SPECIAL ARTICLE

Mentoring Surgeons in Private and Academic Practice

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Mentoring is an essential component of a successful career in any profession, and these relationships are beginning to be explored in great detail in academic surgery. However, it is equally important for surgeons in private practice, and this area has not received nearly as much attention in the literature. The goals for both are similar and include providing career advice, guidance, and counseling, with the only regard being the success of the junior associate. In private practice, the mentor can be a senior colleague who may or may not be part of one's group practice. In academia, it may be someone at another university, although proximity is preferable. It may be necessary to repeat the search for a mentor more than once before a successful relationship evolves. This complex process must be mastered if one is to be successful in either academia or private practice. *Arch Surg. 2005;140:598-608*

One of the most important elements of a successful career in any profession, second only to credentials, is effective mentoring. Although mentoring can be done at a distance, up-close, personal, and frequent contact is preferred because the successful mentor-mentee relationship involves comprehensive fusion of both profession and family life, since synergy is very important in both areas. How this comes about is a function of the culture of your new environment. If you are looking at a private practice position, the search for a mentor within the group should be on your list of things to look for within the organization, beginning with the first visit. If an academic career is your goal, the same rule applies, and the chair or division chief should discuss potential mentors early during the recruitment process, particularly if you are relocating to another academic center. Although mentors are usually someone in your specialty, this is not an absolute requirement. The most important trait for a mentor is to successfully nurture a colleague, with the colleague's success being the only reward. In some instances it may be necessary to have a local mentor as well as a remote person with specialized skills in your area. Should you find yourself in a position where this need is not being addressed, then you need to seek and find your own mentor, even if he or she is at a different site. You should be concerned about any position in which mentoring is not an integral part of the overall recruitment package.

In 1996 I was asked to write an editorial for the newsletter of the National Medical Fellowship Inc, in which I categorized mentoring as functioning as a "parent" vs a "grandparent," the difference being that parents must drive their children to be the best that they can be, at the expense of being their "friend," while it is the job of grandparents to spoil grandchildren and tell them how wonderful they are regardless of their deficiencies.[1] I concluded that a successful mentor must be a strict "parent" who uses whatever tactics necessary to motivate one to succeed and excel. In 1996 Dunnington[2] reminded us that the term *mentoring* originated from the *Iliad* and the *Odyssey*. When Odysseus left home for the Trojan War, he left a trusted friend, Mentor, to coach

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his son Telemachus into adulthood. Dunnington surmised that, "from this relationship came the origins of mentoring characteristics including a developer of talent, a teacher of skills and knowledge and an assistant in defining goals." Pololi and coworkers[3] noted that mentoring is a very complex relationship involving personalities, goals, and their congruence between the mentor and the protégé and transference using heretofore quantitative methodology, which, unfortunately, has provided very limited insight into what the mentee has gained from the relationship. Although mentoring in some form has been around for quite some time, the characteristics of successful relationships in academic medicine are still being defined. It has been well documented that academic faculty members who have been properly mentored are more likely to have a more productive research career, more confidence, and greater career satisfaction.[4,5] Little has been written about mentoring surgeons in private practice. Most of us were fortunate enough to have had enthusiastic and dedicated mentors and appreciate any opportunity to try and emulate those upon whose shoulders we stand.

COMMON PITFALLS OF PRIVATE PRACTICE

Although the pathways to a successful career in private and academic practices share many common pitfalls, as indeed they do with most medical specialties, there are some special features that are peculiar to each of these career pathways. Surgeons in private practice settings, whether solo, group, or large provider–type venues, all need some degree of mentoring. The needs are quite different for entry-level surgeons vs senior surgeons because the avenues for misadventure are quite different. The former most often require an external force to bridle their energy and attitude of invincibility that accompany the completion of a residency or fellowship, whereas the latter often fall prey to the vicissitudes of life and the inability to acknowledge diminishing skills in a changing environment with new technology that they are either unable or unwilling to master.

Entry-Level Surgeons

Private practice surgeons often encounter difficulties in basically 7 areas: (1) negotiating a bad contract, (2) inadequate spousal input into job selection, (3) not recognizing the changing relationship with their families once residency training is completed, (4) not giving proper attention to their board examinations, (5) being overly aggressive in their case selection early on in their careers, (6) being too eager to get involved in the politics of their new medical community, and (7) making bad financial decisions when they enter practice.

Negotiating a Contract. Most residents will never have negotiated a contract before, especially one of this magnitude or importance. I always encouraged my chief residents to just look at the position and the people on the first visit and not talk about contract issues. The foundation for a successful relationship always revolves around people and not bricks and buildings. If a second visit follows, then issues of substance need to be discussed, including base salary and incentives; vacation and continuing medical education time; life and disability insurance; pension plans, including any vestment periods; conditions of partnership; noncompetition clauses; loan forgiveness; board issues; telephone, pager, and automobile leasing plans; on-call schedules; ownership in buildings and equipment; moving expenses; and assistance with home and automobile purchases. If a contract is offered after the second visit, I would review it with them for content and the usual and customary concerns as outlined above. However, I then recommended that they have an attorney from that state go over it in detail to make sure that they understood the document in its entirety. The noncompetition clauses are especially important. The judicial system has not made a declarative statement about the legality of these clauses despite trial cases in several states. Residents should make every effort to continue any insurance policies provided during residency, especially disability coverage.

Spousal Input Into Selecting a Job. It is important that the spouse, and perhaps older children, are comfortable with the place where they are going to be relocated. I tell residents all the time that, for them, all hospitals and operating rooms are basically the same, but their spouse and kids have to actually live in the community, and they need to be comfortable in their new environment. Most recruitments do not involve the spouse on a first visit. This has always puzzled me because if the spouse does not like the environment for any reason, it would be better for all parties involved to discover this on a first visit. At any rate, the spouse should always go along on the second and any subsequent visits. I also think that it is a good idea for older school-age children to be present on a second visit to ease their transition into a new community. Another axiom of mine is that children will generally adapt and adjust if the parents are happy and secure. The spouse should look at school systems, neighborhoods, job markets if he or she intends to work, and distances to hospitals and airports, as well as meet with other spouses of all ages and investigate the potential for assistance with the children in the neighborhood should it be necessary.

Changing Relationship With the Family. During my tenure as chair and program director, I made it a point during the last 2 months of training to talk to the chief residents and graduating fellows about how dramatically their lives would change once they completed their training. They needed to understand that they would soon become a stranger in their own homes. After years of leaving home before the kids woke up and often getting home after they had gone to bed, suddenly they would be at home and "in the way." The spouse will have established a routine that works for him or her for getting the kids, the cat, and the dog fed and everybody dressed and ready for the day's activities. You will not even know what the drill is because you have never seen it. All of a sudden you are there, with your "surgical personality," trying to run the show just as you do in the operating room.

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It simply may not work and may create undue friction and potentially devastating marital discord. If the kids and the dog share their breakfast on the floor from the same bowl and the dog does not get sick, then you should leave it alone. They have been doing it for years, and you will have to learn to gradually fit into the way the household operates until you are accepted as a full-time family member. En route to the 2004 meeting of the Society for Thoracic Surgeons in San Antonio, Tex, I overheard the wife of a newly commissioned cardiothoracic surgeon complaining to a female pharmaceutical representative how difficult it had been dealing with the disruption of her life with the children and dogs when her husband completed his fellowship. I was pleased to see that the Program Committee had included a segment entitled "Relationship Skills for the Surgical Marriage" on the program.[6] Perhaps more surgical organizations should follow suit, especially the American College of Surgeons, which has 2 well-attended annual meetings and an enormous educational program.

Board Examinations. Most graduates of training programs are well prepared to pass both parts of the American Board of Surgery examinations, but the tests must be given their proper attention. Young surgeons must be given some measure of "protected time" by their new partners for their part 1 review, just as they must attend a broad range of clinical conferences after part 1 to successfully negotiate part 2. Many young surgeons are too eager to begin operating when they enter practice and fail to respect parts 1 and 2 of the boards, to their ultimate peril. The American Board of Surgery has limited the number of times a candidate can take both parts of the examination. Also, it is virtually impossible to get a training program to structure a remediation program that is acceptable to the American Board of Surgery because of the requirement that the candidate be paid from a resident's pay line and cannot engage in private practice during this period. I would suggest that, should your in-service examination scores fall below the 20th percentile for 2 consecutive years during your residency, you should seriously rededicate yourself to this effort and spend vacation time in remediation because, statistically, you are unlikely to ever become board certified. In your lifetime, you will pay a harsh penalty for this, both financially with higher malpractice premiums and with the likelihood that you could be legitimately denied privileges at hospitals and have no legal recourse. Once you are in practice away from an academic environment and become busy, there are too few educational support services to help you with this examination. Studying harder is not the answer, because your study methodology is what is flawed and must be corrected.

Case Selection. Young surgeons need to be constantly reminded to do what is safe, proven, simple, and accepted as the community standard of care. Those heroic procedures done as a resident will get you in trouble more often than not outside a tertiary care center. Respect must be earned when you enter practice. If 2 of your first 3 carotid endarterectomy patients suffer a stroke, then you have to do the next 100 procedures without a complication to have an acceptable complication rate. At 2 AM, when you are faced with an obese, elderly, insulin-dependent diabetic patient with severe chronic obstructive pulmonary disease who has an obstructing sigmoid lesion and you have only an operating room technician as your assistant, it is probably safer to perform a diverting colostomy than a Hartmann procedure. Even if you have done the required 5 liver procedures as a resident with a hepatobiliary expert across the table, you really have no idea how to do these procedures and should refer them out if you are in solo practice or do them with an experienced surgeon in your group for a few years and not with a physician's assistant or nurse practitioner. These assistants may be able to give you some "technical" assistance but cannot help you with matters of judgment.

Politics of Medicine. I advise young surgeons to avoid the politics of their medical community for at least 5 years. They should avoid membership on hospital and medical society committees because they are inherently political, including peer review, credentialing, and privileging committees. Every political decision creates ill will on the part of someone, and human nature demands retribution at any and every opportunity. Being the new surgeon in town and filing an "incident report" on a 15-year head nurse because vital signs were taken twice daily instead of 3 times daily as ordered will not work. You should also avoid bringing unnecessary costs to your new hospital. In the "good old days" surgeons were provided with their preferences for sutures and devices. Today, you need to use existing stock and shelf items and just get used to it. As long as the suture or device works, it should matter little to you who made it.

Fiscal Responsibility. After 5 to 7 years of training and many years of living on a marginal budget with school and personal loans that may reach into 6 figures and driving 1 or 2 cars for which parts are no longer available, young surgeons may be too eager for an immediate upgrade in their lifestyle. Although the prospects of a $200 000 job might sound good after a lifetime of a resident's salary, it is important to realize how little will be left when all masters are served. In the old days, surgeons could always augment their income by working in emergency departments, doing compensation and pension examinations, and first-assisting other surgeons, but those days are largely gone. As chairman and program director, my goal was to encourage graduating residents and fellows entering academia or private practice to keep their lifestyles relatively simple for 2 years and establish a practice of saving that would transcend time. You can get 2 new cars for an aggregate monthly payment of $750 or you can pay this amount for each one. You do not need to buy the biggest house on the market with an in-ground pool and a lighted tennis court right away. Private schools are a personal decision and may not be necessary based on the neighborhood you select. Most private groups require a trial period of roughly 2 years before partnership is offered. Some may not even "vest" you in their pension plan during this trial period. Therefore, you should start your own retirement fund and perhaps an educational fund for your children from your salary. This

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can be done through a variety of individual retirement accounts and 401-type vehicles. Surgeons already have a much later start toward retirement planning than any other professional group because of the length of residency, and this must be addressed in year 1. Most physicians do not have time to manage their business affairs on a regular basis, so professional assistance is recommended. Failure to address this early in your career will find you in your 50s with inadequate retirement resources. Many surgeons will be paying off educational loans concomitant with the requirement to begin saving for college tuition, emergencies, and retirement; therefore, this must be addressed early and thoroughly. Entry-level surgeons also assume the premiums on any benefits that can be carried over from residency, particularly disability coverage.

Rules, Regulations, and Behavioral Science. Most residency programs tend to protect the trainees from many of the social issues involving the profession, although they are increasingly being discussed at grand rounds, at special seminars, in the journals, and in locker rooms. Issues that do not garner much attention during residency become profoundly important in practice. These include sexual harassment, stress and anger management, ethics, dealing with distraught relatives, patient satisfaction, enhancing interpersonal and "people skills," understanding and accepting clinical pathways and evidence-based medicine, and recognizing and accepting that you as an individual are really not in control of much of anything anymore. One of the most rampant problems in hospitals throughout the country today is disruptive behavior in the workplace, with abusive behavior on the part of physicians being a serious problem. Many young surgeons get into trouble for lack of mentoring as to what they can and cannot do in the present milieu and what is acceptable and unacceptable behavior. Sexual harassment is a major issue today, and there are courses to help you understand what it means in all of its ramifications. If your hospital does not offer or require such a course, then you should complete a Web-based program at a minimum. You cannot call nurses *cutie*, *honey*, *tootsie*, or *sweetie* anymore because it may be offensive to the person you least expect. In the federal system, anyone within visual or audible range can report you on a toll-free telephone line for suspected harassment. Sadly, you probably should refrain from telling your secretary of 10 years that she looks "terrific" in that blue dress. The same applies to female surgeons.

Screaming at subordinates in the workplace will eventually get you in trouble. Screaming, swearing, and using words with sexual connotations will get you in serious trouble. You also become a liability for your practice entity, since the entire group will likely be named as codefendants in any legal actions against you. Souba[7] addressed the issue of disruptive behavior by surgeons in a 2003 article, noting the number of brilliant scientists who lack the emotional maturity necessary to round out an academic career. He pointed out that this deficiency can be corrected with proper mentoring if the mentee is willing to "work on increasing his or her self-awareness, practice new behaviors on a daily basis and accept candid feedback." He concluded that this deficiency is often long-standing, deeply rooted, and very difficult to change. I used to tell intern applicants that we would never be able to uncover their personality disorders in the 15-minute interviews allotted to this purpose, but that if they knew they were so afflicted, then they should go elsewhere because they were unlikely to finish in this program. Similarly, if you know that you have a volatile personality when you are upset, then you had better seek help in the form of anger management, because your "maintenance" fees may be unacceptable to your senior partners.

Mentoring Senior Surgeons in the Community

The more common problems experienced by senior surgeons in practice include the following: (1) lack of hobbies and distractions; (2) midlife crises, including divorce and separation; (3) substance abuse; (4) financial problems; (5) death and illness among family and friends; (6) reliving their adolescence through their children; (7) empty-nest syndrome; (8) changing practice patterns; (9) recognizing when it is time to stop doing surgery; and (10) deciding whether to transition into an administrative, managerial, or consultant position.

Lack of Hobbies and Distractions. Most surgeons older than 50 years are likely a product of something similar to a traditional "Halsteadean residency program," which called for a work schedule of 36 hours on duty and 12 hours off for 5 to 7 years. This left little time to either continue existing hobbies or learn new ones. This "learned" behavior often carried over into practice and was compounded by the need to catch up with the activities of the children, thus leaving precious little time to pursue mutual spouse-spouse interests. Therefore, when the children leave home, a void is created into which new social activities must be deposited; otherwise, there is a gradual drifting apart because of a lack of shared interests. By the end of the third decade and the beginning of the fourth, the frailties of age begin to appear, and once invigorating activities such as tennis and basketball can no longer be pursued with any degree of intensity or regularity. One solution is to establish one weeknight as a spouse-spouse event while reserving the weekend for family activities. One of the important things that I learned from my mentors was the need to have permanent fixtures within a family's construct, be it a vacation house somewhere or annual family trips to someplace that could always be a gathering place for multiple generations.

Midlife Crises, Including Divorce. In a 1997 report by Rollman et al[8] from the Johns Hopkins Precursors longitudinal study of 1337 Hopkins medical students, 29% of 1118 physicians were divorced after 30 years of marriage, with the choice of specialty being an independent variable. Using internists as the reference group, the adjusted relative risk of divorce was highest among psychiatrists at 2.7 times the rate for the reference group, whereas the rate in surgery was 1.7 times the reference. Doherty and Burge[9] pointed out in 1989 that physicians

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and their spouses may be more likely to stay in failed marriages because of social status and financial security. This may result in marital infidelity on the part of either partner.

Most physicians do not have a financial base for divorce, so the reasons are largely lack of communication, divergent interests, and sexual incompatibilities. Some of this friction may be created during residency owing to the strong "aphrodisiaclike" effect of a horrendous but successful surgical procedure. All surgeons, both male and female, have experienced a feeling after a particularly challenging procedure that is similar to catching the winning touchdown in the Super Bowl, only to go home to a spouse who is complaining because the kids have been particularly upsetting that day. When you get home, your dinner is in the microwave and your spouse is asleep. Herein is planted the seed of infidelity, particularly after the physician has gone through multiple shifts at close quarters with nurses who come in fresh, well-coiffed, and perfumed every 8 hours before the physician gets some time off. Good advice to young surgeons in this circumstance is that this sexual prowess will dissipate sooner than they think, and after age 40, they will be the first ones asleep. Mentors could do a great service by pointing this out to their mentees, with the reminder that their marriage was originally founded on love, devotion, and commitment, and every effort should be made to resurrect that spirit.

Substance Abuse. Although data in this area for physicians are difficult to gather, conservative estimates suggest that 8% to 12% of physicians will develop a substance abuse problem during their careers, which is slightly higher than the 10% rate for the general population.[10-12] Roughly 7% of practicing physicians at any given time are abusing alcohol or other drugs.[13] Of interest, these numbers are essentially the same for every medical specialty, age group, practice environment, and arena (academia vs private practice).[14] Although most of the risk factors for physicians are the same as for the general population, others are physician specific and include a stressful work environment, self-treatment with narcotics, and access to controlled substances. Physicians are quite adept at masking substance abuse–related behavior, and colleagues are generally likely to "look the other way" all too often. The tragedy here is that the mortality rate among untreated physicians is estimated at about 17%.[15] Alcoholic individuals can usually masquerade and survive longer than heroin or cocaine users. Substance abuse among physicians emanates from the same causes as that in the population at large, including an unstable childhood, parental alcoholism, and adjustment problems in high school and college.[16] In a survey of 1600 physicians in practice in medicine, surgery, and anesthesiology, Lutsky[17] showed no difference in the prevalence of impairment, but recorded self-admitted rates of 14%, 20%, and 17%, respectively, for the groups. Of note, 73% of the entire group had used unprescribed psychoactive drugs within the past year.

The responsibility for monitoring substance abuse among physicians resides at the state level through licensing authorities. However, because of legal implications, hospitals are greatly concerned about this issue, and it is a question on all applications for appointment and renewal. In fact, since the government is the major payer for most physicians, it may be just a matter of time before random drug testing is imposed on physicians enrolled as providers in Medicare and Medicaid programs. Physicians should be aware that the impairment is reportable to the National Practitioner Data Bank, unless there is a "voluntary entrance" into a treatment program. It is important to note that completion of a comprehensive treatment program and diligent follow-up and monitoring can restore 75% to 85% of addicted physicians to practice.[16]

Financial Problems. Pecuniary problems for surgeons result primarily from poor planning, bad financial decision making, and the surgical personality profile that borders on aggression, arrogance, and a sense of invincibility. Long years of training, large debt loads, and the fact that many residents start their families during training all converge to complicate this critical phase of estate planning for surgeons. Risky and aggressive investment practices without professional assistance and extensions of the "surgical personality" are all fraught with hazard, and the road is strewn with potholes of failed investments based on "surgical intuition" as opposed to fundamentally sound research toward the development of a responsible financial plan.

Death and Illness Among Family and Friends. This is the age when parents are old and frail and children may die unexpectedly from accidents or malignancies of the young. Coping is difficult, and surgeons are not prone to share their feelings or be consoled by professional people or even close family members or friends. There is often the feeling that not enough time was spent with family and friends, and there is immeasurable guilt when an unexpected death occurs in this setting. Most surgeons do not deal effectively or rationally with death under most circumstances, as it represents defeat for us. Professional assistance is highly recommended in this setting, including group sessions with the rest of the family if necessary.

Reliving One's Adolescence Through Offspring. Most physicians were on a "fast track" all their lives and spent more time in the library than on the playing fields. Thus, some surgeons tend to try to push their children to excel in those extracurricular activities that they never had time for. Watching your kid play youth sports and even high school sports is very satisfying. However, most of these kids will not play college-level sports, so spare them a neurosis and be satisfied with a second-string first baseman or get them involved in activities where there is ample opportunity for participation. Having said this, another ongoing shortcoming that needs attention is the failure of surgeons to attend sporting and extracurricular events involving their children. With the evolving restriction on work hours, this should begin in residency with the surgeon-spouse taking the kids to ballet and soccer practice, attending parent-teacher meetings, and helping with homework.

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Empty-Nest Syndrome. This is intertwined with a lack of hobbies and the realization that there are too few shared interests, absent the children. This is best avoided by making a point of nurturing activities that predate your children; maintaining relationships both locally and afar, be it with friends or family; doing volunteer work together in some community initiative, church, or fraternal organization; and taking good vacations. Periodic reunions with resident-mates at society meetings is a good way to keep in touch and foster long-standing relationships among peers and their offspring. Surgical residency is perhaps the toughest team experience that humans endure aside from armed conflict, and, sadly, many residents never see their peers again after they finish training. It is also for this reason that I think periodic continuing medical programs sponsored by training programs are important because they help maintain the "extended family" concept. This can be something as simple as periodic attendance at the fall meeting of the American College of Surgeons and attending your training program's reception or attending continuing medical education programs sponsored by your institution.

Changing Practice Patterns. The myriad of technological innovations and the explosive growth of laparoscopic, video-assisted thoracic surgery (VATS) and other minimally invasive procedures during the past decade may well have helped some senior surgeons decide how to end their careers. The best example is the emergence of laparoscopic surgery and cardiac revascularization without using the heart-lung machine. Most surgeons older than 55 years are not going to conquer anything laparoscopically more complicated than a cholecystectomy, as these are primarily "destructive procedures" with nothing to reconstruct or anastomose afterward. Most senior surgeons are not going to commit the time and effort necessary to become proficient in laparoscopic or VATS suturing. Similarly, most cardiac surgeons of the same ilk are not going to bother to learn how to do "pumpless" heart surgery. So what do you do when patients demand this technology, younger surgeons are doing it in your community, and you cannot? Again, this ties in with how secure you are financially as to whether you can do something else, such as administrative positions in the hospital or management positions with insurance companies.

Recognizing When It Is Time to Stop Operating. Surgeons around the age of 60 years are at the tail end of the explosive growth of new surgical technology that began during the early 1990s, which has seen many of their mentors and teachers retire. Many of these surgeons worked into their 70s because of a lack of outside interests or poor financial planning. Every resident can recall a staff surgeon who stayed too long and tarnished a stellar reputation. The ultimate stain on an otherwise outstanding career is having one's privileges restricted by the hospital because of poor outcomes, questionable judgment, and failing skills. The worst-case scenario is to have your license recalled by the state health department. Health concerns also factor in here, with the development of neurologic diseases of aging, cervical and lower lumbar disk disease, and other crippling systemic disorders. One of my professors asked me what I planned to do when I got tired of operating. I responded by saying that I could never imagine me tiring of surgery, and his advice was to start thinking about alternatives in the event that it did occur.

Developing a Second Career. Fortunately, the practice of surgery affords the opportunity to become well versed in quite a number of venues, all of which can be nurtured and developed into second careers. These include administrative positions in hospitals, working with local and state health department offices, pharmaceutical companies, federal agencies, private volunteer organizations, foundations, and various consultantships. The key here is recognizing some nontechnical component of your work that you enjoy that can be enhanced with either self-study, computer-based learning, or a couple of course credits at a local college. The ultimate career change is retraining in another specialty, but this option is not available to most senior surgeons. Objective self-assessment here is very important, because a little additional training might make you more marketable if you know that your operating room days are limited.

MENTORING ACADEMIC SURGEONS

The nuances of private practice also plague academic surgeons. However, academicians must additionally deal with a completely different set of issues that are peculiar to their chosen careers. In a 2003 report by Jackson et al[5] involving interviews of Harvard University faculty members, 98% of participants identified lack of mentoring as the first (42%) or second (56%) most important factor hindering career success in academic medicine. Another report from Harvard by Ramanan et al,[18] involving 700 faculty members who reported a good relationship with their mentors, identified several characteristics of the relationship that were critical. They included providing career and research advice, helping the protégé improve communication skills, not abusing power, maintaining close contact, and helping the mentee build professional networks. I would add to that the need for the families of the mentor and mentee to interact socially so that advice can be given here as well, since social issues develop that can adversely affect the mentee's success. Mentoring academic surgeons is becoming more difficult because of the current economic environment at traditional academic health centers (AHCs). Physicians are expected to generate more of their salary amid some of the most severe state budget constraints in memory, with hiring freezes and layoffs, loss of traditional support for research, restricted funds for training and travel, and decreasing support for clerical and laboratory personnel. Meanwhile, the number of residents, medical students, and paraprofessional students has not decreased, and the teaching requirements are increasing as new initiatives are being added to the curriculum. Faculty must spend some time acquiring and refining their teaching skills to remain abreast of the new curriculum initiatives for both students and residents. There are fewer faculty members to go to more regulatory meetings and see more pa-

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tients for less money. Despite these shortcomings, there is still a lot to be accomplished as we stand on the cutting edge of miraculous medical breakthroughs. Andreae and Freed[19] reviewed physician compensation in pediatrics and the University of Michigan and suggested that compensation packages can be developed on the basis of an individual's contribution to clinical care, teaching, and research, with excess productivity being rewarded. Surgeons are natural optimists, which means that there is always a tunnel and a light, although they may not always be in focus at the same time.

The challenges in academic surgery can be categorized on the basis of the transition through the ranks from assistant to associate to full professor: (1) protected time for research; (2) refinement of teaching skills; (3) peer review funding; (4) selecting appropriate hospital, departmental, and university committees; (5) early entry and active participation in the appropriate surgical societies (aka networking); (6) gaining regional and national recognition; (7) promotion and tenure; (8) peer review research panels, including the National Institutes of Health (NIH), American Heart Association, American Diabetes Association, etc; (9) editorial boards of journals; (10) promotion to division chief and chair positions; and (11) postsurgical career options, including positions as dean, medical director, chief of staff, or consultants; governmental positions; and positions at pharmaceutical houses, volunteer organizations, and insurance companies. As a practical event, these issues will be presented and discussed within the framework of the promotion and tenure process in place at most universities at this time.

Assistant Professor

In 1998 Ko and coworkers[20] reported their results from a survey of senior surgeons, which showed that 56% chose surgery because of a mentor and 51% because of research related to a mentor. The most common stage at which a respondent became interested in a specialty was at the junior resident level. Today, many surgical residents aspiring to a career in academic medicine are unable to spend time in the basic research laboratory during their training. This is largely due to a late-1990s decision by the former Health Care Financing Administration to "enforce" the Medicare statute that prohibits the payment of clinical dollars for research. Therefore, residents can no longer be "assigned" to the laboratory while taking weekend and night call as their clinical responsibilities. This essentially leaves institutions with training grants, funded investigators, and large endowments or unrestricted decanal funds as the primary providers of tomorrow's academic faculty, similar to what this country experienced after World War II. Perhaps some agency with the ability to track data over protracted periods, such as the American College of Surgeons, should investigate this phenomenon to determine the long-term effects on the supply and quality of academic faculty in the future.

Because of these changes, many entry-level faculty members will have to gain their research experience as new staff members. This, of course, means being protected by the chairperson so they can pursue basic research and develop important teaching skills. There are a number of professional organizations, including the American College of Surgeons and the Association for Academic Surgery, that offer workshops in all of these areas for entry-level faculty, and all new faculty should be funded to attend both types of seminars.

The mentor should select the various departmental, hospital, and university committees for junior faculty. These should be indicative of service, primarily to the university, without consuming an inordinate amount of time. Admissions committees are always looking for members, and I think that they are too labor intensive for entry-level assistant professors. Assistant professors should have a significant role in third-year medical students' affairs and with the junior residents. A good mix is to have them work with the required basic science didactic lecture series for the residents. They should be active members of the junior surgery societies, including the Association for Academic Surgery and some broad-based societies such as the Surgical Infection Society and the Association for Surgical Education. After completion of the certifying examination of the American Board of Surgery, they should be presented for fellowship in the American College of Surgeons as soon as they have completed the time requirement. Subspecialty faculty should be presented for membership in their societies that do not have a fixed membership, such as the Society for Thoracic Surgery or the Society for Vascular Surgery. Participation in the local, city, or county surgical societies should be at the discretion of the chairperson.

Attention should be given to ensuring that medical student evaluations of the faculty member are being collected and filed for promotion. These should be reviewed with the faculty member on a regular basis to address any concerns that may be discovered. You may think that you are doing a terrific job, but all the students may describe a horrible experience because of the intimidation factor that surgeons so subtly exude. It is extremely important to remember that universities are charged by state legislatures to deal with medical student and not resident education. Therefore, you can be the best clinician in the institution, yet this does not carry the weight of outstanding evaluations by students, especially third-year students. In some AHCs, third-year students are not exposed to subspecialty rotations and there may not be a requirement for such rotations during their senior year. Therefore, if you are a vascular or thoracic surgeon, you may never see a medical student. In such a case, it would be incumbent on you to check with the general surgery program coordinator periodically to make sure that your resident evaluations are being submitted for use in your dossier. University promotions committees are interested in teaching, funding, publications, and university service, with much less emphasis on your clinical activities.

Many universities have begun to include skills in teaching and administration in their faculty development programs on the basis of the hypothesis that faculty who are skilled in this discipline can actually advance the art and science of education rather than just execute same. Most of these programs include as a minimum curriculum de-

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Table 1. Guidelines for Measuring Success as an Assistant Professor

Topic	Entry Level	At 3 y	At 5 y
Research experience	None*	12 h/wk of protected time	12 h/wk of protected time
Publications			
First author	None*	6-8 Papers†	12-16 Papers†
Coauthor	None*	6-8 Papers†	12-16 Papers†
Funding	None	Departmental/pharmaceutical	Foundation, VA, NIH FIRST
Mentor	Yes	Productive relationship	Extensive contact
Networking	None	Beginning/local level	Intermediate regional level
Teaching skills	Limited	Beginning PGY 1-2; 3rd-y students	Intermediate PGY 1-5; 3rd-y students
Clinical expertise	None	Well-defined locally	Locoregional prominence
Basic science expertise	None	Generated hard data	Developed area of expertise
Societies/organizations	ABS/AAAS candidate	FACS, AAAS, SIS	Specialties with open rosters; SUS for high performers

Abbreviations: AAAS, American Association for the Advancement of Science; ABS, American Board of Surgery; FACS, Fellow of the American College of Surgeons; FIRST, First Independent Research Support and Transition Award (R29); NIH, National Institutes of Health; PGY, postgraduate year; SIS, Surgical Infection Society; SUS, Society of University Surgeons; VA, Veterans Affairs.

*Assuming no publications and no research experience.

†Cumulative 3 to 4 per year.

sign, effective teaching methodology and evaluation strategies, program evaluation, and research in medical or health sciences education.[21] In fact, if this is one of your strengths, it could well be your major area of expertise and contribution to a department as opposed to bench research. As we move to more innovative ways of integrating the undergraduate medical school curriculum with the needs of various residency programs, this area is likely to gain major acceptance as one of the primary evaluation tools for promotion, on a par with gene splicing.

The mentor and mentee should meet in an official capacity with the chairman at least twice a year with minutes being taken and an action plan prepared. If the individual is in a subspecialty division, then the division chief should also be present. This will close the loop and put everybody on the same page. Progress reports should be produced by the mentee every 3 months, followed by an annual summary of activities. During the period of "protected time," the faculty member should have no clinical responsibilities except for patients whom he or she has operated on in the recent past. Most of the expectations of a successful faculty member at this level are outlined in **Table 1**. At the end of 2 years, attention should be paid to developing an area of clinical interest so that the mentee can begin giving lectures and grand rounds within the university community and the locoregional area. Between basic science and clinical reports, the faculty member should publish a minimum of 3 papers per year as first author and another 3 or 4 papers as a participating coauthor on other collaborative manuscripts. At this stage, publications can be case reports or small series reviews as well as basic research work. It is important to remember that it takes the better part of 10 months to get a paper accepted for publication. Therefore, it is very unlikely that you will publish much during the first year. Dossiers are usually sent out for external review early in your fifth year, which effectively leaves only 4 years of preparation time for the candidate. Therefore, if an entry-level faculty member first-authors 3 papers per year and coauthors 3 additional papers, the aggregate of 24 manuscripts should bode well for promotion to associate professor. Peer-reviewed journals are preferable but not an absolute requirement at this point. It is important for entry-level faculty to be "selfish" during this period and first-author as many publications as possible. This is particularly important when working with residents or students publishing case reports or small series reviews that are your brainchild. They should be told up front that you are going to be the first author. If they develop the idea and do most of the work, then you have to use good judgment and common sense in deciding the order of authorship.

It is important to acquire "seed" money or startup funds from the department or institution within the first 2 years, and this should be based on an institutional review board–approved research proposal. Preferentially, this should be a "named" grant even if the money comes from the local chair's fund. These can be named after prominent faculty members from the department's past. Assistant professors should actively seek collaboration with nonsurgical colleagues whenever possible. They should also endeavor to access established databases whenever possible, such as the Department of Veterans Affairs National Surgical Quality Improvement Program, trauma registries, various state health department registries, the Society for Thoracic Surgeons/American Association for Thoracic Surgery cardiac surgery database, other specialty registries, the myriad oncology cooperative groups, and the Veterans Affairs Cooperative Studies Program if the faculty member spends any time in the Veterans Affairs system. Depending on the specialty, pharmaceutical support can also be a goal during this period. However, if you are in a high-tech specialty like neurosurgery, vascular surgery, or cardiac surgery, where you are not making decisions about equipment and instrumentation purchases, then this option may not viable. However, you can participate in intensive care unit trials and other drug trials in the clinics and inpatient settings. Most institutions allow 6 years at the assistant professor level before the tenure clock expires or you must be converted to a nontenured track. This 6-year time frame usually follows you, uninterrupted, even if you relocate to

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Table 2. Accomplishments of a Successful Associate Professor

Topic	Year 7	Year 10
Research	12 h/wk	8 h/wk
Funding	NIH FIRST award, DOD, VA merit, surgical societies	NIH, VA merit, major foundations
Publications		
First author	18-24	27-36
Coauthor or senior author	18-24	27-36
Mentoring	Begin mentoring others	Strong mentoring record
Networking	Early national prominence	National/international prominence
Teaching skills	Advanced, 3rd- and 4th-year students, PGY 1-5	Advanced, 4th-year students, PGY 3-5
Clinical focus	National recognition, visiting professor, regional and national	National/international recognition, visiting professor, national and international
Basic science	NIH study sections, major foundations/VA review, DOD	Chairing study sections, major foundations
Society membership	SUS, limited-enrollment societies, officership, committee chairs	ASA for high performers, officership, committee chairs

Abbreviations: ASA, American Surgical Association; DOD, US Department of Defense; NIH, National Institutes of Health; PGY, postgraduate year; FIRST, First Independent Research Support and Transition Award (R29); SUS, Society of University Surgeons; VA, Veterans Affairs.

another university. It is at this juncture that most fledgling academic careers fail.

It is very important to understand that you should target your highest-quality work to organizations that are within your immediate future. Presentations at the Surgical Forum should be of the highest priority for entry-level faculty. Membership committees will generally look favorably on any candidate who has presented before their organization in the past. It is further proof of your worthiness for membership, as you will have been vetted through their own peer review process.

Associate Professor

The requirements for promotion from associate to full professor should be reviewed with the chairperson as soon as this promotion is secured. Some of the indicators of success at this level are highlighted in **Table 2**. Membership in most of the midlevel societies with fixed membership should be gained during this phase of your career. These include the Society of University Surgeons and many of the elite regional organizations (Central Surgical, Western, Pacific Coast, Southeastern). Most of these still require a strong presence as first author, some level of funding, and membership in the junior societies. Universities will look for more university and departmental service and perhaps more contact time with senior students and residents or fellows. At the same time, the faculty member must begin to demonstrate an ability to help promote and develop entry-level faculty, and make the transition from individual success to team success. Intermediate-level organizations, such as the Society of University Surgeons, which also has a fixed membership, may put heavy emphasis on your accomplishments, which means continuing to first-author papers and secure funding as the principal investigator. A good rule of thumb is that any manuscript worthy of publication in a major journal should be first-authored by the faculty member, whereas he or she can be senior author on others. Many people at this level will be promoted to division chiefs, section heads, or even hospital chiefs in complex AHCs with multiple affiliations. For some faculty at this level, clinical practice may become a major problem, which can be difficult to control. The traditional approach is to receive substantial hard-dollar support for 3 to 4 years after initial appointment, after which the dean or chair may expect you to generate more of your own income and, in fact, reduce your hard-dollar support at the end of this time. Again, this is a contract issue and should be discussed and spelled out at the time of your initial appointment to avoid misunderstanding later. In the past at most AHCs this was not a problem because the distribution of income was controlled by matching clinical volume with the number of faculty members. More recently, with diminished state support, deans and chairs may want you in the operating room more, generating your own income, which of course they tax, in addition to meeting all your other requirements for promotion. Once you become a busy clinician, you cannot turn this on and off at will. Some centers are able to control this somewhat through call schedules and hard-and-fast rules about referrals. However, once it becomes common knowledge that you are the surgeon the head nurse in the operating room sent her father to for his rectal cancer, you are going to be busy.

Research continues to be of paramount importance, and if one is doing quality research, then it is still possible to get NIH funding. In his presidential address to the American Surgical Association in 1996, Wells[22] reported that, during the previous decade, surgical investigators continued to do well in terms of the number of grants submitted, the number awarded, and the amount of dollars awarded. Therefore, good ideas and good science can still result in NIH and other peer review funding, such as the American Heart Association, American Cancer Society, March of Dimes, and Department of Defense. Regional organizations become important at this juncture, as does a more active role in the American College of Surgeons. The curriculum vitae at this point should show activities such as moderating sessions at meetings, including the Surgical Forum, discussing papers, serving as reviewers for major journals or editorial board members, and membership on study sections for NIH or the various other research foundations just mentioned.

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Full Professor

Promotion to full professor at most universities is dependent on both a time element and scholarly productivity. Time-in-grade at the associate professor level usually averages 5 to 6 years, but this can be accelerated on the basis of performance. Most of the requirements for success at this level are outlined in **Table 3**. Our surgical heritage is replete with outstanding investigators who were propelled from associate professor to chairman on the basis of research findings with profound implications for humankind.

I have witnessed some of my colleagues becoming tired of operating. If this is going to happen, it is more likely to occur when you reach the level of full professor with tenure. Options to be considered at this point include early retirement, moving into administrative positions at the medical school including deanships, or becoming chief of staff or medical director of a medical center or practice group. Faculty members who stay the course and achieve this level should have been groomed for positions on the editorial boards of the major surgical journals as well as the *New England Journal of Medicine*, the *Journal of the American Medical Association*, and allied journals in closely related medical specialties such as *Chest* for thoracic surgeons. A small but select number will be selected as editors of these surgical journals. They should also have prominent positions on NIH and major foundation scientific study sections, many of which they should be chairing. This is also the level at which positions on the American Board of Surgery, other specialty boards, the various residency review committees, and major leadership positions in regional and national surgical organizations should be evident. Faculty members who achieve this distinction very early in their careers will be strong candidates for chairmanships, influential division head positions, or even deanships if they choose this route. It is at this level that you must demonstrate the ability to mentor younger faculty members. Therefore, a review of a full professor's curriculum vitae and bibliography should show more manuscripts with the individual listed as the senior author and a litany of successful mentees, their accomplishments, and current location or positions.

To make a successful transition to a chair's position, strong administrative experience is absolutely vital. Positions as hospital chiefs at integrated hospitals, especially Veterans Affairs medical centers, are extremely valuable for this purpose. Division head responsibilities are also acceptable. Most faculty members are accustomed to delivering their problems to the attention of the chair for a solution. A major reason search firms and committees are interested in administrative experience in chair searches is that some people discover, after the fact, that they do not enjoy this level of responsibility or, in fact, may not be very good at it. Therefore, it is wise to have explored this side of yourself through a real experience in such a position. You may discover that you do not want this responsibility or that you are not particularly good at it. All of us have seen quite a few individuals who have been passed over for chair positions because of a lack of significant administrative experience.

Table 3. Some Milestones of a Successful Full Professor

Area	Year 15
Research	8-12 h/wk if career funded; otherwise, unlikely to be involved in bench research
Publications	
First author	Limited to reviews of topics in areas of expertise, mostly clinical
Coauthor or senior author	Extensive if engaged in bench research or clinical trials or if incumbent is recognized expert in difficult body organ system, disease population, or specialized area of interest
Mentoring	Mentors will usually be either clinical or research at this level
Teaching skills	Usually centered around PGY 4-5 and specialty residents/fellows
Clinical focus	Most will have been identified with area of clinical interest and expertise with national/international recognition
Societies	Entry- and intermediate-level societies plus societies with restricted membership, all specialty societies, RRC, specialty board directors, officership and committee chairs in ACS, NIH section chairs, VA merit review section/chairs
Leadership positions	Departmental chairs, division chairs, deanships, chief of staff, medical director, FDA panels, foundation boards; officership in specialty and regional surgical societies

Abbreviations: ACS, American College of Surgeons; FDA, Food and Drug Administration; NIH, National Institutes of Health; PGY, postgraduate year; RRC, Residency Review Committee; VA, Veterans Affairs.

The final resting place for most senior academicians in American surgery is the American Surgical Association. A select few will be elected leaders of this group, and the other specialty and regional organizations, but membership in the American Surgical Association is the crowning event for most surgeons. Again, this elite organization has a fixed membership for active members, and you cannot search their Web site for an application: you must be sponsored, and this obligation begins with your chairperson. Therefore, most academic surgeons will not be admitted to this society, which should not detract from an otherwise successful career.

WHO MENTORS THE MENTORS?

One never gets beyond the need for mentoring. A favorite Southern expression during my youth was, "There is always another row to hoe." There is always something else that needs to be done. Many chairs and division heads go on to vice presidency or deanships, or executive positions in national organizations such as the American College of Surgeons, the boards, or the residency review committees. Then again, someone has to run NIH, the Centers for Disease Control and Prevention, the Howard Hughes Medical Institute, the Robert Wood Johnson Foundation, and other health-related foundations. Membership in the Institute of Medicine is important, as its membership is drawn from the rank and file of people at this high level. Networking is still required at this level if success is to be had.

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In summary, it is virtually impossible for community or university surgeons to enjoy an all-encompassing successful career without assistance. Regularly scheduled meetings between mentor and mentee should take place and should result in a written document, which includes an action plan that allows for an objective assessment at a later date. An independent development plan that includes mentoring should be a requirement for all new recruitments, be it a private practice position or an academic appointment. Finally, if mentoring has contributed to your success along the way, then you have at least a moral obligation to assist others along the way.

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