Residency education in surgery

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The Editor's View "Education versus service — the resident's dilemma?" by Waddell (*Can J Surg* 2000;43[5]:326-7) has generated a much needed debate on the appropriate model for postgraduate surgical education. This debate is not only about the resident's hours of work, the work ethic in surgery in general and the optimal length of training in surgery, it is about the way residents are trained, how we measure competence, the progressively higher expectations of our patients and, in the end, the future quality of surgical patient care. The debate extends well beyond our Canadian borders — Dr. Thomas Russell, executive director of the American College of Surgeons, also generated considerable correspondence[1] following his column on residency work hours.[2] Subsequent correspondence and articles in this journal[3–5] have addressed numerous issues both central and peripheral to the debate. Everyone seems to understand the complex issues, but what we really need now is to collectively work toward a viable solution. Our ultimate objective should be to attract the best and brightest into surgery, train and educate these young people effectively and humanely, and create a product that improves the surgical care of Canadians — but how do we get there with all today's conflicting forces at work?

Our focus should be on those changes to current surgical training that will best serve the public interest; this "public" includes not only patients, but also residents, practising surgeons and other health care workers with whom surgeons interact. A competent but overworked surgeon too fatigued to function safely and effectively is as undesirable as a surgeon who is inadequately prepared to meet the standards of contemporary surgical practice. We submit that negotiations between residents and an association of hospital administrators (as is the situation in Ontario) excludes key groups who should be major participants. Those responsible for residency programs, provincial medical associations, licensing bodies, ministries of health and representatives of the public should all be at the table. Collective bargaining is appropriate to deal with matters such as salary, benefits, adequacy of call rooms, access to hospital cafeterias and libraries at night, and so on, but is it reasonable for them to discuss work schedules or distribution of time between service and education, items more suitable for accrediting bodies? Furthermore, the fundamentals of surgical education become buried in a one-for-all agreement that may be appropriate for some specialties such as psychiatry, anesthesia or internal medicine, but quite inadequate for the technical specialties.

There is little doubt that surgical training has changed in the past decade as much as, or even more than, the overall health care environment. Most of the change has been for the better. The quality of training in terms of defining the resident's knowledge base has markedly improved through the setting of educational objectives and the structuring of a defined curriculum, including such important topics as communication skills, bioethics, quality improvement, and clinical epidemiology and critical appraisal. Finally, there has been an improved timetable for learning activities through the provision of academic half-day lectures and seminars. (At the same time, however, the

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information explosion has added to the challenge of factual overload despite these focused teaching sessions.) Surgical skills centres supplement the acquisition of basic surgical techniques in a time-efficient manner and in a lower tension atmosphere more conducive to learning.

Coincident with these advances there has been significant erosion of the time available to learn the essentials of clinical practice. Several of our programs have been reduced from an internship of 1 year followed by 5 years of specialty training, to a total of 5 years, which include 2 years of "core" rotations. Clinical experience is being significantly compromised owing to less frequent night-call (and the following day off), more time off for holidays and non-patient-contact educational activity, spring certification examinations with generous time off for study in the final 6 months (as well as frequently a "down-regulation" of the content of this rotation), and cuts to elective operating time due to fiscal restraint in our teaching hospitals. In addition, the trend toward "super-specialization" within surgery creates more challenges for program directors who might prefer the availability of more "general" experiences. Continuity of patient care by residents has been disrupted by same-day admission surgery and abbreviated length of hospital stay. The residents are participating to a varying degree in the initial consultation, surgery and postoperative follow-up for any given diagnosis or operative procedure but, more often than not, on different patients for each component of care. For instance, a senior resident whose patient suffers an "after-hours" postoperative complication will have only a 25% to 33% chance of gaining the experience of personally handling that complication. Such a learning opportunity is undoubtedly one of the most poignant in surgical education, but may be lost forever — how this affects the rapidity with which important surgical judgement is acquired is difficult to measure, but it cannot be positive. We surgeons must remember the adage that our career is a lifelong learning experience and that by far the biggest leap occurred on the day residency was transformed into a consultant position with full responsibility for patients; if the previous residency model produced those who had to keep learning and growing, how can we now truncate training and expect a better result?

The impact of surgeons' workload and lifestyle on recruitment and retention in the community and their impact on the quality of surgical care are important considerations. Can it be possible for a surgical resident who works 1 night in 4 with the day off after a night on call during training, then to work in a medium-sized community where the expectations are to be on call every second or third night with round-the-clock responsibility for his or her patients? It should be no surprise that our current crop of graduating residents are reluctant to work in an environment for which they are inadequately prepared, especially when they are expected to have a broad range of competencies, which few of their teachers could boast! It is our opinion that we are approaching the point at which residents are receiving inadequate experience to prepare them for the demands of today's surgical practice.

We would like to believe that the improvement in our educational processes and content has compensated for the contraction of clinical exposure during residency, but learning to combine the "art" and "science" of surgery still involves an apprenticeship. Simulated virtual reality technical training may help us significantly in future, both in effective education of residents and in error prevention and management. However, these techniques at present and for the foreseeable future give way to our current process of patient contact in a controlled environment. Patient safety and effective development of the surgical resident dictate that learning must take place with a progressive increase in responsibility, which never exceeds the technical skills of the trainee. In addition, the rapid acceleration of technology complicates this balance; "high-tech" training usually occurs along with conventional procedures, so both must be learned. Just like experienced surgeons, some residents adjust quickly, but many take longer to learn. Various combinations of the foregoing factors must surely translate to a product with inadequate and uneven preparation for independent practice.

The residents themselves have already responded to this challenge by participating in post-residency fellowships, sometimes for academic purposes, sometimes in preparation for subspecialty practice, but frequently as a "top-up" in preparation for community practice, compensating for a lack of general experience during residency. There are some potential advantages to this trend; fellows can tailor their experience to their future practice needs to the extent that the faculty permits, and, moreover, the residents and faculty may benefit from the decreased workload both day and night. Unfortunately for the fellow, the working conditions, hours of duty and pay may be completely unregulated, a possible problem for all.

The disadvantages of the proliferation of fellowships are not inconsequential. This portion of surgical training is not accredited by the Royal College of Physicians and Surgeons of Canada, and the experience gained by fellows may compromise the resident's already inferior experience, particularly in larger centres, as the faculty's focus may shift from the residents to the more skilled and "useful" fellows. Concerns about this trend are already creating tension with residents' rotations in certain universities, and such a trend creates a situation in which no one is happy!

It may be relatively straightforward to define the problems, but what are the solutions? A potential approach is to add a sixth year to the residency program, organized to meet the anticipated practice needs of the resident and accredited by the Royal College, while retaining the certification examination at the end of the fifth year. This could be mainly a year of electives and could involve a variety of specialty rotations tailored to the individual's needs but unencumbered by the need to prepare for examinations; fellowship would not be conferred until completion of this additional year. The response to this proposal might be negative — since in many of the faculties of medicine associated with large research-oriented universities a graduate degree is perceived as almost a prerequisite for entry. The length of post-secondary school education is already excessive — no wonder the length and demands of a career in surgery make such a career unappealing to those who have already spent 9 to 11 years in university! In the selection process for entry into medicine, preference might be given therefore to students with 4 or fewer years of university education. Those wishing to pursue a career in research as a surgeon-scientist would be encouraged to postpone this aspect of their education until their surgical residency, a time when, arguably, the chosen field of study would be more relevant to their future clinical interests as an academic surgeon. Those not having aptitude or interest in research would gain several years and extend their years of productivity as a community surgeon.

Lengthening surgical residency in itself will not be sufficient. Royal College policy and processes for accrediting surgical education require substantive change as do collective agreements governing surgical residents. Explicit recognition of the necessity for a different model of education for surgeons and, yes, hours of work are essential. This is not to advocate a return to the exploitation of residents in the past but rather to introduce a degree of flexibility that better meets the requirements of effective and efficient learning by our residents, while protecting the interests of patients. The surgical community has perhaps mistakenly accepted the concept that the structure of surgical education should be the same for Pediatrics and Internal Medicine when, in fact, the pedagogic needs are quite different. We in surgical education are in a better position to make decisions that appropriately blend the humane learning experience that is attractive to graduating medical students entering a surgical program with the reality of contemporary surgical practice; only we can ensure that the end-product of surgical training is safe and competent. Our residents and the public would ultimately be better served by having the hours of work and length of training determined within individual surgical specialties and having those differences recognized by the Royal College in specific training requirements.

Finally, the notion of "mastery" training should perhaps be revisited. The concept was born from the realization that individual students, for a variety of reasons, learn at different speeds and that mastery of various aspects of a curriculum should be the main criterion of course completion, rather than a time-limited approach. In mastery evaluation, a surgical resident could conceivably achieve competence in less than 5 years. On the other hand, supervisors and program directors might decide that competence or "mastery" was achieved only after 6, 6fi or 7 years.

In the solution to the surgical resident training model, a balance must be struck between the legitimate desire of residents to "get a life" and the legitimate right of patients to "keep a life." Those of us in surgical education must work with the Royal College, with the Canadian Association of Internes & Residents, with hospital associations, with universities and with ministries of health to seek an urgent solution — the Canadian public deserves no less.

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