

Formal leadership training for orthopedic surgeons: Limited opportunities amongst growing demand

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Abstract

Leadership skills are important to all orthopedic surgeons, regardless of practice or location, as interactions with patients, staff, and other physicians necessitate professionalism and leadership. Leadership skills are best developed through formal training and experiential opportunities. Several programs emphasizing leadership skills for orthopedic surgeons exist; however, the number of programs is not adequate to meet the demand. It is difficult for orthopedic surgeons to take advantage of these opportunities, given clinical and professional responsibilities. To appropriately adapt to the changing healthcare environment and ensure advancement of the orthopedic field, formal leadership skills development should be widely integrated into orthopedic training.

Orthopedic surgeons as leaders

Although surgical resident and fellow education focuses primarily on increasing medical knowledge and learning appropriate surgical techniques, a successful surgeon must possess numerous skills not directly related to medicine. Essential among those skills is the ability to be an effective leader, as many studies support the notion that well-developed leadership skills amongst physicians lead to improved patient outcomes, increased team performance, and enhanced learning.¹⁻³ Surgeons will encounter a myriad of leadership roles throughout their careers; in the operating room, on the resident team, within the department or practice, within the surgical community, and as citizens.⁴ In an effort to define the impact that a leader may have on a team's performance, DeRue *et al.* performed a meta-analysis of 59 studies con-

cerning the traits and behaviors of leaders.⁵ The authors concluded that a leader's individual performance is responsible for nearly one third of a team's performance as a whole.⁵ When that team is responsible for patient care and healthcare advancement, an effective leader can have a significant impact on the health of a large population.

One setting in which orthopedic surgeons assume the role of leader is in the operating room. Although most orthopedic surgeons rarely encounter life-threatening crises in the operating room, the threat of one always exists. More commonly, orthopedic surgeons will encounter stressful situations during routine surgical cases that, while not life-threatening, require a similar response. If such a crisis arises, it is rarely preceded by any forewarning and requires prompt, decisive action, seamless coordination of surgical team members, and effective communication.⁶ As the leader of the surgical team, a surgeon must have the ability to ensure that the crisis response is rapid and organized to maximize the likelihood of a favorable outcome. Preparation and training for disastrous events are vital for a surgeon to be able to recognize and appropriately react to a developing situation. Evidence suggests that unprepared individuals typically respond to stressful situations with maladaptive behaviors that lead to confusion and hesitation, often delaying or preventing optimal care.⁶ Training surgeons to effectively respond during stressful events can prevent these negative reactions and allow the surgeon to gain control of the situation. Research performed in the U.S. Navy identified loss of fine motor skills, inability to listen effectively, tunnel vision, and amnesia as maladaptive behaviors associated with the stress response to a crisis. They subsequently correlated the mistakes made during crises as a result of these behaviors with poor overall outcomes. To combat poor stress responses, the authors developed a simulation training exercise emphasizing crisis management and leadership for military personnel. Participants in these training exercises were shown to adapt more favorably to the initial stress of crises. This study also shows that through training exercises these particular skills can be developed.⁶

Both in and out of the operating room, the orthopedic surgeon is the head of the patient care team, which also consists of nurses, advanced practice providers (*e.g.* physician assistants/nurse practitioners), and potentially residents, and is ultimately responsible for the quality of care provided. Therefore, as the leader, it is essential for the surgeon to build an effective team that is capable of delivering excellent care. In their

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Key words: Orthopedic surgery, education, leadership.

Contributions: The authors contributed equally.

Conflict of interest: The authors declare no potential conflict of interest.

Funding: None.

Received for publication: 16 April 2019.

Revision received: 17 June 2019.

Accepted for publication: 4 November 2019.

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Orthopedic Reviews 2019;11:8151

doi:10.4081/or.2019.8151

2011 meta-analysis, DeRue *et al.* concluded that modifiable behaviors, such as initiation of team structure, consideration of members, or charisma, have a greater impact on a leader's effectiveness than do inherent traits, such as demographics, intelligence, or emotional stability.⁵ The ability to initiate structure within a team was found to be the most influential among such behaviors. This includes defining specific roles for each team member, implementing team rules, and setting specific team goals. Efficacy of a leader can be enhanced by using Transformational Behavior, which involves seeking feedback from team members and making changes for the good of the group and individual members.⁵ The authors of this study conclude that the skills and behaviors of a successful leader can be taught and developed through training. This implies that those who would assume a leadership role, such as orthopedic surgeons, would not only benefit from training, but in fact, should incorporate it into their education.

Physicians in academic positions have the additional responsibility of educating residents. Just as leaders are assessed by the performance of their teams, educators are assessed by the performance of their students. In order to be effective, educators must rely on many leadership skills, such as defining goals, motivating students, and actively seeking feedback.⁷ In 2008, Sutkin *et al.* performed a systematic review of the

literature with the goal of defining the characteristics that make a good clinical teacher.⁷ The authors found that the most influential qualities included the clinicians' communication skills, ability to create a supporting learning environment, and to inspire and motivate students to learn and excel. Additionally, a clinician's awareness of his or her own teaching skills and efforts to improve those skills was associated with being a good clinical teacher.⁷ These particular behaviors mirror those identified as being important for becoming an effective leader. These findings further support the

need for all physicians, including orthopedic surgeons, to develop leadership skills throughout their training.

Opportunities for the development of leadership skills in orthopedic surgery

Overall, very few residency training programs in any specialty offer structured leadership and management training to all residents.⁸ However, a limited number of

opportunities do exist for orthopedic surgeons interested in developing leadership skills (Table 1). Medical students, residents, and fellows currently training at Duke University can participate in the Feagin Leadership Program, which is a year-long curriculum comprised of workshops, seminars, conferences and other opportunities designed to build the skills and behaviors necessary to become an effective leader within the medical community.⁹ The program curriculum covers topics that include: mentoring, networking, negotiation, teamwork, individual leadership styles, develop-

Table 1. Leadership Skills Development Opportunities within Orthopedic Surgery.

Organization	Program	Target Audience	Goals
AAOS	Leadership Fellows Program (LFP)	AAOS Fellows 45 years old or younger	<ul style="list-style-type: none"> - Facilitate the development of future AAOS leaders - Exposure to didactic leadership training - Match participants with an established AAOS leader (mentor)
AOA	Resident Leadership Forum	PGY 4 residents nominated by their Department Chairs	<ul style="list-style-type: none"> - Develop enhanced leadership skills - Learn leadership strategies to share with other residents in your training program - Network with other resident leaders, AOA members, and members of the Emerging Leaders Program
AOA	Emerging Leaders Program	Orthopedic surgeons in their 5 th year of residency up through their 13th year of clinical practice	<ul style="list-style-type: none"> - Networking with established AOA members - Connect and work with accomplished peers across US and Canada - Develop enhanced leadership skills through interactive events including Emerging Leaders Forum
AOA	APEX Leadership Program	All orthopedic surgeons with interest in developing leadership skills	<ul style="list-style-type: none"> - Develop greater understanding of healthcare policy - Understand cultural impacts of organizational structure and success - Build a unique effective leadership style - Learn the analytical processes behind effective strategy - Develop team building skills and management styles
AOA	North American Traveling Fellowship	Young orthopedic surgeons looking to advance their careers	<ul style="list-style-type: none"> - 5 week tour of top orthopedic centers in US and Canada offered every other year - Opportunity to network with top surgeons, expand leadership skills and initiate collaborative research efforts
AOA	AOA-JOA Traveling Fellowship	Practicing board-certified orthopedists interested in sharing knowledge and skills with academic leaders from Japan	<ul style="list-style-type: none"> - 3 week tour of top academic centers in host nation, which alternates each year - Opportunity to expand leadership skills and build diverse set of orthopedic skills by sharing knowledge and experience between host and visiting surgeons
AOA	Austrian-Swiss-German Traveling Fellowship	Young board-certified orthopedic surgeons interesting in sharing experiences with top surgeons in German-speaking nations	<ul style="list-style-type: none"> - 3-4 week tour of top orthopedic centers in Austria, Switzerland, and Germany - Opportunity to build leadership skills and understand challenges surgeons face in diverse cultures
Duke University	Feagin Leadership Program	Scholars: Medical Students, Resident and Fellow Physicians Participants:	<ul style="list-style-type: none"> - Develop effective ethical leaders who positively influence healthcare
Duke University	Feagin Leadership Forum	Emerging leaders from a diverse group of professional fields	<ul style="list-style-type: none"> - Two-day event in which established leaders convene to share their expertise and experiences with an invited group of emerging leaders - Feagin Scholars present their year-long projects
Duke University	Feagin Leadership Outreach Effort	Physician groups, medical societies, and residency programs interested in incorporating leadership development into their organizations	<ul style="list-style-type: none"> - Leadership development sessions are conducted to share the Feagin - Leadership's expertise on an international level
Orthopedic Societies at the national, regional, and local level	Governing Boards and Committees	Residents interested in becoming involved in the orthopedic community	<ul style="list-style-type: none"> - Provides opportunity for residents to familiarize themselves with leadership - Affect change within the community by participating in committee decisions - Serve as the representative for the resident body in orthopedic societies

ment of leadership qualities, difficult conversations, and emotional intelligence. Feagin Scholars also work on a team project, which is presented at the Feagin Leadership Forum, an annual invitation-only two-day conference where world-class leaders in medicine, business, and the military share their expertise with a group of emerging leaders from a wide array of professional fields. The 2017 Forum included presentations from Scott Kozin, MD, who shared his experience in being involved in the first successful bilateral hand transplant, and panels centered around selfless leadership in the community and overseas service. Outreach is a major component of the Leadership Program, and allows Feagin Scholars to conduct leadership development sessions with other physician groups, medical societies, and residency programs.⁹

Resident and attending orthopedic surgeons may also work to develop leadership skills by becoming involved in orthopedic and subspecialty societies (Table 2). Opportunities for resident participation have expanded significantly in recent years. In 2011, 11 of the 20 societies allowed resident membership, and five of the 11 offered a collective total of 14 resident committee positions.¹⁰ At that time, the Orthopaedic Trauma Association (OTA) offered one resident position on its Education Committee. The J. Robert Gladden Orthopaedic Society (JRGOS) allowed one resident member to serve as a voting member on its Board of Directors, and the American Academy of Orthopaedic Surgeons (AAOS) offered 11 resident committee positions.¹⁰ A recent review of the OTA website demonstrated that this society now offers 9 resident committee memberships on 8 different committees, as opposed to the single position offered seven years ago.¹¹ Opportunities for residents may also exist in local, state, or regional societies. For instance, Pennsylvania Orthopaedic Society allows one resident representative from each program in the state to sit on its Board of Directors.¹²

The AAOS, OTA, American Association of Hip and Knee Surgeons (AAHKS) and the Ruth Jackson Orthopaedic Society (RJOS) offer formalized mentorship programs.¹⁰ While one can argue there is overlap between the roles and skills of mentor and leader, they are distinct from one another. Leaders function as the head of a team, whereas the role of professional mentor is to foster the growth of an individual in all facets of their career. Mentoring requires a significantly more personal, collegial relationship than that between leader and team member. A mentor must also employ a different, albeit similar,

set of skills and behaviors than that of a leader.¹³ For these reasons, neither a mentorship program nor any program designed to build mentorship skills should be viewed as a surrogate to a leadership development program.

Each year, the American Orthopaedic Association (AOA) hosts the C. McCollister Evarts Resident Leadership Forum (RLF), which provides two PGY-4 residents from each orthopedic residency program in the United States with the opportunity to develop leadership skills and strategies while networking with leaders in the orthopedic community. The forum is comprised of two days of presentations covering topics such as “Residents as Teachers” and “Leading as an Early Career Surgeon.” Participants are also invited to attend the first full day of the AOA Annual Meeting and earn automatic eligibility to join the AOA’s Emerging Leaders Program (ELP).¹⁴ The ELP is available to PGY-5 residents up through faculty in their 13th year of clinical practice. The program offers interactive events, webinars, and networking opportunities across the United States and Canada.

Members of the ELP have the opportunity to apply to serve on the Young Leaders Committee, which oversees the RLF and the Young Leaders Program, as well as identifying and developing opportunities for leadership within the AOA.¹⁵

Leadership training opportunities also exist in the early years of clinical practice. In 2001, the AAOS created the Leadership Fellows Program (LFP), a one-year program available to 10 board-certified orthopedic surgeons who are under the age of 45. This program is designed to assist in the development of future AAOS leaders and focuses on experience-based training of leadership skills. Each fellow is paired with a current orthopedic leader, who serves as a mentor for the year and beyond. Upon program completion, fellows are assigned to an AAOS committee and can become a more active member of the society.¹⁶ An anonymous survey of 67 alumni and 73 prior applicants found that LFP alumni were significantly more confident in three of the eight leadership categories surveyed, including knowledge of theory, tolerance for demands of leadership, and leadership

Table 2. Orthopedic Surgery Specialty Societies.

American Academy of Orthopaedic Surgeons (AAOS)
American Orthopaedic Association (AOA)
Orthopaedic Research and Education Foundation (OREF)
Orthopaedic Research Society (ORS)
Ruth Jackson Orthopaedic Society (RJOS)
J. Robert Gladden Orthopaedic Society (JRGOS)
American Society for Surgery of the Hand (ASSH)
American Orthopaedic Foot & Ankle Society (AOFAS)
American Orthopaedic Society for Sports Medicine (AOSSM)
Arthroscopy Association of North America (AANA)
American Shoulder and Elbow Surgeons (ASES)
Musculoskeletal Tumor Society (MTS)
Orthopaedic Trauma Association (OTA)
AO North America
American Association of Hip and Knee Surgeons (AAHKS)
Hip Society
Knee Society
North American Spine Society (NASS)
Scoliosis Research Society (SRS)
Pediatric Orthopaedic Society of North America (POSNA)
Eastern Orthopaedic Association (EOA)
Mid-America Orthopaedic Association (MAOA)
Mid-Central States Orthopaedic Society (MCSOS)
New England Orthopedic Society (NEOS)
North Pacific Orthopaedic Society (NPOS)
Southern Orthopaedic Association (SOA)
Western Orthopaedic Association (WOA)

positioning.¹⁷ A review of the curriculum vitae of 60 alumni and 47 prior applicants found that alumni were significantly more likely to hold a national committee chair position after completing the LFP than those who were not accepted into the program. However, being a retrospective study, the authors could not definitively conclude that the differences between the two groups were a result of the effectiveness of the program.¹⁷

The AOA, in conjunction with University of Southern California, has developed and is now enrolling for the new APEX Leadership Program.¹ This is a 10-month program which includes 50 hours of instructional coursework, ten of which are completed online, and the remaining 40 offered in-person over three sessions throughout the year. As well, participants are required to complete a capstone project, where they put their newly developed skills to practice with the guidance of program faculty. While this program appears to address all of the facets of effective leadership and is available to all orthopedic surgeons, there is limited enrollment spots each year.^{18,19}

Several opportunities also exist outside of the United States. The American Orthopaedic Association-Japanese Orthopaedic Association (JOA) Traveling Fellowship, a jointly supported program, was first offered in 1992 as an opportunity for young surgeons to spend three weeks travelling amongst the other nation's top academic institutions, gaining a unique perspective on healthcare in a different country and building leadership skills through exchange of experiences.²⁰ Other international traveling fellowships exist including the Austrian-Swiss-German (ASG) Fellowship and the North American Travelling Fellowship (NATF).^{21,22} These fellowships provide an amazing opportunity for leadership skills development for the few surgeons who are selected to participate each year.

The benefit of more extensive leadership training

The need for strong leaders within the orthopedic community has been well-established. In his 1985 AOA presidential address, C. McCollister Evarts highlighted the importance of leadership among orthopedic surgeons by saying, "it is not sufficient just to belong to an elitist organization; we must recognize and develop our leaders and leadership in order to enable all of the orthopedic organizations to begin to

meet the challenges ahead."²³ The call for more impactful leaders in the orthopedic community was again reverberated five years later. In his 1990 presidential address to the Association of Orthopaedic Chairmen, James Herndon anticipated major reform, and recognized the growing need for managerial leaders within the orthopedic community. He stated that although leaders had emerged from within the field, they had often been viewed as "technocrats, non-cooperative, and not academic."²⁴

The skills that are necessary to become an effective leader are not exclusively inherent to the individual, but rather can be taught and developed through instruction and practice. This has been demonstrated in the military, where a cohort study of nearly 1,800 officers showed that the amount of leadership training and experience an officer received were directly correlated with the extent and strength of his or her leadership skills.²⁵ Research in a business setting has displayed a similar link between degree of leadership training and strength of leadership qualities.²⁶ There is a relative paucity of literature evaluating this relationship in the health professions. However, one study by Saravo *et al.* enrolled 57 residents across multiple specialties in a four-week leadership training program and found a significant improvement in both transformational and transactional leadership skills, which are those that focus on defining specific goals for the team as well as the rewards for achieving those goals.^{5,27}

Although opportunities exist for those in general orthopedic training to develop leadership skills, such as the Feagin Leadership Program or Resident Leadership Forum, a formal, standardized program for all orthopedic surgeons has yet to be implemented. In an effort to identify gaps in leadership training, Jaffe *et al.* interviewed 24 University of Michigan surgical faculty members from multiple specialties including: General, Vascular, Plastics, Thoracic, and Transplant.²⁸ Topics discussed during the interviews included participants' motivations for involvement in leadership development, previous experiences with leaders, and skills and knowledge participants wished to obtain. They discovered that many surgeons felt their medical school and residency training failed to sufficiently prepare them for leadership roles.²⁸ The interviewees also felt that effective leadership training should include communication, team building, business acumen, and healthcare policy.²⁸ Recognizing this deficiency, numerous medical schools have attempted to incorporate formal leadership training programs into their curricula. An

increasing number of schools offer dual MD/MBA degrees. Such programs typically require an additional year of graduate education and do not necessarily develop all of the leadership skills surgeons will need, focusing instead on managerial and financial capabilities.²⁹ In 2014, Webb *et al.* performed a systematic review to identify the best practices in leadership training during undergraduate medical education by evaluating and comparing leadership program structures and methods, including the setting, format, instructor type, and duration.³⁰ The authors found that the programs varied greatly in each of the assessed categories. The majority of studies were unable to identify significant changes amongst the students' behavior or tangible results that would suggest these programs effectively developed leadership skills. However, the authors did note that outcomes measured varied greatly between programs. Implementation and universal adherence to a standardized assessment tool would allow for more accurate evaluation of the quality of leadership training programs.³⁰

Discussion

All orthopedic surgeons will inevitably enter a leadership role during their professional career and their effectiveness in this role will have a large impact on the care of their patients and the future of the field. Fortunately, the skills required to become a successful leader can be developed through training and experience. Opportunities exist for orthopedic residents to develop leadership skills; however, these programs cannot provide training to a substantial number of surgeons. The Feagin Leadership Program is only available to current Duke trainees, and the Feagin Leadership Forum is only available to invited individuals. The orthopedic subspecialty societies offer a limited number of committee positions for residents, and only four of the 23 subspecialty societies offer mentorship programs. Although 11 of the societies offer membership to residents, membership alone is unlikely to facilitate the development of necessary skills to be an effective leader. One of the earliest opportunities for formal leadership training occurs as a PGY-4 with the Resident Leadership Forum; however, this program is only accessible to a maximum of two residents per orthopedic residency program. Given the importance of these skills for all orthopedic surgeons, it would be most beneficial to begin developing these skills early in training, so that leadership strategies may be more useful

and effective by the time one enters practice.

The need for more widely accessible leadership training exists throughout all medical specialties. A systematic review published in 2015 identified 34 residency/fellowship programs across all medical and surgical specialties that had attempted to incorporate leadership training into the program curriculum.³¹ None of these curricula were identified as being implemented in orthopedic surgery programs. The training programs varied greatly in duration, method of teaching, and focus of skills developed. Yet, all programs reported positive outcomes, mainly in terms of increased knowledge and expertise with regards to the development of leadership skills. However, the authors concluded that the majority of these studies focused on immediate and self-assessed outcomes, whereas few sought to evaluate the broader effects on team performance.³¹ A similar more recent systematic review of 52 leadership development programs offered during graduate medical education found little consistency between the curricula. Similarly, the programs were often evaluated by self-assessment and learner satisfaction as opposed to an assessment of the leadership skills of individual participants.³²

Conclusions

A leader's efficacy, largely influenced by modifiable behaviors, has a large impact on team performance. While an orthopedic surgeon may function as a business leader within a private practice, as an educator in an academic setting, and within the orthopedic community if involved in one of the orthopedic societies, they will always serve as leaders of the healthcare team both in and out of the operating room. Therefore, while the degree to which one operates as a leader may vary from surgeon to surgeon, all fit into a leadership role in one form or another and all would benefit from a formal leadership training curriculum. Orthopedic residency takes a minimum of 5 years, during which the focus is on acquiring knowledge and technical skills to become capable surgeons. From the information presented, one can surmise that success in this profession also requires skills and knowledge not directly related to patient care, and that the development of these skills should be incorporated into the training curriculum of all orthopedic surgeons. Additionally, offering a leadership development program that is accessible to all practicing orthopedic surgeons (in person or on-line) would provide

the opportunity for continued personal and professional development beyond residency training.

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