To Be or Not to Be a General Surgeon!

Raimund Margreiter, MD

First, please allow me to express my deepest appreciation for the members of our association for having elected me president of this most prestigious and respectable surgical society in Europe. Being president has been a true highlight of my professional career. I would like to take this opportunity to thank our long-term secretary Pierre-Alain Clavien and his charming and so highly efficient assistant Susanne Kammerer for their pleasant cooperation during the past year and also to acknowledge the fact that they eased most of my workload for me. One of my duties was to prepare this address.

I have chosen this topic despite the huge amount of literature particularly from the United States and the fact that in their presidential address 4 previous ESA presidents explicitly focused on the problem of the declining number of medical students pursuing a career in general surgery.[1–4] For quite some time Austria seemed to remain unaffected by this problem. In more recent years, however, a lack of interest in surgery has become evident in my country, too, and has prompted me to delve into this daunting problem and try to add a few personal aspects. I have to mention, however, that we in Innsbruck still have between 10 and 15 applicants for every vacant training position. To the presumed reasons for this fortunate situation, I will come back later.

Why is the impending disappearance of the general surgeon so alarming in my country? It is because, as in many other European countries, most surgery is performed in public hospitals to which virtually every citizen has free access. Since a few years, patients are asked for a minor contribution on a days-of-hospitalization basis, and only a small portion of usually minor surgery is performed in private hospitals. Alone in the state of Tyrol with a population of no more than 710,000, we have in addition to a tertiary reference center, which is also a university teaching hospital, 7 peripheral public and 2 private hospitals with surgical departments. In 6 of the public hospitals Whipple's procedures and straightforward liver resections and in 2 even esophageal resections are performed in admittedly small numbers. The impact of volume on outcome has been demonstrated many times, and it is my conviction that major liver, biliary, and pancreatic surgery and esophagus and low anterior rectum resections should be restricted to high-volume centers.

Only recently have health care authorities and our national surgical society begun to address this problem. Even if in future the already enumerated procedures are not carried out in peripheral hospitals, there will be enough work to keep theses surgeons busy. In my view this field is still too broad to be named "residual surgery," as general surgery in the era of subspecialization has already been termed.[5] This field will still include, apart from the abdomen, the thyroid and the breast. These medium-sized hospitals cannot afford to employ a specialist for each of the subspecialties, such as colorectal, hepatobiliary-pancreatic, breast, endocrine, or oncologic surgery. An alternative system would be to install small-sized hospitals in the periphery with gatekeeper function that provide only primary care, and to have a few reference centers with all kind of experts.

Because the current system is believed to be in the best interest of the patient, it probably will not be changed in the foreseeable future. Therefore, our health care system will rely strongly on competent general surgeons who are able to provide total patient care at the highest level for many diseases that may require surgical intervention.

Now the question arises whether we are able to attract enough medical students to pursue a career in general surgery and how to train them appropriately.

Basically, interest in becoming a medical doctor continues to be great and seems to even be on the increase in recent years. In 2010, there were 10,700 applicants for the total of 1500 positions at the 3 public medical universities in Austria. This number increased this year to 11,150.[6] It has to be mentioned, however, that almost half of the applicants are foreigners (40% from Germany), who are very likely to return to their home countries after graduation. In Germany, more than 90% of first-semester medical students are reported to graduate.[7] Even if this figure is probably somewhat lower in Austria, we are still producing a sufficient number of medical doctors.

From the Department of Visceral, Transplant and Thoracic Surgery, University Hospital, Innsbruck, Austria.
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Reprints: Raimund Margreiter, MD, Department of Visceral, Transplant and Thoracic Surgery, University Hospital, A-6020 Innsbruck, Austria. E-mail: Raimund.Margreiter@uibk.ac.at.
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I am not aware of any hard data on the quality of European students pursuing a career in surgery. Analyses from the United States, however, seem to prove that the best and brightest medical students are not choosing a career in general surgery,[8] which forced surgery programs to go further down their rank lists to fill categorical positions.[9] This finding, however, does not confirm my personal experience. Reasons could be that surgical research has become less intellectually challenging as compared with research in the neurosciences or internal medicine. On the contrary, surgeons have become too focused on technical aspects, thus, often leaving clinical decisions to colleagues from other disciplines and making them the key players. Remaining the case manager for surgical diseases will be a formidable challenge in times when clinical care is becoming disease-focused rather than discipline-focused. The concept of cognitive specialties versus procedural specialties must be opposed with might and main.[10] Precisely the term "cognitive disciplines" to describe nonsurgical specialties implies that surgeons cannot or do not think.

Several surveys have identified a number of reasons that may deter medical students from general surgery: length of training, perception of uncontrollable lifestyle, long working hours, call schedules, social downgrading, insufficient training conditions, high level of stress, and low income.

Training in general surgery in the United States takes a minimum of 5 years and in Europe 5 years in surgery plus 1 year in complementary disciplines. We still keep trying to pack a rapidly exploding body of knowledge and technology into these 5 years. I can hardly imagine how to shorten the training period and still meet the requirements for certification in surgery or how all these requirements can be taught in a 5-year curriculum. Obviously, some people in the United States feel the same way. I quote: "We are largely still doing what we have always promised and delivered: training surgeons broadly, perhaps as a jack-of-all-trades and master of none" or "We are producing broad-based non-experts."[11] This is the reason why general surgeons are often perceived by the Internet-knowledgeable public as persons who know a little about a lot. Although the qualification profile in Europe is somewhat smaller, the previous statements should also hold true for our countries.

Even if excellent training programs have recently been developed, for instance in the United Kingdom (Intercollegiate Surgical Curriculum Programme), by the American Board of Surgery (SCORE, a standard national curriculum for general surgery residents together with the 3-phase skill curriculum of the American College of Surgeons) and by the Australasian College of Surgeons, all of them including computer-assisted surgery and simulation technologies,[12] it will be extremely difficult if not impossible to impart within 5 years the clinical experience and technical competence needed to cover the full spectrum of general surgical procedures at the highest quality.

By far, the most critical concern of students, residents, and practicing surgeons is attrition and lifestyle, one of the main reasons to decide against a career in surgery.[13,14] Concerns about the negative effects of sleep deprivation on residents' well-being, among other factors, led the Accreditation Council for Graduate Medical Education in July 2003 to drop the mandatory work hour restriction for residents in the United States from 90 to 100 hours to 80 hours per week. Five years later the American College of Surgeons appointed a task force to conduct an analysis of the impact of duty hour restriction on patient safety, education, and training of surgical residents.[15] This group of leaders of a variety of surgical specialties came to the conclusion that the available evidence does not suggest that decreased duty hours have improved the safety of surgical patients. A further decrease in working time might result in increased handovers, disruption of continuity of care, erosion of the surgeon-patient relationship, and a decrease in patient satisfaction. In addition to the negative impact on patient care, the education and training of future surgeons would be severely compromised. The opinion prevails that a fatigued, knowledgeable surgical resident has been traded for a refreshed and relaxed but uninformed and unaccountable individual attending the patient.[16] In this context, it was interesting to hear what was reported at this meeting. Katja Maschuw and colleagues concluded from their study that acute call-associated fatigue seems to be a predominantly subjective perception. In contrast, acute partial sleep deprivation seems to have a positive short-term effect on cognitive skills, causing enhanced technical performance of complex tasks and improved objective alertness.[17]

How has work hour limitation affected residents' lifestyle? A survey conducted at 124 of the 252 programs in the United States revealed that the attrition rate increased from 6 residents lost per year to 8 residents. The majority of those who left surgery entered other fields of medicine that are more conducive to a controlled lifestyle.[18] Other groups found that rates and patterns of attrition seem to have been unaffected by work-hour limitation.[19,20] The authors of a careful analysis of the existing literature entitled "Myth and Realities of the 80-hour Work Week" came to the conclusion that resident work-hour reduction has resulted in little significant change in lifestyle, clinical exposure, patient well-being, faculty work hours, or medical student recruitment.[21]

The European Working Time Directive limited average working hours for hospital-employed medical doctors to 60 hours per week in 2004. Interestingly, at least in Austria this does not apply to division heads and chairmen. After allowing for 5 to 6 weeks of holiday, attendance at scientific meetings, time spent for postgraduate education, nightshift leave, and sick leave, residents are available during the daytime for training for not more than 26 to 30 weeks per year. This fact is well recognized by the division of general surgery of the UEMS (Union Européenne des Médicins Spécialistes), the European Association of Medical Specialists (W. Feil, personal communication), which tries to harmonize medical education in Europe as it is well aware that it is absolutely impossible to meet the volume requirements for each resident, not to mention that most institutions and residencies are unable to provide the volume and spectrum of patients that we are convinced they should be exposed to, to acquire the competence that enables them to provide the highest level of patient safety and quality of care. A possibility that is discussed within this group would be a 6-year basic training period in general surgery, followed by another 2 years of training in specialties such as colorectal or hepatobiliary surgery, which was already recommended by Andrew Warshaw almost 20 years ago. Those completing this program would be called special general surgeons in contrast to general surgeons and subspecial surgeons.[11] More recently, Fernandéz-Cruz made a similar recommendation in his presidential address in 2004.[3] A somewhat different model was already introduced in Germany 5 years ago and calls for residents after completing a common trunk of 2 years in general surgery to have to decide on 1 of 8 surgical subspecialties, including general surgery for their further 4 years.[22] I was also told that an extension of working hours for hospital-based medical doctors is not to be expected (W. Feil, personal communication).

This means that we have to look for solutions for this problem. A transatlantic comparison of the competence of surgeons at the beginning of their professional career was conducted in Canada and the Netherlands—2 countries with similar training programs but different working hours (officially 46 hours in the Netherlands, but 55 hours in that study, vs 84 hours in Canada)—revealed performance of Dutch residents to be equivalent to that of their Canadian colleagues with regard to technical skills and cognitive knowledge. The Canadians, however, were found to have better patient management skills.[23] In the context of working hours, the experience made in Sweden, where a 40-hour work week was introduced already 40 years ago, and the work by Ihse, another former president of our society, should be of

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interest. Limited work hours necessitated far-reaching subspecialization among their surgeons, which is believed to have led to higher quality of patient care. On the contrary, the authors admit that this evolution has watered down the broad surgical competence required for emergency cases in the general surgical unit.[24] They further believe that Sweden has too many surgeons in relation to procedure volume. Even in high-volume centers, surgeons perform less than 200 operations annually.[2]

It is not my intention to extend the age-old discussion of whether to preserve a modified form of general surgery or to specialize or subspecialize. The fact remains that we have to react to the concerns expressed not only by residents but also by certified surgeons and make training for and the profession of surgery more efficient and attractive. Emotional exhaustion and burnout rates of up to 40% together with a significant rate of alcohol dependence among surgeons have to be considered frightening and alarming signals,[25] even if I have to confess that I cannot help feeling that in some instances burnout is just a lame excuse for being unable to cope with professional problems.

Numerous proposals and recommendations on how to address these problems have been made over the last decade. Virtually all of them are valid.

It has been shown that career choices for students interested in surgery may originate from premedical school experiences or interactions or encounters with surgeons during the early years of medical training. Whereas the first opportunity to intervene is beyond our control, we should try to encourage students to join a surgical research team as early as possible and, perhaps most importantly, inform students about all the advantages that our profession has to offer, instead of complaining and moaning about practice issues in the presence of students and residents. Furthermore, to awaken students' interest in surgery, it is important to involve students in the operating room. Students who sutured in the operating room were 4.8 times as likely to be interested in surgery, and students who drove the camera 7.2 times.[26] The vital impact of mentoring and role models on surgical career choices has been demonstrated many times. It is crucial that mentors and role models stress the importance of the doctor-patient relationship, which is usually closer in surgery than in any other medical discipline, and teach the psychosocial aspects of surgery. Chief residents are perceived to be the most authentic persons involved in education.[27] The confident, aggressive, stubborn, cynical, unsophisticated, and occasionally even disruptive and downright crude surgeon has had his day. However, this phenotype of a surgeon, which goes back to times when bold decisiveness and sheer fearlessness were the defining qualities of a surgeon, is still perceived by many students. A surgeon of our day should combine emotional and social competence, professional authority, and communication skills, as described by Peter Neuhaus[4] in his address. A more recent study revealed surgeons to have the most clearly identifiable personality profile, which is not substantially different from that of other physicians.[28]

The hierarchical structure of surgical departments, and in particular academic surgical departments, is often criticized. There is no doubt that this has to change if we are to foster initiative behavior, autonomy, and self-reliance in young doctors. They, however, have to acknowledge that some degree of hierarchy is essential because someone has to make the final decision and assume the responsibility in clinical and educational matters.

Over the years, residents have been forced to take on more and more paperwork and bureaucracy, much of it documentation. In an environment of modern information systems many of the administrative chores are antiquated. What is left after streamlining should be taken care of by other less qualified personnel, such as physician's assistants in the United States or documentation assistants as they are called in Germany. Debureaucratization would save a lot of time that can be better spent in the operating room. Because work-hours restriction led to an increase in time-consuming and continuity in patient care-eroding handovers, valuable time could also be saved by using computerized rounding and sign-out systems, which can certainly not replace interactive sign conversations among care providers.[29]

Call schedules are another major concern with a negative impact on family life. Because surgical emergencies will continue to occur, I am afraid this kind of service will continue to be needed in the foreseeable future. In my mind the acceptance of night shifts is largely—like most of what is summarized under life-work imbalance—a matter of attitude. When I was a resident, our schedules, just as those of most surgeons in my generation, included at least 10 night shifts per month without a day off afterward. We were happy to be on call because it meant an additional learning experience from emergency cases and because of the extra money we earned. And still, I found enough time to go rock climbing, high-altitude mountaineering, ski racing, and wild water canoeing at a top level. I have to admit that night calls become more burdensome with increasing age. Professionalism combined with a pronounced sense of duty makes it only natural to get up in the middle of the night and attend to a complex case.

Insufficient compensation is consistently found by surveys to be a factor deterring medical students from a surgical career. The last decade in the United States saw a decline in personal average income of physicians. This and the frightening perception of uncontrolled malpractice litigation, and the steadily increasing education debt, are probably the reasons why this concern is particularly pronounced in a country where compensation still places surgeons in the upper 0.1% income bracket.[30,31] At any rate, hospital-employed surgeons in the United States earn significantly more than their colleagues in the Netherlands, Great Britain, or France and 4 times more than in the other European countries.[4] Obviously, remuneration has no paramount impact on surgical career choices, at least not in these latter countries. Even if we go into medicine primarily to help sick people, it is clear that surgeons in most European countries are underpaid and improvement in their reimbursement is necessary. It is a known fact with no reason to substantiate it that general surgical procedures are less valued as compared with procedures performed by "specialists." I think we must educate society that it is not fair to demand the highest level of competence, merciless accountability, and unlimited availability without providing adequate compensation.

All of us chose surgery because of our desire to immediately see the results of the work we do with our hands. The greatest reward comes from seeing patients improve with our care. To provide this care requires a competence that can only be achieved through long, hard training, and by staying current with the rapidity of change in knowledge and technologies that mandates programmed, continuous lifelong learning, which I consider one of the most fascinating facets of our profession. Students who shun the rigors of surgical training and view the profession as too demanding should look to a different field of medicine. Surgical training and practice is and always will be hard work, and the willingness to work hard has obviously gone out of fashion. We are apparently faced with a change in the nature of the individuals in the workforce who are entering medicine.

What I find most alarming is the fact that surgery is viewed nowadays by an increasing number of trainees and also practicing surgeons as a job and not a profession. A profession is defined as "an occupation whose core element is work that is based upon the mastery of a complex body of knowledge and skills." It is a vocation when these capabilities are used in the service of others. Its members are governed by codes of ethics and profess a commitment to competence, integrity, morality, altruism, and promotion of the public good within their domain, as Jon Thompson explained.[32] A job is seen as being associated with a strictly controlled working time and a "shift

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mentality," which is apt to jeopardize the continuity in patient care with all its negative aftermath not only for patients but also for the attending doctors.

Surgery is and always will be associated with a certain level of stress, which is positive because it keeps us alert. Our profession therefore requires some mental stability. Many surgeons, however, suffer from too great a workload and particularly from being overstrained by having to do too many things at the same time or in an overlapping fashion. This can result in a rushing around that has been termed "urgency without importance"[33] and causes a lot of detrimental extra stress. This can be avoided to a large extent by careful time management. This kind of stress is then often increased by an effort-reward imbalance, which may eventually lead to burnout and is more complex to cope with.

As for the issues of declining prestige and social downgrading, I do not understand students' perception because at least in the United States, Germany, and Austria and probably in most European countries, surgery is still ranked highest of all medical specialties, and medicine is ranked highest among all common professions.[34,35]

In addition to all the concerns and complaints discussed so far, there is a cluster of real and perceived problems that deter women from general surgery training. Apart from the perception that general surgery is incompatible with a happy marriage and childbearing, women view surgeons as having a distinctive macho-type personality. Sexual harassment and gender discrimination have been reported from surgical units and may also be a reason not to go into surgery.[32,36] Nothing could be further from my mind than excusing such behavior, but I think that similar experiences have been reported from virtually every profession with a workforce of both sexes. Because 50% to 60% of medical students in most countries are female, we have to increase the number of women entering surgery. Peter Morris, another former president of our society, thinks that a larger cohort of women in surgery will bring more compassion, better communication, and even more intellect into the surgical community. If we fail to achieve that goal, he predicts that male surgeons will have a miserable life in future as there will be even fewer surgeons to do the work than is now the case.[37] Part-time practice, better opportunities for reentering surgery after maternity leave, and childcare services are considered incentives for women to pursue a career in surgery.[38]

If you remember, I promised to tell you why the number of applicants by far exceeds the number of vacant posts in general surgery in Innsbruck. Possible reasons are that some time ago we instituted a learning center where students and trainees are taught basic skills such as suturing, how to perform an endoscopy, and do an ultrasound examination, place urinary and intravenous catheters, among many other things. We also try to involve the brightest students in research projects as early as possible. We were able to increase the number of female trainees and staff members from 4% 10 years ago to 25% now. When a woman goes on maternity leave, we get immediate locum, which is not the case for other kinds of leave. Childcare services with daily opening hours from 7 AM to 6 PM proved extremely helpful. As training in minimal access surgery has been predominantly organized by the particular industry, we have built up our own training center. Hierarchy was reduced and surgeons were allowed to go about their most valued services. Their income was significantly increased by giving them the lion's share of the income from private patients. How good I was as a role model must be judged by my former coworkers.

Whatever we do in life, we seek happiness. Even if it is a widely held opinion that there are essentially no differences in life satisfaction between the richest people in Western societies and African tribesmen, on a personal basis happiness seems to increase with income. This positive effect, however, disappears once a certain level of income is reached. The way we spend our money has an even greater impact on happiness than the amount of money we earn. Spending for others has been seen to make people happier than spending for our own personal needs.[33] We surgeons constantly give the most valuable gift to others—health and life. We should accept that this inexhaustible source of happiness, self-esteem, and satisfaction is sometimes spoiled by system-immanent drudgery, hardship, and strain. If we succeed in accentuating the intrinsically fulfilling aspects of our work and in conveying our desire and passion for surgery to our students and residents, we would not have to worry about the future of general surgery. I would like to finish by quoting the Austrian poet Anton Wildgans, "If something is to give light, it must accept that it burns." (Was leuchten soll, muss dulden, dass es brennt. In: Worte der Weisheit).

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