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Mentorship in Orthopaedic Surgery—Road Map to Success for the Mentor and the Mentee

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William N. Levine, MD, Jonathan P. Braman, MD, Richard H. Gelberman, MD, and Kevin P. Black, MD

Mentorship in Residency

There are unique challenges and opportunities associated with mentoring of orthopaedic residents. Relative to medical students, there is a much greater duration, intensity, and responsibility for teaching, while relative to fellowship training, the educator teaches and mentors a much less knowledgeable and less skilled protégé. Although physicians receive their medical degree following completion of medical school, they learn how to become orthopaedic surgeons during the five years of their residency education. Graduating medical students have very little knowledge of musculoskeletal disease and its treatment[1]; however, it is expected that at the end of five years, they are prepared for their board examinations and the independent practice of orthopaedic surgery. Even the most outstanding residents require frequent assessment and feedback, and the need to constantly challenge and critique the knowledge and skills of the resident has the potential to compromise the unique closeness and sense of empathy and support that serve as the foundation of the mentoring relationship.

The factors noted above have implications for the ten stages of the mentoring relationship described by Mendler[2]. The first five phases (attraction, cliché exchange, recounting, personal disclosure, and bonding) compose the developmental phase of the relationship, during which time the "chemistry" of the relationship evolves, mutual interests and goals are identified, and the supportive framework is established. Although most residents ultimately pursue subspecialty fellowship training, our belief is that they need to experience the various subspecialties before coming to this decision, something that may not occur prior to the conclusion of their postgraduate year 3. Therefore, in many situations, the relationship with the junior resident is more one of a supportive advisor, which may ultimately evolve into that of true mentoring or plateau at that level as the resident becomes the protégé of a different mentor whom the resident subsequently identifies. The sixth stage, fear of infringement, is associated with the transition from the educator and superior to professional colleague and is less likely to occur in residency. The final three phases of mentoring are not typical of the mentoring relationships that can

Disclosure: None of the authors received payments or services, either directly or indirectly (i.e., via his or her institution), from a third party in support of any aspect of this work. One or more of the authors, or his or her institution, has had a financial relationship, in the thirty-six months prior to submission of this work, with an entity in the biomedical arena that could be perceived to influence or have the potential to influence what is written in this work. Also, one or more of the authors has had another relationship, or has engaged in another activity, that could be perceived to influence or have the potential to influence what is written in this work. The complete **Disclosures of Potential Conflicts of Interest** submitted by authors are always provided with the online version of the article.

occur during residency. Therefore, in most situations, residents move on to the next phase of their training or career at a point when the mentoring relationship is still relatively early in its development.

It is extremely important to consider the mentoring relationship from the perspective of the resident. Numerous investigators have reported the importance of a mentor in personal guidance, research activities, and career selection[3-5]. In a survey of orthopaedic residents, Flint et al.[6] reported that, although 96% of residents thought mentoring to be extremely important or critical to their development, only 17% were extremely satisfied, while another 28% were somewhat satisfied with mentoring efforts within their own programs. Residents from programs in which mentors were self-selected reported greater satisfaction relative to programs in which mentors were assigned. Hariri et al., in another study of orthopaedic residents, reported that intellectual factors and role models or mentors were the two factors most likely to influence fellowship subspecialty selection[7].

Mentoring also has a potential benefit in improving diversity in our workforce. Day et al.[8] and Okike et al.[9] demonstrated the lack of diversity with regard to sex and race among orthopaedic residents and the orthopaedic workforce and noted that, although there have been some gains during the past fifteen years, women and minorities remain substantially underrepresented. Quintero et al. reported a potential unconscious personality bias in the ranking of medical students to an orthopaedic residency program and stated that promoting diversity within the admissions committee may foster a diverse resident body and orthopaedic workforce[10].

This lack of diversity in the current orthopaedic educator workforce can be countered, in part, with successful cross-cultural mentoring of our students and residents. Crutcher examined the perspectives of mentors who had worked with protégés from different races, sexes, socioeconomic backgrounds, ethnicities, religions, and sexual orientations from their own and described challenges associated with these relationships as well as promising practices that have been used to overcome them[11]. These include mentor self-reflection to better understand one's personal motivation; taking time for both mentor and mentee to better understand each other's cultural values and norms; the development of a trusting and respectful relationship; identification of shared goals, values, and interests; development of a range of communication strategies; participation in shared activities, such as goal setting and shadowing experiences; and celebrating accomplishments.

There are many financial, administrative, and clinical workload pressures that have the potential to compromise our mentoring relationships with residents. Our efforts in supporting them through this vigorous and stressful period of training and guiding them in their ultimate career selection are essential, however, in helping to develop the best orthopaedic workforce in the years ahead.

Mentorship in Fellowship

Mentorship in fellowship has many similarities to residency, but there are some substantial differences as well. Most importantly, it is critical to remember that fellows are soon-to-be colleagues in their desired subspecialty field. Fellows are more focused and committed to learning everything possible during their year of fellowship training. In addition, the surgical skills of fellows are more advanced than those of residents so their expectations are typically quite different with respect to hands-on opportunities in the operating room. The question that is raised from this fellowship mentoring model, therefore, is how can we become effective and memorable mentors?

Fellowship mentoring begins with understanding what the goals of each fellow are prior to starting the year. For example, you have an academic fellowship and have matched two highly competitive and successful candidates who have completely different career paths in mind by the time they start their fellowships. If they are treated identically, there may be one happy and one very unhappy fellow in your midst. Step 1, therefore, is to sit down with each fellow and have the fellow articulate his or her desired goals and objectives for the fellowship year. Step 2 involves returning the favor—after listening to the fellow's goals and objectives, clearly and transparently share your goals and objectives with each fellow. Over the past decade, we have developed a set of goals and objectives that are shared with each fellow before the start of the fellowship year and this level of transparency is invaluable to ensuring that both sides are "on the same page."

Step 3 is to break down the goals and objectives for the fellows further into the following categories: clinical, education, research, and practice-building and/or life after fellowship.

Clinical Goals

Clinical goals include defining the role of the fellow in the office and the operating room. How much time will be spent in the office? How many patients is a fellow expected to evaluate during the day? What is the role of the fellow in the operating room? Are residents present and, if so, how are the cases divided? Assigning roles to the fellow and resident (if both are present) in the operating room is instrumental in decreasing negative feelings and enhancing resident and fellow education. Furthermore, planning how these roles will change and evolve over the course of the year leads to increased buy-in.

Education and Research

Defining educational and research goals are critical to ensuring a successful fellowship mentoring relationship. Clearly delineating the fellow's role in conferences (indications conferences, core curriculum, etc.) helps the mentor to establish expectations. Mentoring the fellow in research projects is imperative to avoid wasted time, costs, and opportunities.

Practice-Building and Life After Fellowship

The most successful fellowship mentors are those who view the fellowship as the first chapter of a valued relationship—one

that begins as a mentor-mentee relationship but evolves into colleagues and friends as time goes on. Some fellowship mentors, on the other hand, unfortunately view the fellowship as a "one and done" situation, and fellows who participate in these type of fellowships are often greatly disappointed.

Mentorship in Academic Medical Centers—Faculty Recruitment and Retention

The converging factors of unfilled academic positions, formidable recruitment costs, and high turnover rates point to the need for a more effective approach to the recruitment and retention of academic orthopaedic surgeons. The expenses associated with turnover alone, including the costs of recruitment, hiring, and lost clinical income until the faculty member is replaced, are estimated to be over $580,000 for a surgical subspecialist[12]. Over a recent four-year interval, the average turnover rate for assistant professors across medical and surgical departments at one large American university generated an average annual cost per department exceeding $400,000. The focus of this section is to identify the factors most closely associated with the success or failure of recruiting and retaining talented faculty in the building of an academic orthopaedic surgery program.

Leadership and Recruitment

At its core, the recruitment and retention process is about leadership. From 1996 to 2000, Collins, in search of the factors that led to exceptional business performance over time, conducted a study of 1435 American companies[13]. Just eleven companies excelled, and each of them was headed by what Collins termed a "Level 5" leader. A coupling of unique personal characteristics helped the most effective leaders to find the right people and to foster in those people the highest levels of dedication and performance. Foremost among the traits of the Level 5 leaders were the paradoxical personal qualities of humility and fierce resolve. Collins' leaders shared credit for success and were the first to accept blame for mistakes.

In *Good to Great and the Social Sectors,* Collins further described how outstanding leaders recruit and retain talented people in not-for-profit organizations[14]. In the chapter "Getting the Right People on the Bus," he observed that the most effective recruits are nearly neurotic in the pursuit of their goals; they are driven to making lasting achievements in their areas of interest.

Mentoring and Retention

Forty percent of medical school faculty who responded to a recent broad survey on career satisfaction reported that they were not progressing satisfactorily, and 42% were seriously considering leaving academic medicine[15,16]. In an effort to counter those trends and to address the factors associated with failure, investigators have recommended that formal departmental mentoring programs be developed—programs to address those personal and professional issues that correlate most closely with the retention and advancement of young faculty[17-23].

Studies on the effects of mentorship have observed a number of important outcomes, including an improved early understanding about the department and its issues and practices[24,25], higher promotion rates, and greater career satisfaction and department commitment. The most rigorous programs have sought to address the three specific categories of content that appear critical to the success of developing academicians: referent information (the information necessary to perform the work of an academic orthopaedic surgeon), appraisal information (regular feedback), and relational information (information about social relationships)[21].

The Provision of Information and Feedback

One of the primary benefits of the mentoring relationship is the usefulness of the information that the mentee gains[26]. At the outset, a mentor who is genuinely committed to the young faculty member's success spends time understanding career and personal goals of the mentee. He or she helps to develop a list of research and publishing goals, attempts to provide insight on the importance of managing time and professional commitments, and relates experience on the benefits of avoiding obligations that are not directly related to initial career goals[17]. At the same time, the mentor relates basic information about the academic department, including the choice of track (clinician-educator or investigator), the expectation for clinical productivity, the scope and scale of achievement required for academic advancement, the commitment to house staff education, and the culture of academic cooperation and professionalism that exists in the department.

Formal mentoring programs have a place in improving the retention and advancement of young faculty[12,18]. Uniformly, young faculty members pass through important milestones, including the selection of an area of focus, the decision to pursue certain activities and to forego others, and the achievement of a reasonable balance of family and career. Ultimately, the goal of a well-designed mentoring program is to help young academicians deal with both predictable and unpredictable circumstances and to prepare them, in the most positive way possible, for the professional, personal, and environmental transitions that occur regularly in academic orthopaedics.

Menteeship—Obligations of the Protégé

A protégé is a person with potential who is in a relationship with a person with expertise. In the book *Faculty Success Through Mentoring*, by Bland et al., the authors define mentoring as "a relationship with a defined purpose: to help mentees successfully acquire the key competencies and constructive work relationships they need to lead a successful and satisfying career." Additionally, they state that it must be a "collaborative learning relationship."[27]

Identifying the critical parts of a career that are of interest to an individual is critical to allowing surgeons to use their time, efforts, and skills effectively. Research by Csikszentmihalyi focused on surgeons and similar professions that have high job satisfaction. As outlined in his book, *Flow,* there are certain conditions under which a sense of complete immersion in one's

TABLE I The Conditions Needed for Flow To Occur*

1. Clear goals for the process at hand
2. A high degree of concentration requiring a limited field of attention
3. A loss of self-consciousness and an emerging of action and awareness
4. A distorted sense of time
5. A direct and immediate response to feedback from the experience
6. A balance between ability level and challenge (the challenge is neither too hard nor too simple)
7. A sense of personal control over the activity
8. The activity is intrinsically rewarding and there is an effortlessness of action
9. A lack of awareness of bodily needs (in the flow state, people do not recognize hunger or thirst)
10. An absorption into the activity, narrowing the focus of awareness (action awareness merging)

*Not all conditions are required for every instance of flow.

work can occur[28]. Athletes frequently describe this state as being "in the zone." Table I lists some of the conditions under which flow can occur. It is clear from this list that the operating experience is ripe for the opportunity to experience flow. Indeed, many of the surgeons whom he studied would enhance the difficulty of their procedures by trying to increase the feedback—reducing the operative time, increasing the operative efficiency, or enhancing patient outcomes through characteristic improvement and technique. It is important to recognize the opportunity that our profession allows for us to be engrossed in our work and capitalize by making the great parts of our job more frequent and easier to attain.

First, a protégé should create a personal mission statement, develop and document goals as an orthopaedic surgeon, and decide what his or her career will be about. This will allow the protégé to define pathways for success, set timelines, and establish priorities.

Secondly, it is imperative for the protégé to identify individuals who meet the needs for professional development in each of these identified areas. For example, acquiring a mentor who can help to procure laboratory space may require different contacts and connections than someone who has the ability to advance a career in a subspecialty society or who could provide an example on appropriate professional behavior in the clinical setting.

Consequently, protégés must be willing to reach out—at times even to strangers—in order to attain appropriate guidance in certain areas of personal and professional development. It is this challenge, initiating relationships, which can be intimidating for junior faculty. If the protégé is thoughtful, kind, humble, and willing to work, mentors are frequently willing to provide resources such as time and energy. Once the relationships of mentorship are established, they are rewarding for both parties.

After the relationship between a protégé and a mentor is established, there are concrete ways that the protégé can maintain the relationship and enhance the likelihood of success (Table II). First of all, the protégé must be respectful. Arriving prepared and on time is a part of this commitment. Second, a protégé must be trustworthy. One should make no promises that cannot be kept and should keep the promises that are made. Third, a protégé must demand and accept feedback. This commitment to hear what mentors have to say is at the heart of the relationship. Protégés should listen to the mentor carefully, analyze what he or she says critically, and provide feedback on what they have heard. In addition, they should ask thoughtful questions of the mentor. Fourth, the protégé must understand that this relationship is mutual. Once a mentor-protégé relationship is established, it is important to remember that it is truly mutually beneficial.

It is also important for the protégé to recognize the limits of the mentor-protégé relationship. Certainly, there are aspects to these relationships that can be stimulating for a protégé's career and can enhance his or her involvement in certain organizations. At the same time, success in the professional realm of orthopaedic surgery is predicated not on the importance of one's mentors, but on one's own due diligence and hard work. It is simply by incorporating the advice, life skills, and assistance of a mentor that a protégé's possibilities are enhanced. There is no substitute for self-directed effective career development.

Overview

Mentorship plays an integral role in the career development of orthopaedic surgeons. Beginning with residency, mentors serve as role models, teachers, and advocates to help the mentee

TABLE II Obligations of a Protégé

1. Be respectful and be prepared
2. Follow through
3. Demand and accept feedback
4. Require accountability
5. Seek opportunities for self-improvement
6. Recognize the limits of mentorship
7. Seek new mentors (and protégés)

attain the fellowship or job of his or her choice. Then, in fellowship, the mentor takes on a different role in helping to prepare the mentee for his or her first job and life after fellowship. Mentorship of junior faculty is imperative to enhance job satisfaction, productivity, and retention. Finally, learning the art of becoming a good mentee helps to enhance the mentor-mentee relationship and leads to increased happiness and job security. ■

William N. Levine, MD
622 West 168th Street, PH-1117,
New York, NY 10032.
E-mail address for W.N. Levine: wnl1@columbia.edu

Jonathan P. Braman, MD
Department of Orthopaedic Surgery,
University of Minnesota,
2450 Riverside Avenue South,
R200, Minneapolis, MN 55454

Richard H. Gelberman, MD
Department of Orthopaedic Surgery,
Washington University School of Medicine,
660 South Euclid, Campus Box 8233,
St. Louis, MO 63110

Kevin P. Black, MD
Penn State Milton S. Hershey Medical Center,
Penn State Hershey Bone & Joint Institute,
30 Hope Drive, MC EC089, P.O. Box 859,
Hershey, PA 17033-0850

References

1. Freedman KB, Bernstein J. The adequacy of medical school education in musculoskeletal medicine. J Bone Joint Surg Am. 1998 Oct;80(10):1421-7.
2. Mendler AN. Teaching hard-to-reach youth. J Emotional and Behavioral Problems. 1994;3:23-4.
3. Calligaro KD, Dougherty MJ, Sidawy AN, Cronenwett JL. Choice of vascular surgery as a specialty: survey of vascular surgery residents, general surgery chief residents, and medical students at hospitals with vascular surgery training programs. J Vasc Surg. 2004 Nov;40(5):978-84.
4. Gedde SJ, Budenz DL, Haft P, Lee Y, Quigley HA. Factors affecting the decision to pursue glaucoma fellowship training. J Glaucoma. 2007 Jan;16(1):81-7.
5. Sambunjak D, Straus SE, Marusić A. Mentoring in academic medicine: a systematic review. JAMA. 2006 Sep 6;296(9):1103-15.
6. Flint JH, Jahangir AA, Browner BD, Mehta S. The value of mentorship in orthopaedic surgery resident education: the residents' perspective. J Bone Joint Surg Am. 2009 Apr;91(4):1017-22.
7. Hariri S, York SC, O'Connor MI, Parsley BS, McCarthy JC. A resident survey study of orthopedic fellowship specialty decision making and views on arthroplasty as a career. J Arthroplasty. 2011 Sep;26(6):961: e1.
8. Day CS, Lage DE, Ahn CS. Diversity based on race, ethnicity, and sex between academic orthopaedic surgery and other specialties: a comparative study. J Bone Joint Surg Am. 2010 Oct 6;92(13):2328-35.
9. Okike K, Utuk ME, White AA. Racial and ethnic diversity in orthopaedic surgery residency programs. J Bone Joint Surg Am. 2011 Sep 21;93(18):e107.
10. Quintero AJ, Segal LS, King TS, Black KP. The personal interview: assessing the potential for personality similarity to bias the selection of orthopaedic residents. Acad Med. 2009 Oct;84(10):1364-72.
11. Crutcher B. Cross-cultural mentoring: an examination of the perspectives of mentors [dissertation]. Doctor of Philosophy Department of Educational Leadership. Oxford, OH: Miami University; 2006: p. 36-49.
12. Schenkenberg T, Foster NL, Bromberg MB, DeWitt LD, Flanigan KM; Neurology Academic Advisory Committee. Neurology Academic Advisory Committee: a strategy for faculty retention and advancement. Neurology. 2011 Aug 16;77(7):684-90.
13. Collins J. Level 5 leadership. The triumph of humility and fierce resolve. Harv Bus Rev. 2001 Jan;79(1):66-76: 175.
14. Collins J. Good to great and the social sectors: A monograph to accompany good to great. New York: HarperCollins; 2005.
15. Bickel J, Brown AJ. Generation X: implications for faculty recruitment and development in academic health centers. Acad Med. 2005 Mar;80(3):205-10.
16. Feldman MD, Arean PA, Marshall SJ, Lovett M, O'Sullivan P. Does mentoring matter: results from a survey of faculty mentees at a large health sciences university. Med Educ Online. 2010;15:15.
17. Gray J. Mentoring the young clinician-scientist. Clin Invest Med. 1998 Dec;21(6):279-82.
18. Illes J, Glover GH, Wexler L, Leung AN, Glazer GM. A model for faculty mentoring in academic radiology. Acad Radiol. 2000 Sep;7(9):717-24, discussion :725-6.
19. Johnson KS, Hastings SN, Purser JL, Whitson HE. The Junior Faculty Laboratory: an innovative model of peer mentoring. Acad Med. 2011 Dec;86(12):1577-82.
20. Morzinski JA, Simpson DE, Bower DJ, Diehr S. Faculty development through formal mentoring. Acad Med. 1994 Apr;69(4):267-9.
21. Mullen EJ. Pursuing knowledge through qualitative research. Soc Work Res. 1995 Mar;19(1):29-32.
22. Rustgi AK, Hecht GA. Mentorship in academic medicine. Gastroenterology. 2011 Sep;141(3):789-92.
23. Takagishi J, Dabrow S. Mentorship programs for faculty development in academic general pediatric divisions. Int J Pediatr. 2011;2011:538616.
24. Ostroff C, Kozlowski S. Organizational socialization as a learning process: the role of information acquisition. Personnel Psychol. 1992;45:849-74.
25. Ostroff C, Kozlowski S. The role of mentoring in the information gathering processes of newcomers during early organizational socialization. J Vocat Behav. 1993;42:170-83.
26. Schor NF, Guillet R, McAnarney ER. Anticipatory guidance as a principle of faculty development: managing transition and change. Acad Med. 2011 Oct;86(10):1235-40.
27. Bland CJ, Taylor AL, Shollen SL, Weber-Main AM, Mulcahy PA. Faculty success through mentoring: a guide for mentors, mentees, and leaders. New York: Rowman & Littlefield Education; 2009.
28. Csikszentmihalyi M. Flow: the psychology of optimal experience; New York: HarperCollins; 2008.