Mentorship

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Abstract

Keywords

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The world of medicine is in a state of flux with major and substantive changes in its educational model. Students, residents, and junior attendings can no longer rely entirely on experiential development through clinical immersion. Instead, to attain similar levels of knowledge, technique, and situational comfort, there must be innovations in medical education that take advantage of the experience of mentors. Mentoring has been a part of medicine and surgery since the days of apprenticeship. Mentors must now teach more basic medicine than ever before and adapt to changes in the structure of medical education such as the use of simulation, yet still continue to foster career development among trainees and junior colleagues. For mentoring to succeed and benefit mentees, it must be supported. This patronage starts with each local university or hospital system but eventually must permeate the greater medical culture.

Objectives: On completion of this article, the reader should be able to summarize the role of mentoring in modern medical education and the course of its evolution.

The origins of medical education, particularly in surgery, are built upon a framework of apprenticeship. Throughout much of the 19th century, the practice of apprenticeship remained the hallmark of training and professional development of the surgical and surgical-barber professions.¹ This method of education differentiated surgeons from medical doctors whose professional training was typically through the university; surgeons in the United Kingdom still use the title “Mister” instead of “Doctor” as a prefix to their name.

In 1889, at Johns Hopkins University, Halsted revolutionized the training of U.S. surgeons by introducing the German structure of graded responsibility still featured in our current training system, and integrated aspects of the apprentice model. Education was achieved through experiential learning and the sharing of the collective wisdom of more advanced medical colleagues.² This hierarchical structure remains the cornerstone of medical education in many countries to this day.

Fundamentally then, modern medical and surgical education not only embraces but also has its structural underpinnings in the concept of growth through the tutelage of

senior, more experienced practitioners who serve as mentors. In its most basic sense, a mentor facilitates personal and professional growth through the sharing of learned knowledge and insight.³ In more recent medical history, mentoring has implied a professional rather than an academic role, focused on assisting trainees in grant acquisition, publication of scholarly work, and career networking. Over the past two decades, the role of mentoring has broadened and become a more integral part of medical education as other forms of academic development have dwindled.⁴

Changing Times

The experiential model of learning of medicine, which previously encompassed a large portion of medical education, can be summarized by the “see one, do one, teach one” adage. This philosophy of teaching, most prominent during the latter years of medical school, residency, and early attending years, is predicated upon exposure to large volumes of clinical material; learning progresses case by case, circumstance by circumstance and these experiences can become incorporated into a personal conceptual scheme. However, as our medical practice and culture changes, the progression of *see, then do, then teach* can no longer be the exclusive or

near exclusive method of medical education and professional development. Though experiential learning will always be a part of medicine, for a variety of reasons it is becoming a less dominant presence in medical education.²

There are at least three major reasons that growth through the internalization of bulk experience is decreasing: the reduction in student and resident work hours, the increased awareness of medical liability, and the changes in healthcare reimbursement. In 2003, in the United States, resident work hours were decreased to 80 hours per week with a goal of reducing fatigue and the associated medical errors that could be associated with overwork. Whether this initiative has achieved its goal or not, the rule limits the amount of time residents are involved in patient care and consequently the number of cases to which residents are exposed. Similar restrictions have been implemented around the world and additional restrictions pertaining to resident call hours have been imposed. The decrease in work hours directly and causatively correlates to a decrease in clinical experience. The traditional educational framework of growth through volume of exposure has become compromised with these new guidelines and must be compensated for by other means.

In addition to work hour restrictions, the medico-legal system, particularly in the United States, limits the exposure of learners to facets of medicine that were previously accessible. Although the nation's medical system has long emphasized quality care and error reduction, hospital practice is now more than ever based on lawsuit avoidance. Whether or not this extreme caution leads to an increased quality of healthcare is not clear,⁵ but it does reduce student and resident clinical experiences. This is particularly true in surgery where learning is often hands on; in the past system of graded responsibility, the trainee performed techniques and procedures deemed appropriate for their level based on local customs and consensus. In the current environment, attending supervision is often mandated independent of the trainee's qualifications. This policy is further reinforced by the current reimbursement practices. Hospitals are businesses and their regulations, practices, and bylaws are commonly driven by financial considerations. In a healthcare system where medical practice is commonly driven by governmental and private insurance companies, the focus is typically upon maximization of monetary reimbursement rather than educational imperatives. Patient visits, consultations, and most procedures are not reimbursable unless performed or directly overseen by an attending physician. The current financial and legal influences on the healthcare system clearly decrease trainee's experiential learning, responsibility, and clinical preparedness.⁶

For these reasons, the classical educational framework of learning through experience is fading away. Students and residents are no longer experiencing as much medicine first hand and when they are able to "see one," their "doing" is limited by hospital and national regulations. This change in the learning environment not only applies to students and residents but also to junior attendings; increasing administrative work based on quality control concerns and systems-based error reduction, as well as the rapidly growing bureau-

cratic requirements such as extensive documentation, limits a young attending's case volume and experiential development. To maintain high-quality physician education, much of the medical education must now be taught instead of experienced. In this context, mentoring becomes a very important part of the new academic medicine paradigm.

Mentoring

Mentoring provides the opportunity for the sharing of experience so that new trainees can supplement their learning in the operating room and hospital wards with the shared experience of their mentors. Trainees are able to absorb real world experience anecdotally as well as learn from the mentor's developed knowledge and expertise. Further, although didactic forms of education do not allow for customization or communication to the learner, mentors can identify gaps in education and specifically address their learner's needs.⁷ This personalization is of particular importance as supplemental learning needs to complement each trainee's unique clinical experience.

Mentoring is an effective educational tool and has been identified by some learners as the single most important aspect of training.⁸ In addition, positive surgical role models have been shown to increase the likelihood of medical students pursuing surgical careers. Conversely, negative role models and/or negative behavior of superiors were major deterrents from a career in surgery.⁹ Mentoring is also directly associated with improved professional satisfaction. Sambunjak et al⁸ demonstrated that junior attendings with mentors were more likely to be promoted and Steele et al showed that the experience of a mentor relationship led to faculty retention.¹⁰

Despite its inherent value, mentoring appears to be less abundant or available than it should be. In an analysis from a well-respected academic institution, it was shown that a majority of junior attendings wanted, but lack, senior mentors; some departments reported that as few as 19% of faculty had academic mentors. Eighty percent of UK medical students reported not having a mentor.⁹

Mentor Traits

Apprenticeship roots established the basis for mentorship in surgery and medicine, and the basics of mentoring have undergone relatively little change over the years. It is a reciprocal, dynamic, and collaborative relationship in which an experienced professional offers guidance, support, and knowledge to a junior learner.¹⁰ Medical mentorship functions according to Piaget's theory of constructivism; experience and knowledge is assimilated and accommodated into a personalized framework or schemata.² This framework applies to both mentors and role models, though they are not the same. What differentiates mentoring from other professional relationships is its emphasis on teaching. The role of a mentor is to specifically define academic/professional goals and to serve as a guide toward those goals. In mentorship, learning should be through active teaching as opposed to the

simple observation of a role model. Mentor relationships should be interactive and be composed of two-way communication; mentor–mentee relationships are shown to be more effective as they break down generational as well as hierarchical barriers and liberalize discussion.¹¹

Aside from medical expertise, the ability to communicate is one of the most sought after traits in a mentor. The individual mentoring relationship can be constructed in a wide variety of ways, but trainees consistently agree upon the desired qualities of a mentor. They desire a guide who has excellent clinical knowledge, enthusiasm, leadership, communication skills, and the ability to promote interest in research. Students and junior physicians alike place importance on these traits, though with a different emphasis on priorities. Students assign a greater value to communication and the ability to inspire, while the young professionals prefer knowledge and experience.² The ideal mentor possesses all of these characteristics or traits and is able to adapt teaching to meet specific developmental needs.

Value to the Mentee

In addition to the previous characteristics, there are various other components that make a mentor valuable. Part of being a mentor is being an active guide or teacher, but the mentor must also have a worthy product or expertise to provide. This expertise can consist of purely academic knowledge, technical expertise or professional prestige, and networking. The respective value of each of these categories is increasing within the new educational landscape. With the loss of first-hand experience by the mentee, the mentor's own expertise and knowledge becomes a more important part of learning.

Awareness of the value of mentoring as well as its place in the medical environment allows for better integration into the trainees' overall developmental schema. However, a large portion of residents and faculty members underappreciate their effect and influence on medical students. In surgery, this failure is of particular concern given the 26% drop in student surgery interest since the 1980s in the United States¹²; approximately 10% of surgical residency positions have gone unfilled in recent years.⁹ Not only must there be an appreciation of the value of mentoring but also an understanding as to how mentoring differs from its past role, with a new emphasis on basic academics. The mentee must be engaged in one-on-one discussion and debate which bridges the trainee's educational gaps from basic sciences to patient management.

With the understanding of trainees' potential lack of real world technical experience, an opportunity for mentoring integration into simulation-based education seems desirable. There has been ample literature to suggest a prominent role for teaching and the acquisition of technical skills through simulation; the one-on-one expert-guided instruction that a mentor is able to provide can be a perfect fit for the simulation environment. Although hands on learning and repetition are essential for the mastery of a skill (e.g., the adage that 10,000 hours of practice makes an expert), the sheer volume of

practice alone cannot ensure the desired skill level; hours spent in deliberate practice as opposed to just total hours spent on a task determine proficiency.² The utility of mentoring combined with simulation-based education may actually produce more technically able physicians than those trained with higher volumes of cases in past years. The Fundamentals of Laparoscopic Surgery (FLS) program is an example of a successful program that can achieve these goals. It provides minimally invasive technical instruction within a well-developed framework and under expert mentor guidance, ultimately producing residents with technical skills rivaling those trained in the operating room.¹³

The demand for mentor-based education is increasing as substitute for what was previously learned through floor work, experience, and repetition. This shift in emphasis on a mentor's responsibilities toward clinical learning does not diminish the classical mentoring focus upon research and professional networking. No matter the level of training, advancement in the academic setting is still often driven by the "publish or perish" maxim. Research influence, productivity, and funding are still metrics commonly used to evaluate faculty, residents, and, even to a degree, students. A mentor's experience, established professional relationships, and academic funding are all important in the promotion of a mentee's career and the development of his or her understanding of medicine as a culture.

A successful mentor then has positive personality attributes and provides expert knowledge; but he or she must also interact cooperatively with the mentee in order for any of these previous traits to be of optimal value. Specific goals of a mentor–mentee relationship vary greatly depending on the training levels of the respective parties as well as the members' individual personalities. It is clear, however, that more satisfying and positive relationships can be established if these goals are laid out early and if alignment discussions are revisited often to ensure that milestones are met.⁹ Mentorship goals and responsibilities are particularly important in the framework of a multiple mentor network.

Structure of a Mentor Relationship

The mentor–mentee relationship is a malleable structure that should be personalized based upon its members. Healy et al⁹ noted that there was no consensus preference for formalized educational meetings over ad hoc discussions. Nor was there any mentee agreement as to whether mentoring relationships should be established by administrators or by the members of the relationship themselves.¹⁴ Some learners preferred mentors of similar age, while others desired more senior teachers.¹⁰ What is evident is that no matter the desired characteristics of a mentoring relationship, all parties must be very clear about their preferences, and an agreement as to a relationship structure must be reached. This verbal contract allows for improved communication, less misunderstanding as to the roles of each member, and better integration of the mentoring relationship into the learner's greater mentoring network.

As described previously, the role of mentoring is increasing within the framework of medical education. However, that does not mean that individual mentors need to stretch themselves thin; the educational paradigm shift happens at the mentee's end, not the mentor's. Though a trainee may have to rely upon mentoring for a greater portion of his or her academic development, this can be accomplished through multiple mentors, or the creation of a mentoring network. There is emerging evidence that multiple mentors significantly benefit mentees' education.¹⁵ A network approach allows for the integration of different educational spheres and the development of the various unique facets of a mentee's career.

Mentor networks are becoming particularly valuable as medical fields become more specialized. In this setting, the "silo mentality" of mentoring only those in the same specialty potentially becomes restrictive.⁷ Though a subspecialist may be able to assist with a very specific facet of education, his or her ability to contribute to general medical education may be limited. Instead, the tradition of accepting mentees within one's own department must be replaced by an interconnected mentoring community. A multiple mentor network not only broadly improves education but it also benefits individual mentors by allowing for increased comfort and productivity in their roles. Physicians report that this networked approach allows them to feel less responsible for a mentee's entire development and allows them to focus on their own expertise. Furthermore, when this methodology is widely accepted, it becomes possible to refer mentees to other medical experts as needed for optimal instruction.

Value of Mentorship

For mentorship as a philosophy to be successful, it needs to hold perceived value. It was previously stated that mentors must recognize their own value, but that same value must be realized by the greater medical culture and infrastructure. It must be supported and nurtured to grow and sustain a pool of clinical mentors. In hierarchical systems, upper tier support is required for the sustenance of any program. Support at the leadership level is particularly important in modern medicine where so much activity is controlled and influenced by national regulation and where extensive publication allows ideas and opinions to spread rapidly. In the end, mentoring must be embraced not only by the individual mentors and mentees but also by the departments, universities, and governments that dominate medication education and its development; mentorship must become integrated into the frameworks of these greater systems. The University of Vermont College of Medicine provides universal access to mentoring, and it also provides uniform policies, requirements, and descriptions as to how mentoring fits into the school's overall educational program (—Fig. 1).

Like all forms of education, mentoring requires significant resources to be successful; these resources must be provided by the academic administrations. While other forms of education require equipment and facilities, mentoring requires time, a very valuable and expensive commodity when

1. Each faculty member will be given a complete description of the:
 - a. faculty mentoring program of the department (this document)
 - b. College of Medicine Handbook
 - c. College of Medicine Standards and Guide lines
2. The faculty member's job description will define clearly the service, teaching, research, and organizing role of the department within the context of the Health System.
3. The departmental faculty mentoring program will include a written description of the criteria regarding the selection of a mentor and a statement advising that the mentor will meet with the protégé at least twice (2) each year.
4. A record of the issues discussed with the faculty member (protégé) will be maintained.

Fig. 1 Draft guidelines for the University of Vermont College of Medicine faculty mentoring program.

that time belongs to medical doctors. It takes away from time spent on other professional duties and can interfere with research program maintenance and clinical volume. Physicians therefore require incentives and fair compensation, so they may be more willing and able to forego classical means of professional advancement and remuneration.

In an ideal world where time is not such a precious commodity and there are not so many competing demands, teaching future generations of doctors would be reward enough for mentors. But in reality, financial compensation and/or professional recognition are required, especially in an era of shrinking reimbursement, increasing responsibilities, and ever greater time pressures. Salary increases, enhanced access to research infrastructure, academic credit, and professional advancement are all forms of mentor compensation that have been used. As of yet, the ability to adequately reimburse or incentivize physicians has been compromised by the difficulty in documenting the quality or quantity of mentorship provided. However, just as physicians are acknowledged by universities for their medical school didactic involvement, credit based on mentorship is emerging. The Association of American Medical Colleges' Group on Educational Affairs has created a set of standards to be used by educational administrations and promotion committees in the evaluation and reimbursement of academic mentors.¹⁴

Educating Mentors

The other resource that teachers need to be provided to succeed is education. Administrators can provide ample reimbursement, simulation, and research support, but must also provide the time and resources for mentor education. Training is important for all mentors, even those who are experienced. A survey from an academic medical center discovered that even experienced mentors widely desire mentor development training and that this need or desire is significantly underappreciated by the administration.⁷ No matter one's familiarity or experience with teaching, dealing with certain situations is always potentially difficult. Providing guidance across differences in sex, race, and age are considered some of the most uncomfortable scenarios.¹⁶ Mentor education allows for these issues to be addressed and interactions rehearsed in a collegial atmosphere where opinions and experiences can be openly shared. Mentor

confidence and comfort is increased with discussion and practice, as their teaching repertoire is expanded. Tsen et al⁷ showed that after the completion of an educational training program, mentors felt more able to teach mentees outside of their specialties and had a better understanding of the academic resources at hand.

At this point in time, several institutions provide career development sessions on mentoring. Many of these programs are didactic based and limited in depth as well as the complexity of resultant discussions. In response, the National Institutes of Health (NIH), Institute of Medicine (IOM), and Association of American Medical Colleges (AAMC) have come together to institute a multisession mentor development program nationwide. This program emphasizes discussion-based learning and problem solving, though it focuses only on one-on-one mentoring relationships as opposed to the ideal interdisciplinary approach.

Just as administrative support is necessary for the education of trainees, it is also required for the training of educators. Instruction must be incorporated into a hospital's continuing education program and also into the greater medical culture. Programs must be created, finances set aside, time made, and, most importantly, the curriculum needs to evolve and grow with changing times and feedback. Medical education has been significantly transformed over the last several decades and professional adaptability is required in this shifting environment. With imminent changes in healthcare on the horizon, medical education and the role of mentorship will inevitably transform yet again. To keep up with systemic changes as well as smaller adjustments within an academic community, regular mentor training must be offered and must be kept novel and fresh. With constant vigilance, interdisciplinary cooperation can continue to develop and enthusiasm for mentoring can thrive.

Conclusion

The world of medicine is acutely in a state of flux and with that comes a change in its educational model. Students, residents, and young attendings can no longer rely entirely on experiential development through volume of exposure. Instead, to attain similar levels of knowledge, technique, and situational comfort, they must collaborate with others and take advantage of the experience of mentors. Mentoring has been a part of medicine and surgery since the days of apprenticeship, but its role and value is increasingly recognized in recent years. Mentors must now teach more basic medicine than ever before and continue to both adapt within the established academic curriculum as well as within an interdisciplinary network of specialized educators. For mentoring to continue to succeed and benefit mentees, it must be supported. This patronage starts with each local university or hospital system but eventually must permeate our greater medical culture. Incentives, resources, and training programs are all necessary for the development and sustainability of education through mentoring.

Reflections

Essentially all surgeons who encounter students, residents, junior colleagues, or other healthcare professionals have many opportunities to facilitate their personal and professional growth through the sharing of insight and experience. As such, virtually every faculty member and surgeon has the ability and qualifications to serve as a mentor. The focus in the literature is often on mentorship programs, resources, their structure, and specialized goals (e.g., grant acquisition, publications, and clinical mastery); certainly, these are all of critical importance and specific objectives do make a mentorship relationship more productive.

However, as professionals, there are so many opportunities for more "informal" mentorship that can provide great value for our students and trainees. On the academic side, writing a first paper or applying for a first grant can be an overwhelming and impenetrable barrier for many. Walking a junior person through this process may be the single most important factor that starts a mentee on a productive or even exceptional career. Similarly, just taking a few minutes before an operation to describe how one prepared for the case and presented the risks and expected outcomes to a patient and their family can provide lessons that will serve a young surgeon well throughout his or her career. Perhaps, most importantly, a mentor's life experiences can both motivate a mentee and guide them through some of life's rough spots. The taxing demands of surgery have created frightening levels of burnout, especially among young surgeons.¹⁷ Lessons learned regarding maintaining a healthy marriage, meeting family commitments, and finding joy and reward from our profession may be the most important lessons of all.

Mentorship need not be confined to arbitrary institutional boundaries. Very often, the most important and influential mentors are senior colleagues with similar interests and goals found in professional societies. Gender need not be a barrier to successful mentoring relationships. In a study from our institution assessing deterrents to a career in surgery, 75% of women who considered a role model influential in their career choice had a male role model. Only 12% felt that a lack of mentors or role models deterred them from a potential career in surgery.¹⁸

Much of the preceding discussion appropriately deals with the potential benefits of mentorship to the mentee, the characteristics of a successful mentoring relationship, and the need for training and support of mentors. But we must not overlook our fundamental obligation as professionals to provide mentorship and strengthen surgery as a discipline, as well as contribute to the well-being of our patients and society. In an era where "business considerations" and suspect euphemisms dominate the world of our trainees, the fundamental tenets of professionalism have become strained and exposure to true professionals may be limited. Mentorship can be a refreshing and rejuvenating relationship that nourishes the soul of the mentor and can help the mentor rediscover the joy and rewards of being a surgeon, especially in challenging times. As surgeons, we have the opportunity to interact with some of the best, brightest, and enthusiastic members of the next generation, whose accomplishments

and leadership will create the legacy of surgery in the decades ahead; this is the natural order of things. Contributing to the success of a mentee and watching his or her career unfold in a positive and productive direction can be among the richest of professional satisfactions.

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