Part **I**

Basic Considerations

chapter **1**

Leadership in Surgery

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INTRODUCTION

The field of surgery has evolved greatly from its roots, and surgical practice now requires the mastery of modern leadership principles and skills as much as the acquisition of medical knowledge and surgical technique. Historically, surgeons took sole responsibility for their patients and directed proceedings in the operating room with absolute authority, using a command-and-control style of leadership. Modern surgical practice has now evolved from single provider–based care toward a team-based approach, which requires collaborative leadership skills. Surgical care benefits from the collaboration of surgeons, anesthesiologists, internists, radiologists, pathologists, radiation oncologists, nurses, pharmacists, social workers, therapists, hospital staff, and administrators. Occupying a central role on the healthcare team, surgeons[1] have the potential to improve patient outcomes, reduce medical errors, and improve patient satisfaction through their leadership of the multidisciplinary team. Thus, in the landscape of modern healthcare systems, it is imperative that surgical training programs include formal instruction on leadership principles and skills to cultivate their trainees' leadership capabilities.

1▶

Many medical and surgical communities, including residency training programs, acknowledge the need for improved physician leadership. Specifically, surveyed surgical residents felt a lack of confidence in multiple areas of leadership, particularly in conflict resolution.[2] Surgical trainees identify leadership skills as important, but they report themselves as "not competent" or "minimally competent" in this regard.[2,3] While a small number of surgical training programs have implemented formal curricula focused on teaching leadership principles, it is now imperative that all surgical training programs teach these important skills to their trainees.[4,5] Interviews of academic chairpersons identified several critical leadership success factors,[6] including mastery of visioning, communication, change management, emotional intelligence, team building, business skills, personnel management, and systems thinking. These chairpersons stated that the ability of emotional intelligence was "fundamental to their success and its absence the cause of their failures," regardless of medical knowledge.[6] Thus, residency programs need to include leadership training to prepare future surgeons for success in modern healthcare delivery.

In the United States, the Accreditation Council for Graduate Medical Education (ACGME) has established six core competencies—patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice (Table 1-1)[4]—that each contain principles of leadership. The ACGME has mandated the teaching of these core competencies but has not established a formal guide on how to teach the leadership skills described within the core competencies. Therefore, this chapter offers a review of fundamental principles of leadership and an introduction of the concept of a leadership training program for future surgeons.

DEFINITIONS OF LEADERSHIP

Many different definitions of leadership have been described. Former First Lady Rosalynn Carter once observed that "A leader takes people where they want to go. A *great* leader takes people

1▶ Effective surgical leadership improves patient care, safety, and clinical outcomes.

2▶ A fundamental principle of leadership is to provide a vision that people can live up to, thereby providing direction and purpose to the constituency.

3▶ Surgical leaders have the willingness to lead through an active and passionate commitment to the vision.

4▶ Surgical leaders have the willingness to commit to lifelong learning.

5▶ Surgical leaders have the willingness to communicate effectively and resolve conflict.

6▶ Surgical leaders must practice effective time management.

7▶ Different leadership styles are tools to use based on the team dynamic.

8▶ Surgical trainees can be taught leadership principles in formal leadership training programs to enhance their ability to lead.

9▶ Mentorship provides wisdom, guidance, and insight essential for the successful development of a surgical leader.

where they don't necessarily want to go, but where they ought to be." Leadership does not always have to come from a position of authority. Former American president John Quincy Adams stated, "If your actions inspire others to dream more, learn more, do more, and become more, you are a leader." Another definition is that leadership is the process of using social influence to enlist the aid and support of others in a common task.[7]

Levels of Leadership

When working toward organizational success, strong leadership is a critical component. The best study of the relationship between leadership skill and organizational success is in the field of business. In business, the processes of customer satisfaction, product development, and organization efficiency are the equivalent of patient satisfaction, medical advancement, and efficient delivery of care. Jim Collins, author of *Good to Great,* studied the success and leadership styles of Fortune 500 companies over a 30-year period. He found that leadership is strongly correlated with corporate success, and most importantly for our study, that leadership strength can be broken down by level and characteristic (See figure 1-1).[8]

Of 11 particularly outstanding organizations identified, great leadership was the single major defining characteristic that distinguished them from their peers. These organizations were led by what Collins called the "Level 5 Leader," one whose personal humility and professional will drove team success. Under this system of leadership study, surgeon-leaders begin at the bottom level and, through study, hard work, and professional development, advance to the ultimate level of leadership.[8]

FUNDAMENTAL PRINCIPLES OF LEADERSHIP

Leadership is a complex concept. Surgeons should strive to adopt leadership qualities that provide the best outcomes for their patients, based on the following fundamental principles: vision, willingness, time management, conflict resolution,

Table 1-1

Accreditation Council for Graduate Medical Education core competencies

CORE COMPETENCY	DESCRIPTION
Patient care	To be able to provide compassionate and effective healthcare in the modern-day healthcare environment
Medical knowledge	To effectively apply current medical knowledge in patient care and to be able to use medical tools (i.e., PubMed) to stay current in medical education
Practice-based learning and improvement	To critically assimilate and evaluate information in a systematic manner to improve patient care practices
Interpersonal and communication skills	To demonstrate sufficient communication skills that allow for efficient information exchange in physician-patient interactions and as a member of a healthcare team
Professionalism	To demonstrate the principles of ethical behavior (i.e., informed consent, patient confidentiality) and integrity that promote the highest level of medical care
Systems-based practice	To acknowledge and understand that each individual practice is part of a larger healthcare delivery system and to be able to use the system to support patient care

LEVEL 5 EXECUTIVE
Builds enduring greatness through a paradoxical combination of personal humility plus professional will.

LEVEL 4 EFFECTIVE LEADER
Catalyzes commitment to and vigorous pursuit of a clear and compelling vision; stimulates the group to high performance standards.

LEVEL 3 COMPETENT MANAGER
Organizes people and resources toward the effective and efficient pursuit of predetermined objectives.

LEVEL 2 CONTRIBUTING TEAM MEMBER
Contributes to the achievement of group objectives; works effectively with others in a group setting.

LEVEL 1 HIGHLY CAPABLE INDIVIDUAL
Makes productive contributions through talent, knowledge, skills, and good work habits.
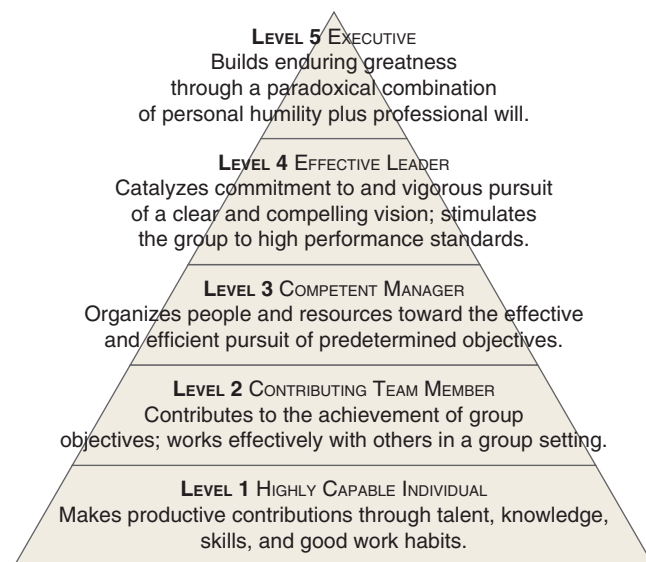
Figure 1-1. Levels of leadership as defined by Jim Collins in *Good to Great*. (*Reproduced with permission from Collins J: Good to Great. Boston, MA: Harper Collins; 2011.*)

Table 1-2
The fundamental principles of leadership

LEADERSHIP SKILL	DESCRIPTION AND APPLICATION IN THE FIELD OF MEDICINE
Vision	The act of establishing tangible goals of care for patients on both a daily basis as well as for long-term purposes.
Effective communication	Establishing an open, respectful, and nonjudgmental forum for communication among different members of the healthcare team and with the patient.
Willingness to lead	Taking on full responsibility for the care of patients and remaining ethical, professional, and committed despite the especially challenging rigors of joining the field of surgery.
Willingness to learn	A commitment to lifelong learning of the latest scientific, medical, and surgical updates to deliver optimized patient care.
Conflict resolution	The art of resolving conflicts in a peaceful and ethical manner in team settings.

Figure 1-2. Apollo 11 Lunar Module moon walk. Astronaut Edwin "Buzz" Aldrin walks by the footpad of the Apollo 11 Lunar Module, July 1969. *(Reproduced with permission from AP Photo/NASA. © 2018 The Associated Press.)*

recruitment, and culture (See Table 1-2). Surgeon-leaders will develop a team of faculty, residents, and other healthcare personnel who are aligned on mission, vision, and values. The team and leader must be willing to address complex problems with honest communication and well-developed conflict resolution skills. A culture must be established where faculty and staff will work towards the advancement of the medical arts and the greater good of society.[9]

Vision

The first and most fundamental principle of leadership is to establish a vision that people can live up to, thus providing direction and purpose to the constituency. Creating a vision is a declaration of the near future that inspires and conjures motivation.[10] A classic example of a powerful vision that held effective impact is President Kennedy's declaration in 1961 that ". . . this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth." Following his declaration of this vision with a timeline to achieve it, the United Sates mounted a remarkable unified effort, and by the end of the decade, Neil Armstrong took his famous walk and the vision had been accomplished (Fig. 1-2).

On a daily basis, surgeons are driven by a powerful vision: the vision that our surgical care will improve patients' lives. The great surgical pioneers, such as Hunter, Lister (Fig. 1-3), Halsted, von Langenbeck, Billroth, Kocher (Fig. 1-4), Carrel, Gibbon, Blalock, Wangensteen, Moore, Rhoads, Huggins, Murray, Kountz, Longmire, Starzl, and DeBakey (Fig. 1-5), each possessed a vision that revolutionized the field of surgery. In the 19th century, Joseph Lister changed the practice of surgery with his application of Pasteur's germ theory. He set a young boy's o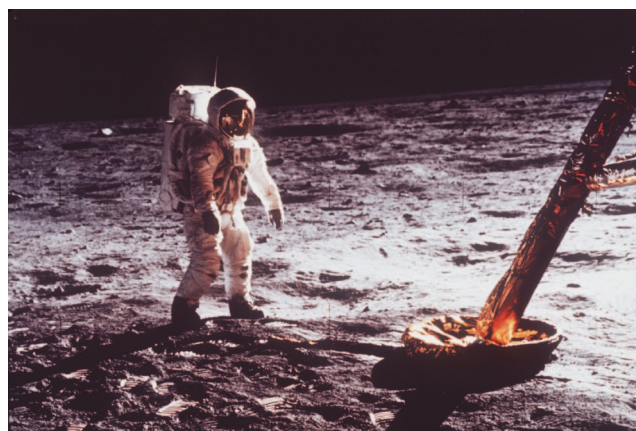pen compound leg fracture, a condition with a 90% mortality rate at that time, using carbolic acid dressings and aseptic surgical technique. The boy recovered, and Lister gathered nine more patients. His famous publication on the use of aseptic technique introduced the modern era of sterile technique. Emil Theodor Kocher was the first to master the thyroidectomy, thought to be an impossible operation at the time, and went on to perform thousands of thyroidectomies with a mortality of less than 1%. He was awarded the Nobel Prize in Physiology or Medicine in 1909 for describing the thyroid's physiologic role in metabolism. Michael E. DeBakey's powerful vision led to the development of numerous groundbreaking procedures that helped pioneer the field of cardiovascular surgery. For example, envisioning an artificial artery for arterial bypass operations, Dr. DeBakey invented the Dacron graft, which has helped millions of patients suffering from vascular disease and enabled the development of endovascular surgery. Dr. Frederick Banting, the youngest recipient of the Nobel Prize in Physiology or Medicine, had a vision to discover the biochemical link between diabetes and glucose homeostasis. His vision and perseverance led to the discovery of insulin.[11] In retrospect, the power and clarity of their visions were remarkable, and their willingness and dedication were inspiring. By studying their careers and accomplishments, surgical trainees can be inspired by the potential impact of a well-developed vision.

Figure 1-3. Joseph Lister directing use of carbolic acid spray in one of his earliest antiseptic surgical operations, circa 1865. *(Used with permission from Getty Images.)*
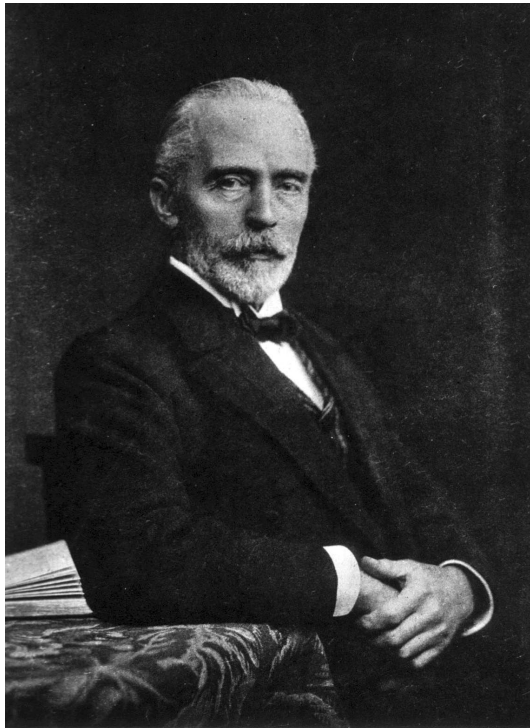
Figure 1-4. Emil Theodor Kocher. *(Reproduced with permission from the National Library of Medicine.)*

Leaders must learn to develop a vision to provide direction for their team. The vision can be as straightforward as providing quality of care or as lofty as defining a new field of surgery, such as atomic surgery and personalized medicine. One can start developing such vision by brainstorming the answers to two simple questions: "Which disease needs to be cured?" and "How can it be cured?"[12] The answers represent a vision and should be recorded succinctly in a laboratory notebook or journal. Committing pen to paper enables the surgical trainee to define his or her vision in a manner that can be shared with others.

Figure 1-5. Michael E. DeBakey. *(Reproduced with permission from AP Photo/David J. Phillip. © 2018 The Associated Press.)*

Generating Belief in Your Vision

Surgical leaders with great visions will inevitably require help from colleagues, other healthcare professionals, scientists, administrators, patients, and nonmedical personnel. To get this help, surgical leaders must inspire their team and understand motivation. For the surgeon-leader, it is critical to know that people do not follow leaders because of *what* they do; people follow leaders because of *why* they do what they do. The people who help the leader execute the vision are motivated by the leader's beliefs and attitudes more than the leader's policy or agenda. This concept, based on Simon Sinek's *Start With Why*, is rooted in understanding of the anatomy and function of the human brain.[13] See figure 1-6.

For example, take a surgeon-leader who wants to implement a new perioperative checklist to reduce surgical errors. The "what" is very simple: a checklist to reduce errors. The operating room team may make a rational decision to adapt the checklist; however, it is also possible that the checklist may be perceived as "another piece of paperwork" and rejected, or that the checklist may have its implementation fought, undermined, delayed, or ignored. A surgeon-leader who does not understand how people are motivated might argue rationally, telling the team that the checklist was created with great care, that all of the best evidence was incorporated in its creation, and that the checklist is short and efficient. This is the "how," and once again it appeals to the rational and analytical side of the team. With these arguments, the surgeon-leader's vision remains susceptible to rejection for many of the same reasons. A leader who understands how to motivate a team towards a vision will start with "why." Before ever discussing the checklist in detail with the team, the leader will speak of their shared mission to offer the best patient care possible, ask the team to imagine how they might want a family member treated, and emphasize that a careless error could lead to patient harm and embarrassment for the team. With these arguments, which constitute an emotional appeal to the team's belief system, the leader can expect this vision for better patient care via a new surgical checklist to be adapted by the team. The team will be receptive to implementing a new checklist, not because they believe in the checklist as a tool, but because they believe in the surgeon-leader's vision for optimizing patient care.

There is a biological reason why this concept works. "Why," "how," and "what" are correlated to the functions

When a leader's vision appeals to "why," it triggers an emotional response in the limbic brain and increases the likelihood that a vision will be embraced. Persuasion using "what" and "how" appeals to the neocortex and is more easily rejected.
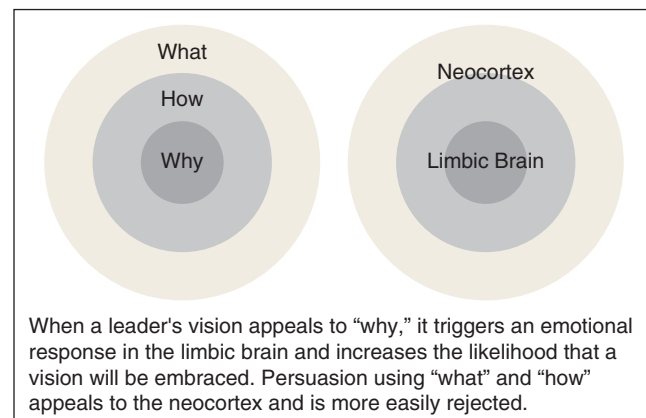
Figure 1-6. When leaders seek to generate belief in their vision, it is best to appeal to the team with "why" statements. *(Data from Sinek S. Start with why: how great leaders inspire everyone to take action. London: Portfolio/Penguin; 2013.)*
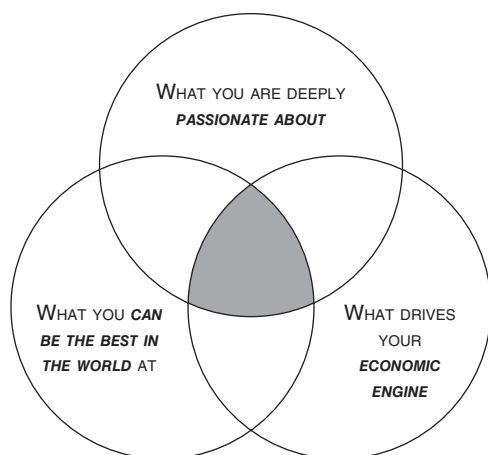
Figure 1-7. Leaders should be selective about where they expend their efforts, as demonstrated by Jim Collins in "Good to Great." (*Reproduced with permission from Collins J: Good to Great. Boston, MA: Harper Collins; 2011.*)

The Flywheel Effect of Building and Sustaining Momentum

Figure 1-8. The "flywheel effect." (*Data from Collins J: Good to Great. Boston, MA: Harper Collins; 2011.*)

of separate anatomical levels in the human brain. The neocortex is, evolutionarily, the newest area of our brains, and it is responsible for the analytical and rational thoughts and decisions that we make. It corresponds to the "what" and the "how." When the surgeon-leader in the previous example started with the checklist and its rational arguments, the leader was appealing to their team's neocortex, and the vision was rejected. However, when the surgeon started with the "why," the vision for better patient care was emotionally accepted by the team, who became receptive to the checklist as a tool for achieving the vision.[13]

Surgery is a field that requires extraordinary dedication and great personal sacrifice. The very nature of vision—steps forward into a better future—implies that change and difficult work will be required of the leader. See figure 1-7. For this reason, surgeon-leaders should establish visions about which they are deeply passionate and committed so that when obstacles are encountered the leader has the strength of will to progress forward. Leaders should be selective about which options they pursue. Each opportunity and idea requires great effort to execute; ultimately only a few can be brought to completion. Therefore, leaders should understand what drives their organization's economic engine: the ideas and opportunities that will bring patients better care, bring the organization more patients, and create new treatments, etc. Thousands of hospitals, companies, innovators, and physicians are addressing many of the same problems in healthcare, such as growing burdens of chronic disease, an aging population, and rising health costs. The best opportunities lie where talent and ability align, so leaders and organizations should be cognizant of choosing projects for which they have the potential to be the "best in the world" at doing. Once the vision is set and the project is chosen, it is up to the leader to generate momentum.

Momentum is either a cumulative effect of continuous steps towards improvement or, alternatively, in the negative sense, movements towards failure or stagnation. The "flywheel effect," depicted in Fig. 1-8, demonstrates the building of momentum with (a) initial steps forward, (b) an accumulation of visible results, (c) realignment of the team in the new direction (accounting for new information and data), and then (d) an accumulation of momentum followed by more steps forward. Careful attention to the aforementioned principles is essential in building a successful surgical career, department, or division.[8]
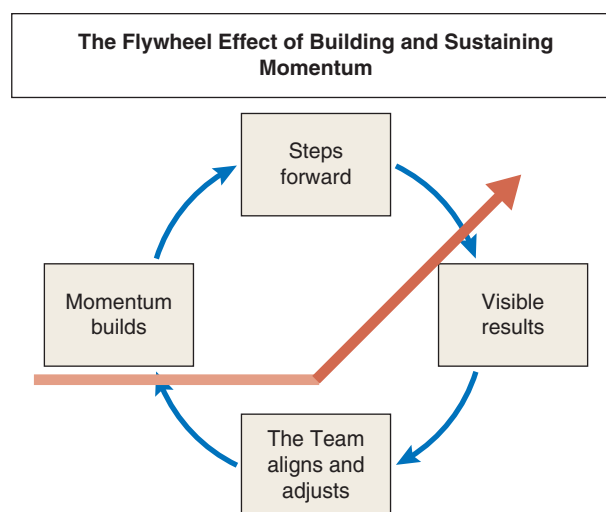
Willingness

The Willingness Principle represents the active commitment of the leader toward his or her vision. To do so, a surgical leader must be willing to lead, commit to lifelong learning, communicate effectively, and resolve conflict.

To Lead. A key characteristic of all great leaders is the willingness to serve as the leader. Dr. Martin Luther King Jr, who championed the civil rights movement with a powerful vision of equality for all based on a commitment to nonviolent methods,[14] did so at a time when his vocalization of this vision ensured harassment, imprisonment, and threats of violence against himself, his colleagues, and his family and friends (Fig. 1-9). King, a young, highly educated pastor, had the security of employment and family, yet was willing to accept enormous responsibility and personal risk and did so in order to lead a nation toward his vision of civil rights, for which he was awarded the Nobel Peace Prize in 1964.

Willingness to lead is a necessity in any individual who desires to become a surgeon. By entering into the surgical theater, a surgeon accepts the responsibility to care for and operate on patients, despite the risks and burdens involved. They do so, believing fully in the improved quality of life that can be achieved. Surgeons must embrace the responsibility of leading surgical teams that care for their patients, as well as leading surgical trainees to become future surgeons. A tremendous sacrifice is required for the opportunity to learn patient care. Surgical trainees accept the hardships of residency with its accompanying steep learning curve, anxiety, long work hours, and time spent away from family and friends. The active, passionate commitment to excellent patient care reflects a natural willingness to lead based on altruism and a sense of duty toward those receiving care. Thus, to ensure delivery of the utmost level of care, surgical trainees should commit to developing and refining leadership skills. These skills include a commitment to lifelong learning, effective communication, and conflict resolution.

3▶

To Learn. Surgeons and surgical trainees, as leaders, must possess willingness to commit to continuous learning. Modern surgery is an ever-changing field with dynamic and evolving healthcare systems and constant scientific discovery and innovation. Basic and translational science relating to surgical care is growing at an exponential rate. The sequencing of the human

techniques, including the use of robotic surgery. The field continues to advance, offering many advantages to patients including faster recovery, sometimes decreased pain depending on procedure type, and shorter hospital stays.[16-18]

Fortunately, surgical organizations and societies provide surgeons and surgical trainees a means to acquire new knowledge on a continuous basis. There are numerous local, regional, national, and international meetings of surgical organizations that provide ongoing continuing medical education credits, also required for the renewal of most medical licenses. The American Board of Surgery requires all surgeons to complete meaningful continuing medical education to maintain certification.[19] These societies and regulatory bodies enable surgeons and surgical trainees to commit to continual learning and ensure their competence in a dynamic and rapidly growing field.

Surgeons and trainees now benefit from the rapid expansion of web-based education as well as mobile handheld technology. These are powerful tools to minimize nonproductive time in the hospital and make learning and reinforcement of medical knowledge accessible. Currently web-based resources provide quick access to a vast collection of surgical texts, literature, and surgical videos. Surgeons and trainees dedicated to continual learning should be well versed in the utilization of these information technologies to maximize their education. The next evolution of electronic surgical educational materials will likely include simulation training similar to laparoscopic and Da Vinci device training modules. The ACGME, acknowledging the importance of lifelong learning skills and modernization of information delivery and access methods, has included them as program requirements for residency accreditation.

To Communicate Effectively. The complexity of modern healthcare delivery systems requires a higher level and collaborative style of communication. Effective communication directly impacts patient care. In 2000, the U.S. Institute of Medicine published *To Err Is Human: Building a Safer Health System*, which raised awareness concerning the magnitude of medical errors. This work showcased medical errors as the eighth leading cause of death in the United States with an estimated 100,000 deaths annually.[20] Subsequent studies examining medical errors have identified communication errors as one of the most common causes of medical error.[21-23] In fact, the Joint Commission identifies miscommunication as the leading cause of sentinel events. Information transfer and communication errors cause delays in patient care, waste surgeon and staff time, and cause serious adverse patient events.[23] Effective communication among surgeons, nurses, ancillary staff, and patients is not only a crucial element to improved patient outcomes, but it also leads to less medical litigation.[24-26] A strong correlation exists between communication and patient outcomes.

Establishing a collaborative atmosphere is important since communication errors leading to medical mishaps are not simply failures to transmit information. Communication errors "are far more complex and relate to hierarchical differences, concerns with upward influence, conflicting roles and role ambiguity, and interpersonal power and conflict."[22,27-29] Errors frequently originate from perceived limited channels of communication and hostile, critical environments. To overcome these barriers, surgeons and surgical trainees should learn to communicate in an open, universally understood manner and remain receptive to any team member's concerns. A survey of physicians, nurses, and ancillary staff identified effective communication as a key element of a successful leader.[30] As

Figure 1-9. Dr. Martin Luther King Jr acknowledges the crowd at the Lincoln Memorial for his "I Have a Dream" speech during the March on Washington, D.C., August 28, 1963. *(Reproduced with permission from AP Photo. © 2018 The Associated Press.)*

genome and the enormous advances in molecular biology and signaling pathways are leading to the transformation of precision medicine and personalized surgery in the 21st century (see Chapter 15).[15] Performing prophylactic mastectomies with immediate reconstruction for *BRCA1* mutations and thyroidectomies with thyroid hormone replacement for *RET* proto-oncogene mutations are two of many examples of genomic information guiding surgical care. Technologic advances in minimally invasive surgery and robotic surgery as well as electronic records and other information technologies are revolutionizing the craft of surgery. The expansion of minimally invasive and endovascular surgery over the past three decades required surgeons to retrain in new techniques using new skills and equipment. In this short time span, laparoscopy and endovascular operations are now recognized as the standard of care for many surgical diseases, resulting in shorter hospital stay, quicker recovery, and a kinder and gentler manner of practicing surgery. Remarkably, during the last century, the field of surgery has progressed at an exponential pace and will continue to do so with the advent of using genomic analyses to engineer cancer cells with molecular imaging agents that will guide personalized surgery, which will transform the field of surgery during this century. Therefore, surgical leadership training should emphasize and facilitate the continual pursuit of knowledge.

Willingness to learn encompasses the surgeon's commitment to lifelong learning. This has been exemplified by the surgeons of the past several decades who have dedicated their peak practicing years to perfecting minimally invasive surgical

leaders, surgeons, and surgical trainees who facilitate an open, effective, and collaborative style of communication can reduce errors and enhance patient care. A prime example is that successful communication of daily goals of patient care from the team leader improves patient outcomes. In one recent study, the modest act of explicitly stating daily goals in a standardized fashion significantly reduced patient length of intensive care unit stay and increased resident and nurse understanding of goals of care.[31] Implementing standardized daily team briefings in the wards and preoperative units led to improvements in staff turnover rates, employee satisfaction, and prevention of wrong-site surgery.[27] In cardiac surgery, improving communication in the operating room and transition to the postanesthesia care unit was an area identified to decrease risk for adverse outcomes.[32] Behaviors associated with ineffective communication, including absence from the operating room when needed, playing loud music, making inappropriate comments, and talking to others in a raised voice or a condescending tone, were identified as patient hazards; conversely, behaviors associated with effective collaborative communication, such as leading the time-out process and closed-loop communication technique, resulted in improved patient outcomes.

One model to ensure open communication is through standardization of established protocols. A commonly accepted protocol is the "time out" that is now required in the modern operating room. During the time-out protocol, all team members introduce themselves and state a body of critical information needed to safely complete the intended operation. This same standardization can be taught outside the operating room. Within the Kaiser system, certain phrases have been given a universal meaning: "I need you now" by members of the team is an understood level of urgency and generates a prompt physician response 100% of the time.[27] As mentioned earlier, standardized forms can be useful tools in ensuring universally understood communication during sign-out. The beneficial effect of standardized team communication further demonstrates how effective communication can improve patient care and is considered a vital leadership skill.

Effective communication with patients in the modern era, necessitates understanding that many patients access health information via the internet and that patients are often ill equipped to evaluate the individual source.[33,34] Discrepancies exist between surgeon's self-perceived ability to communicate and patient's actual satisfaction. A patient's perceived interaction with their physician has an enormous impact on patient health outcomes, malpractice, and financial reimbursement;[35-40] specifically, the association between poor doctor–patient communication and a patient's perception that their doctor does not care about them. Good bedside manner has been shown to decrease litigation even in situations of error or undesirable outcome.[39-40] Physicians who demonstrate concern, actively know their patients, and share responsibility for decision-making are more likely to be trusted by their patients.[26,41,42] Strong doctor–patient relationships and effective communication skills have been incentivized by the Agency for Healthcare Research and Quality and the Centers for Medicare & Medicaid Services through their Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) and Clinical and Group Consumer Assessment of Healthcare Providers and Systems (CGCAHPS) programs, which measure patient satisfaction.[43]

To Resolve Conflict. Great leaders are able to achieve their vision through their ability to resolve conflict. Delivery of modern surgical care is complex; numerous conflicts arise on a daily basis when surgeons and surgical trainees provide high-quality care. Therefore, the techniques for conflict resolution are essential for surgical leaders.

To properly use conflict resolution techniques, it is important for the surgeon and surgical trainee to always remain objective and seek personal flexibility and self-awareness. The gulf between self-perception and the perception of others can be profound; in a study of cooperation and collaboration among operating room staff, the quality of their own collaboration was rated at 80% by surgeons, yet was rated at only 48% by operating room nurses.[44] Systematic inclusion of modern conflict resolution methods that incorporate the views of all members of a multidisciplinary team help maintain objectivity. Reflection is often overlooked in surgical residency training, but it is a critical component of learning conflict resolution skills. Introspection allows the surgeon to understand the impact of his or her actions and biases. Objectivity is the basis of effective conflict resolution, which can improve satisfaction among team members and help deliver optimal patient care.

Modern conflict resolution techniques are based on objectivity, willingness to listen, and pursuit of principle-based solutions.[45] For example, an effective style of conflict resolution is the utilization of the "abundance mentality" model, which attempts to achieve a solution that benefits all involved and is based on core values of the organization, as opposed to the utilization of the traditional fault-finding model, which identifies sides as right or wrong.[46] Application of the abundance mentality in surgery elevates the conflict above the affected parties and focuses on the higher unifying goal of improved patient care. "Quality Improvement" (previously or alternatively "Morbidity and Mortality") conferences are managed in this style and have the purpose of practice improvement and improving overall quality of care within the system, as opposed to placing guilt or blame on the surgeon or surgical trainees for the complication being reviewed. The traditional style of command-and-control technique based on fear and intimidation is no longer welcome in any healthcare system and can lead to sanctions, lawsuits, and removal of hospital privileges or position of leadership.

Another intuitive method that can help surgical trainees learn to resolve conflict is the "history and physical" model of conflict resolution. This model is based on the seven steps of caring for a surgical patient that are well known to the surgical trainee[47]: (a) the "history" is the equivalent of gathering subjective information from involved parties with appropriate empathy and listening; (b) the "laboratory/studies" are the equivalent of collecting objective data to validate the subjective information; (c) a "differential diagnosis" is formed out of possible root causes of the conflict; (d) the "assessment/plan" is developed in the best interest of all involved parties; the plan, including risks and benefits, is openly discussed in a compassionate style of communication; (e) "preoperative preparation" includes the acquisition of appropriate consultations for clearances, consideration of equipment and supplies needed for implementation, and the "informed consent" from the involved parties; (f) the "operation" is the actual implementation of the agreed-upon plan, including a time-out; (g) and "postoperative care" involves communicating the operative outcome, regular postoperative follow-up, and the correction of any complications that arise. This seven-step method is an example of an objective, respectful method of conflict resolution.[47] Practicing different styles of conflict resolution and effective communication in front of the entire group of
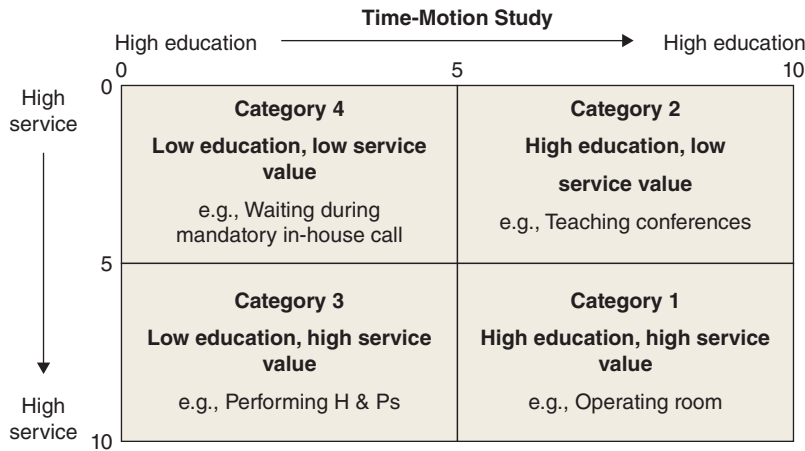
Time-Motion Study

High education → High education

0   5   10

Figure 1-10. Surgery resident time-motion study. H & P = history and physical examination.

Time Management

It is important for leaders to practice effective time management. Time is the most precious resource, as it cannot be bought, saved, or stored. Thus, management of time is essential for a productive and balanced life for those in the organization. The effective use of one's time is best done through a formal time management program to improve one's ability to lead by setting priorities and making choices to achieve goals. The efficient use of one's time helps to improve both productivity and quality of life.[48-50]

It is important for surgeons and surgical trainees to learn and use a formal time-management program. There are ever-increasing demands placed on surgeons and surgical trainees to deliver the highest quality care in highly regulated environments. Furthermore, strict regulations on limitation of work hours demand surgical trainees learn patient care in a limited amount of time.[48-50] All told, these demands are enormously stressful and can lead to burnout, drug and/or alcohol abuse, and poor performance.[48-50] A time-motion study of general surgery trainees analyzed residents' self-reported time logs to determine resident time expenditure on educational/service-related activities (Fig. 1-10).[50] Surprisingly, senior residents were noted to spend 13.5% of their time on low-service, low-educational value activities. This time, properly managed, could be used to either reduce work hours or improve educational efficiency in the context of new work hour restrictions. It is therefore critical that time be used wisely on effectively achieving one's goals.

Parkinson's law, proposed in 1955 by the U.K. political analyst and historian Cyril Northcote Parkinson, states that work expands to fill the time available for its completion, thus leading individuals to spend the majority of their time on insignificant tasks.[51] Pareto's 80/20 principle states that 80% of goals are achieved by 20% of effort and that achieving the final 20% requires 80% of their effort. Therefore, proper planning for undertaking any goal needs to include an analysis of how much effort will be needed to complete the task.[49] Formal time management programs help surgeons and surgical trainees better understand how their time is spent, enabling them to increase productivity and achieve a better-balanced lifestyle.

Various time allocation techniques have been described.[49] A frequently used basic technique is the "prioritized list," also known as the ABC technique. Individuals list and assign relative values to their tasks. The use of the lists and categories serves solely as a reminder, thus falling short of aiding the user in allocating time wisely. Another technique is the "time management matrix technique."[49] This technique plots activities on two axes: importance and urgency, yielding four quadrants (Fig. 1-11). Congruous with the Pareto's 80/20 principle and Parkinson's law, the time management matrix technique channels efforts into quadrant II (important but nonurgent) activities. The activities in this quadrant are high yield and include planning, creative activity, building relationships, and maintaining productivity. Too often, surgeons spend a majority of their time attending to quadrant I (important and urgent) tasks. Quadrant I tasks include emergencies and unplanned or disorganized situations that require intensive and often inefficient effort. While most surgeons and surgical trainees have to deal with emergencies, they often develop the habit of inappropriately assigning activities into quadrant I; excess time spent on quadrant I tasks leads to stress or burnout for the surgeon and distracts from long-term goals. Efficient time management allows surgeons and surgical trainees to be proactive about shifting energy from quadrant I tasks to quadrant II, emphasizing preplanning and creativity over always attending to the most salient issue at hand, depending on the importance and not the urgency.

Finally, "the six areas of interest" is an alternative effective time management model that can help surgeons and surgical trainees achieve their goals, live a better-balanced lifestyle, and improve the quality of their lives.[49] The process begins by performing a time-motion study in which the activities of 6-hour increments of time over a routine week are chronicled. At the end of the week, the list of activities is analyzed to determine how the 168 hours in 1 week have been spent. The surgical trainee then selects six broad categories of areas of interest
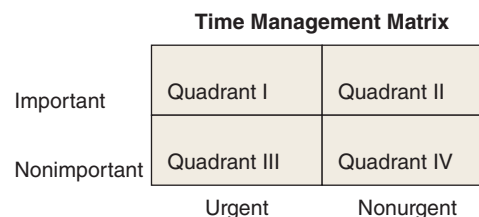
Time Management Matrix

Figure 1-11. Time management. (*Data from Covey S. The Seven Habits of Highly Effective People. New York, NY: Simon & Schuster; 1989.*)

(i.e., family, clinical care, education, health, community service, hobbies) and sets a single activity goal in each category every day and monitors whether those goals are achieved. This technique is straightforward and improves one's quality of life by setting and achieving a balanced set of goals of personal interest, while eliminating time-wasting activities.

A formal time management program is essential for modern leadership. The practice and use of time management strategies can help surgeons and surgical trainees achieve and maintain their goals of excellent clinical care for their patients, while maintaining a more balanced lifestyle.

Self-Care and Wellness

The challenges of practicing medicine place unique stresses on surgeons. A departmental program for improving wellness and teaching self-care can help alleviate these stresses. Acknowledging these stresses is an important step for any leader to help peers at risk. Quality of life surveys have identified individual protective factors that can be implemented prophylactically. These factors for improving self-care and wellness include regular exercise programs, maintenance of routine medical care, and health screening. The following may not apply to all physicians; however, religious practices, reflective writing, and maximizing work-life balance have also been demonstrated to be protective.[52]

Surgeons and physicians overall experience increased rates of suicide, depression, substance abuse, marital and family problems, and other stress-related health effects as compared to the general population. Suicide rates in physicians are higher among those who are divorced, widowed, or never married. Depression is a common challenge, with rates as high as 30% among trainees, and higher when lifetime risk is considered. Drug and alcohol abuse among physicians mirrors the general population; however, physicians have higher rates of prescription drug abuse. The ability to self-medicate likely contributes to prescription drug abuse by physicians. Divorce and marriage unhappiness among physicians has been attributed to the "psychology of postponement," compulsive personality traits that are reinforced and selected for during medical training, and lack of work-life balance. Residents, due to their inexperience, may be at higher risk than practicing physicians. For physicians who do not seek professional help, fear of losing their medical license is the most commonly provided reason. Departmental wellness programs may provide an alternative source of support for these surgeons.[52-54]

The past 10 years have seen a significant increase in attention to the issue of physician wellness. Physician wellness has become an issue transcending specialties and resulting in significant research. The creation of wellness and self-care programs within departments represents an opportunity for surgeons to demonstrate leadership qualities.[52-54]

Recruitment

The challenges of modern medicine and ever-larger medical centers have created a reality where no single surgeon-leader can exercise complete control—it takes a team of leaders with shared vision, mission, and goals. To this end, the previously discussed "level 5 leader" who embodies personal humility and professional will is essential.[8] Previous generations whose leaders and departments were composed of self-proclaimed giants dominated and suppressed alternative points of view, communication, and innovation. In recent years, there has been a change to building teams with authentic leaders who have high ethical standards and well-developed nontechnical skills, who lead by example, and who never compromise excellence. The surgeon-leader must build a team where talented individuals are placed in the right job for their skills. The essence of a leader is one who enables others to succeed. Team work is imperative to change, and trust is the make-or-break component. Simply put, teams that trust each other work well, and teams that do not trust each other do not work well.[9]

Creating a Culture of Empathy, Patient-Family-Centered Care, and Personalized Surgery

Creating the right culture is the most challenging of all the surgeon-leader's tasks. Modern surgical departments should focus on creating a culture of empathy, patient–family-centered care, and personalized surgery. Instilling a positive culture requires both discipline and consistency because it may take considerable time to change how people think, feel, and behave.[9,55,56] Organizational culture is built around the leader's vision and values. Coming up with strong values requires genuine commitment. A leader should realize that staying true to his or her values can be challenging when conflicts arise.[57]

WHY WE LEAD

Choosing to Become a Leader

There are many benefits to becoming a leader. Humankind has pondered the question of whether leaders are born or made for millennia. The best evidence to date indicates that leaders are both born and made. Leadership potential is a skill that all persons are born with, to some degree, and that can be formally trained, learned through observation, and honed with practice.[13] The positive effects of a leader on others are innumerable, including a leader's positive influence on innovation, diversity, culture, and quality. For modern surgeons, leadership skills are essential for the delivery of quality patient care; therefore, it is the duty of the surgeon to study leadership.

For the surgeon studying to be a better leader, effective leadership also has many individual benefits, including recognition from one's peers, promotion, and autonomy. Modern leaders are increasingly required to be humble about their accomplishments in order to be successful and effective.[8] Beyond recognition, promotion, and autonomy there are more selfless reasons for surgeons to desire leadership. Leadership is a tool to help make a difference. Leadership is a good path towards a career as an educator, which offers the leader a sense of accomplishment and satisfaction in seeing others succeed. Some choose to become leaders out of a sense of selfless service, taking on leadership for the benefit of others, or out of a desire to solve problems. Leadership may come with material rewards, including wealth and power, which motivate some.

Whatever the motivation, surgeons, in their role as leaders of patient care teams, have a duty to develop some skill in leadership. It would be best for individuals, departments, and patients if all surgeons sought to develop leadership skills and experience in some area of administration, patient care, education, or research. The benefits to the individual are numerous.

Leadership's Effect on Healthcare Cost and Clinical Outcomes

Much attention has rightly been paid to historical leaders' impact on humanity. Surgical leaders of the past have made great contributions on which we may build. All surgeons have a responsibility to be leaders, whether at the team level or in

an administrative or organizational capacity. To that end, it is worth noting the benefits of formal leadership education.

Large observational studies using trained observers assessed the effects of different surgical leadership styles on operative cases. Team cohesion and collective efficiency were reduced when leaders utilized abusive supervision or over-controlling methods. Abusive supervision alone was associated with decreased "psychological safety."[58] Surgeons perceived as having positive leadership characteristics by their staff have lower 30-day all-cause mortality.[59] This is likely due to creating a culture of safety where the staff can speak up if they notice an error and feel they have the latitude to do what is best for the patient quickly and autonomously.[59,60]

With increased recognition and attention on human error, nontechnical skills, including leadership, play a role in patient safety. The landmark study, "To Err Is Human," estimated that almost 100,000 people die each year due to medical errors.[20] In the surgical setting, 40% to 50% of errors may be attributed to communication breakdown. The Multifactor Leadership Questionnaire scores subjects on their demonstration of transformational leadership behaviors. Transformational leaders exhibit the qualities of charisma, inspired motivation, intellectual stimulation, and individualized consideration. In video analysis of complex surgical operations, surgeons scoring even a single point higher on the transformational leadership score exhibited 3 times more information sharing behaviors, 5 times more positive voice behaviors, and 10 times more supportive behaviors, all while displaying poor behaviors 12.5 times less frequently than their peers.[60] Exhibiting the characteristics of transformational leadership clearly has much to offer the surgeon-leader in preventing serious errors.[58-60]

The field of trauma contains the largest body of formal study demonstrating the positive effects of leadership on clinical results. Strong leadership skills improve both the speed of resuscitation and completion of the initial trauma evaluation.[61-63] There is no one optimal style of leadership covering all situations; some call for a more empowering leadership style while others call for a more directive style. The optimal style of leadership varies based on team composition, with less experienced teams better responding to the directive style, while more experienced teams work faster with trust and an empowering style. The formally educated surgical leader should be able to switch easily between styles based on the situation at hand.[56,58,60-64]

Leadership styles affect responses to patient safety concerns and protect the organization as a whole. The surgical leader adopts a supervisory capacity while creating a culture of safety. In detail, frontline staff must be encouraged to participate in safety improvement. Staff ownership of safety must be established and upheld. In order to assure this outcome, whistleblowers must be protected. A culture of psychological safety, organizational fairness, and continuous learning is required. Subordinates require appropriate authority, autonomy, and latitude to do their jobs and care for patients.[60]

Formal leadership training has been well studied within the Veteran's Health Administration system using the Surgical Care Improvement Program. The Medical Team Training Program, for instance, has been shown to result in a 18% decrease in 30-day mortality[65] and a 17% decrease in 30-day morbidity.[66]

Also at the organizational level, leaders using an empowering style may improve process of care protocols and increase efficiency. Operating room turnover times specifically have been shown to be reducible.[67] Value-based purchasing benchmarks, such as hospital-acquired infections, which affect reimbursement, can be reduced or eliminated depending on the measure.[68,69] Medical errors may be reduced, and significant medical errors may have their effects mitigated. Patient satisfaction may be improved. The overall financial performance of the institution can be affected in a positive manner.[69,70]

There are positive correlations between mutual respect, clinical leadership, and surgical safety. Traditional command and control style leadership negatively impacts psychological safety resulting in the development of more modern leadership styles. The best clinical processes have the potential to break down when there is a toxic work environment and lack of psychological safety within the team.

The Importance of Diversity and Leadership

The past quarter century has seen a steady increase in diversity within the field of surgery. Women, as of 2015, represent 38% of surgical trainees and 10% of academic professors currently, but have doubled their representation in the past 20 years.[71] Some fields, such as head and neck surgery and plastic surgery[72] have studied their own subspecialty groups with similar findings. African Americans comprise both 6% of medical school graduates, 6% surgical trainees, and 2% to 4% of professors of surgery nationwide.[73] Hispanics represent 5% of graduating medical students, 9% of general surgery trainees, and 4% to 5% of persons at all levels of academic surgery.[73] Physician diversity is crucial and may help to address disparities in social determinants of health.[74]

Studies indicate that the bottleneck in diversity occurs at the level of the medical school application pool, which in turn is caused by educational deficiencies at the primary, secondary, and collegiate level.[73,75-78] As an attempted solution, the University of Michigan developed a "pipeline" program that pairs grade-school and high-school students with physicians for experiential learning and the development of mentoring, presentation skills, and networking.[75] It is important for departments of surgery to develop a diversity program for recruitment of residents and faculty. Multi-institutional blinded studies indicate that the implementation of formal leadership and diversity training improves diversity leadership and strategic human resource management.[74,78]

LEADERSHIP STYLES

The principles of leadership can be practiced in a variety of styles. Just as there are many definitions of leadership, many classifications of styles exist as well. A landmark study by Daniel Goleman in *Harvard Business Review* identified six distinct leadership styles, based on different components of emotional intelligence.[79] Emotional intelligence is the ability to recognize, understand, and control the emotions in others and ourselves. By learning different styles, surgeons and trainees can recognize their own leadership style and the effect on the team dynamic. Furthermore, it teaches when the situation may demand change in style for the best outcome. The six leadership styles identified are *coercive, authoritative, affiliative, democratic, pacesetting,* and *coaching*.

The *coercive* leader demands immediate compliance. This style reflects the command and control style that has historically dominated surgery. Excessive coercive leadership erodes team members' sense of responsibility, motivation, sense of participation in a shared vision, and ultimately, performance. The phrase, "Do what I tell you!" brings to mind the coercive leader. However, it is effective in times of crisis to deliver clear,

concise instruction. This style should be used sparingly and is best suited for emergencies.

The *authoritative* leader embodies the phrase "Come with me," focusing on mobilizing the team toward a common, grand vision. This type of leader allows the team freedom to innovate, experiment, and devise its own means. Goleman's research indicates this style is often the most effective. These leaders display self-confidence, empathy, and proficiency in initiating new ideas and leading people in a new direction. This is best used when a shift in paradigm is needed.

The *affiliative* leader creates harmony and builds emotional bonds. This requires employment of empathy, building relationships, and emphasis on communication. An affiliative leader frequently gives positive feedback. This style can allow poor performance to go uncorrected if too little constructive/critical advice is given. Affiliative leadership is most useful when motivating people during stressful circumstances or healing rifts in a team.

The *coaching* style of leadership focuses on developing people for the future. Coaching is leadership through mentorship. The coach gives team members challenging tasks, counsels, encourages, and delegates. Unlike the affiliative leader who focuses on positive feedback, the coach helps people identify their weaknesses and improve their performance, and ties their work into their long-term career aspirations. This leadership style builds team capabilities by helping motivated learners improve. However, this style does not work well when team members are defiant and unwilling to change or learn, or if the leader lacks proficiency.

The *democratic* leader forges consensus through participation. This leadership style listens to and values each member's input. It is not the best choice in an emergency situation, when time is limited, or when teammates cannot contribute informed guidance to the leader. It can also be exasperating if a clear vision does not arise from the collaborative process. This style is most appropriate when it is important to obtain team consensus, quell conflict, or create harmony.

The *pacesetter* leader sets high standards for performance and exemplifies them. These leaders identify poor performers and demand more from them. However, unlike the coach, the pacesetter does not build the skills of those who are not keeping up. Rather, a pacesetter will either take over the task himself or delegate the task to another team member. This style can be summed up best by the phrase, "Do as I do, now." This leadership style works well when it is important to obtain high-quality results and there is a motivated, capable team. However, pacesetters can easily become micromanagers who have difficulty delegating tasks to team members, which leads to burn out on the part of the leader. Additionally, team members can feel overwhelmed and demoralized by the demands for excellence without an empathic counter balance.

Each of the above styles of leadership has strengths and weakness. Importantly, leaders who are the most successful do **7▶** not rely only on one leadership style alone. They use several of them seamlessly depending on the situation and the team members at hand. Therefore, the more styles a leader has mastered, the better, with particular emphasis on the authoritative, affiliative, democratic, and coaching styles. Each leadership style is a tool that is ultimately employed to guide a team to realizing a vision or goal. Thus, leadership training programs should teach the proper use of all leadership styles while adhering to the principles of leadership.

FORMAL LEADERSHIP TRAINING PROGRAMS IN SURGERY

History of Leadership Training and the Multifactor Leadership Questionnaire

Since it has been shown that effective leadership can improve patient outcomes, leadership principles and skills should be taught to surgical trainees using formal leadership training programs. The importance of teaching leadership skills is reflected by the ACGME mandated core competencies (see Table 1-1). However, surgical trainees, most notably chief residents, find themselves in various leadership roles without ever having experienced formalized leadership training, which has been shown to result in a self-perceived lack of leadership ability.[2] When surveyed on 18 core leadership skills (Table 1-3), 92% of residents rated all 18 skills as important, but over half rated themselves as "minimally" or "not competent" in 10 out of 18 skills.[2] Increasingly, residents and junior faculty are requesting leadership training and wish to close the gap between perceived need for training and the implementation of formal leadership training programs.[80-86]

A number of leadership workshops have been created. Extracurricular leadership programs have been designed mostly

Table 1-3

Eighteen leadership training modules

SKILLS	IMPORTANCE MEAN SCORE	COMPETENCE MEAN SCORE*
Academic program development	3.2	2.4*
Leadership training	3.8	2.3*
Leadership theory	3.2	2.1*
Effective communication	3.7	2.7*
Conflict resolution	3.8	3*
Management principles	3.7	2.7*
Negotiation	3.7	2.8*
Time management	4	2.8*
Private or academic practice, managed care	3.6	2*
Investment principles	3.5	2.2*
Ethics	3.6	3.2
Billing, coding, and compliance	3.5	1.7*
Program improvement	3	2*
Writing proposals	3.3	2.2*
Writing reports	3.4	2.4*
Public speaking	3.7	2.7*
Effective presentations	3.7	2.7*
Risk management	3.5	2.1*
Total	3.6	2.5*

*$P < 0.001$ by Student t-test between mean importance and mean competence scores.

Reproduced with permission from Itani KMF, Liscum K, Brunicardi FC: Physician leadership is a new mandate in surgical training, *Am J Surg*. 2004 Mar;187(3):328-331.

for physicians with an MBA or management background but have not been incorporated into the core residency training program.[80] Also, there are many institutions that have published experiences with leadership retreats or seminars for residents or young physicians.[81-84] The ACGME hosts multiple leadership skills workshops for chief residents, mostly targeted toward pediatricians, family practitioners, and psychiatrists.[85] Similarly, the American College of Surgeons leads an annual 3-day leadership conference focusing on leadership attributes, consensus development, team building, conflict resolution, and translation of leadership principles into clinical practice.[86-87] These programs were all received well by participants and represent a call for a formal leadership program for all surgical trainees.

An innovative leadership curriculum first implemented in 2000, prior to work-hour restrictions, taught general surgery trainees' collaborative leadership skills at a time when the traditional command-and-control leadership style predominated.[2,89,90] Surgical residents participated in 18-hour-long modules based on the leadership principles and skills listed in Table 1-2, taught by the surgical faculty. A number of leadership techniques, including time management techniques and applied conflict resolution techniques described earlier, were designed and implemented as part of this leadership training program. Within 6 months of implementation, residents' self-perceived total commitment to the highest personal and professional standards, communication skills, visualization of clear missions of patient care, and leadership of others toward that mission increased significantly.[2,89,90] Remarkably, the positive impact of this leadership curriculum was significant when measured using tools, such as the Multifactor Leadership Questionnaire (MLQ), social skills inventory, personality inventory, and internal strength scorecard.[2,89,90] The MLQ is a well-validated instrument that objectively quantifies leadership beliefs and self-perceived outcomes across medical and nonmedical disciplines. Based on the MLQ, surgical residents more often use a passive-avoidance style of leadership that emphasizes taking corrective action only after a problem is "significant and obvious." This tool can also be used to track progress toward more effective, collaborative styles of leadership. These studies demonstrated the ability to measure leadership behavior of surgical trainees in a standardized, quantifiable format.[2,89,90] Taken together, these studies support the concept that leadership skills can and should be taught to surgical trainees, and there are validated tools to measure outcomes.

8▶

Designing the Program

Success in designing a formal leadership development program can be achieved through the following method. First, select the right participants at the right time in their career. Junior surgeons new to practice are ideal; however, they should be given a chance to get their clinical and research interests off the ground before they are asked to lead others. Candidates, should be open to taking on leadership roles and have the right combination of introspection and humility that lends to professional development. High-quality speakers from the business, legal, creative, and medical worlds should be brought as guest speakers. Topics could include leadership overall, strategy, finance, management skills, feedback, and coaching. Constructive criticism is essential because prospective leaders will need guidance and mentoring. Surgeons who have been through a formal leadership training program will become proficient at team-building skills and management and will become self-empowered individuals.[91]

Formal leadership training is not restricted to faculty alone. Leadership training should begin early and continue throughout residency. Surgical residents' leadership styles have been studied in environments where they are given an assistant to supervise, as if they were an attending. Most residents were able to adapt to difficult operative challenges, in this setting, by providing a more directed style of leadership to their assistants. When faced with a less challenging task, or when the surgery resident's confidence was particularly high, their leadership score was also high. For the surgical resident preparing to move on to the attending level, such skills are necessary to develop.[92]

Nontechnical surgical skills, such as leadership, demonstrate a number of desired effects for the operative team. Patient safety, including all cause 30-day mortality, is improved by stronger nontechnical skills.[59] Development of clear and effective communication, situational awareness, team skills, and decision-making all are correlated with reduced surgical errors. Interruptions, such as needing to answer a page during an operation, are the only nontechnical factors in surgical error that are not directly attributable to leadership style.[93]

Surgical leaders have a responsibility to make ethical decisions. At this time, there is no standard curriculum to formally train surgical residents in ethics, despite interest from a majority of residency program directors.[94-97] Several solutions have been proposed. A case-based approach to ethics training appears to have some merit, where monthly hour long ethical dilemmas are discussed in an informal, nonhierarchical setting.[98] In another study, an ICU-based simulation model demonstrated promise for teaching compassion and end-of-life ethics to surgical residents. In this model, surgery residents have their first end-of-life conversations with standardized patients simulating the surgical ICU environment.[99,100]

Practicing Leadership Skills and Assessing Leadership Formally With Objective Structured Clinical Examination (OSCE) and Simulation

The past decade has seen a demonstrable increase in our knowledge of how to develop leadership skills, particularly through simulation, as well as leadership evaluation through OSCE and other tools. Multiple groups have assessed multidisciplinary teams, typically composed of nurses, anesthesia groups, and surgeons for the leadership associated nontechnical skills of communication, teamwork, and situational awareness. Through increasingly validated instruments and assessment tools, these nontechnical skills have been found to be trainable.[101] The OSCE has been established as the gold standard[102] for the training and assessment of a wide range of clinical and nontechnical skills with high reliability and validity.[103-106]

The OSCE was developed by Harden, at the Ninewells Hospital in Dundee, Scotland, and first published in 1975.[107] He subsequently coined the term "OSCE" in his 1979 publication "Assessment of Clinical Competence Using an Objective Structured Clinical Examination (OSCE)."[108] The purpose of the OSCE was to address the lack of a reliable method to evaluate the clinical abilities of physicians and featured a comprehensive assessment of history-taking and physical examination skills. Early versions also assessed nontechnical skills, patient interaction, and professionalism. Since its inception, the OSCE has matured, been subjected to rigorous tests of reliability and validity, and has seen widespread adoption.[109-111]

OSCEs remain a critical portion of resident evaluation. They have been well validated for teaching leadership skills in

trauma and interacting with simulated patients in difficult scenarios. OSCEs can be tailored to a variety of circumstances, including practicing breaking bad news or discussing end of life care, dealing with angry or aggressive patients, and simulating disagreements with other providers or family members.[109-112] The potential for OSCEs to train, test, and perfect nontechnical skills, such as leadership, is extraordinary.

A pilot project for the Medical Council of Canada was conducted by the University of Toronto and published in 1988 describing the use of an OSCE for evaluating the clinical skills of international medical graduates applying to Canadian residency.[113] Effective communication and language proficiency have been key components since the beginning. A comprehensive review of this program 2 years later confirmed the reliability and validity of using an OSCE for this purpose.[114] The Medical Council of Canada has subsequently mandated a requirement for an OSCE evaluation of all international graduates applying for positions in Canada. In place for the past two decades, the program has ensured a baseline proficiency of skill, attitude, knowledge, and other nontechnical skills.[115]

OSCEs quickly gained acceptance as an established tool to assess learners in a comprehensive manner and became the inspiration for the creation of the USMLE Step 2 Clinical Skills (CS) examination, required for all U.S. medical students prior to licensure.[116] Indeed, medical students whose schools use OSCE as practice do better on USMLE Step 2.[117] The USMLE Step 2 CS examination meets the criteria, discussed in the following section, for a thorough and well-designed OSCE examination, due to its 12-station design which takes 8 hours to complete. It has been found to be a valid and comprehensive evaluation of a student's clinical abilities, admittedly at massive expense to medical students.[118] In the United States, osteopathic medical students take the OSCE-style Level 2 Performance Evaluation.[119]

Although station number and total duration are not completely agreed upon, data indicate that the OSCE examination should be between 3 and 6 hours and 8 to 10 stations in length in order to obtain reliable ($r = \geq 0.7$) communication, history, and physical examination skills. A guideline was that at least seven cases are needed in any domain to achieve reliability. The testing period may be spread over several sessions making up an aggregate score in order to maintain validity. Many medical schools prepare their students for clinical practice with OSCE-style examinations throughout the year, which, taken together, are summative of a high-quality, multistation, valid OSCE. Checklists are typically the standard scoring tools; however, checklists alone may not be as reliable as a more comprehensive review by more experienced clinicians—particularly when assessing more advanced students and residents.[120] All of the licensure examinations, discussed previously, meet the criteria for a well-designed OSCE based on number of stations and time duration.

Beginning in 2003, the ACGME mandated the use of OSCEs within residency programs. At the time, residents were wary of its adoption, particularly fearing its use as a tool for determining promotion. Residents' perceptions of the examination, over time, did change to reflect an acceptance of its use for grading both technical and nontechnical skills.[121-123]

In the United States, the OSCE assesses technical and nontechnical skills in an accurate and valid fashion. The OSCE demonstrates a rapid progression of technical skills highly correlated to a postgraduate year, whereas clinical skills improve at a more moderate rate[121] (Fig. 1-12).
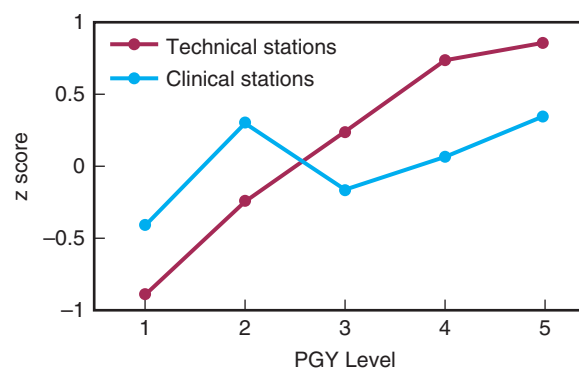
Figure 1-12. Resident assessment by year of training by OSCE. Technical skills assessment demonstrates a rapid and continual progression through 5 years of training, whereas clinical evaluations show only modest improvement over the same time period. *(Data from Turner JL, Dankoski ME. Objective structured clinical exams: a critical review,* Fam Med. *2008 Sep;40(8):574-578.)*

The past 2 to 3 years has seen an explosion in simulation technology and research. In one particularly strong study, multiple teams were assessed for hemorrhage and airway emergencies. The Non-Technical Skills for Surgeons (NOTSS) tool was used to assess teams prior to and during simulation. For surgeons, higher NOTSS scores were associated with a quicker resolution of the simulation crisis.[125] Advances are being made in using simulation to solve difficult to teach physical examination skills such as breast lump detection and prostate or rectal cancers.[126,127] Studies assessing these new simulation tools have also indicated that many attending level surgeons would benefit from continued simulation practice both for keeping operative skills fresh and preventing the decline of physical exam skills, for instance during dedicated research time.[126-128]

The Objective Structured Assessment of Technical Skills (OSATS) was initially developed as a bench station examination. It was later applied to intraoperative skill assessment, and appears to be an additional option for programs seeking a validated and reliable method for mixing technical skills assessment into simulations of nontechnical exercises to create a more "real world" simulation.[129-133] With recent focus on milestones and proficiency-based promotion, as compared to time-based promotion of residents, there is a need to reliably assess intraoperative skill.[134] Digitization and modern computing have created new opportunities for simulation and education. One proposed method is a real-time, mobile web system featuring consistent and accurate assessment of the residents' performance. The platform enabled timely recording of data, was efficient in terms of how much faculty time it took to complete an assessment (average 2 minutes), and from a validity standpoint did trend well overall with resident postgraduate year. The system itself fulfilled the ACGME and American Board of Surgery mandate for program assessment of resident performance in the operating room.[134]

Nontechnical skills often erode during stressful events, particularly in surgery where bleeding, complexity of the operation, time-constraints, and equipment problems can have a negative effect. Additionally, roadblocks with insurance and other third parties, critical illness, and delivering bad news add different kinds of stress.[135] Indeed, video analysis of real operations indicates that attending surgeons typically take over, change their style of leadership, and decrease their teaching in the operating room once unintended events occur.[136]

By using simulated patients, patient-centered models, and intensive and immersive training, nontechnical skills including communication can improve interview techniques.[137,138] Post communication skills training at the 12-month follow-up demonstrated that the training was effective, and with real clinical practice after the training communication skills had improved even more.[139]

Lastly, there appears to be a positive feedback loop tying nontechnical leadership skills with self-perceived operating room prowess. Those surgeons who rate their own technical skills highly are also more likely to engage in positive leadership skills, including teaching in the operating room, handle difficult situations, and provide more clear instructions.[140] Simulation may be particularly critical for preventing technical skill decline in residents on dedicated research time or for attending surgeons whose research, clinic, or administrative duties decrease the amount of time they can spend in the operating room. Simulation represents the future of medicine and an excellent opportunity for research and development. Medicine, including surgery, has much ground to make up in regards to simulation training compared to other high-risk fields, such as the military, space, and aeronautics. Modern surgical leaders should recognize surgical simulation as critical to their organization's success.

Evaluation of Surgeon Performance

Multiple organizations are evaluating the technical and nontechnical skills of surgeons in a real-time basis. We have included this comprehensive list of organizations (Table 1-4) with a brief description of their purpose and mechanisms of evaluation. Several of these involve technical skills evaluations and most involve nontechnical

Table 1-4

Multiple organizations have been created to evaluate both the technical and nontechnical skills of surgeons[141]

ORGANIZATION NAME	DESCRIPTION	MAIN SKILLS, CONDITIONS, OR QUALITIES EVALUATED	EVALUATION OF TECHNICAL SKILLS?	EVALUATION OF NONTECHNICAL SKILLS?
Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)	A public reporting initiative that measures patient perspectives on and satisfaction with hospital care based on qualities of healthcare that patients view as important.	Communication with nurses, communication with doctors, responsiveness of hospital staff, pain management, communication about medicines, discharge information, care transition	No	Yes
Clinical and Group Consumer Assessment of Healthcare Providers and Systems (CGCAHPS)	A public reporting initiative that measures patient perspectives on and satisfaction with care provided in an office setting based on qualities of healthcare that patients view as important.	Access to care, provider communication, test results, office staff, overall provider rating	No	Yes
Datix, Incident Reporting	A database of incidents that improves reliability of physicians by improving rates of reporting, promoting ownership of mistakes, and improving patient safety.	System issues, patient safety and quality issues, provider behavior, leadership style	Yes	Yes
Patient Advocacy Reporting System (PARS)	A system that compiles patient complaints into a complaint index for each physician for comparison with other medical group members and to help identify high-malpractice-risk physicians who may benefit from peer intervention.	Unprofessional behavior deemed as disrespectful and rude	No	Yes
Co-worker Observation Reporting System	A system in which physicians document coworker unprofessional conduct in order to provide nonjudgmental and timely feedback and to encourage self-reflection and change.	Unprofessional behavior deemed as disrespectful and unsafe	Yes	Yes

(*Continued*)

Table 1-4

Multiple organizations have been created to evaluate both the technical and nontechnical skills of surgeons[141] *(Continued)*

ORGANIZATION NAME	DESCRIPTION	MAIN SKILLS, CONDITIONS, OR QUALITIES EVALUATED	EVALUATION OF TECHNICAL SKILLS?	EVALUATION OF NONTECHNICAL SKILLS?
American Board of Surgery (ABS) Maintenance of Certification (MOC) Program	A program that documents a surgeon's ongoing commitment to professionalism, lifelong learning, and practice improvement through self-report.	Restrictions on medical license, restrictions on hospital privileges, continuing medical education, self-assessment of continuing medical education, cognitive expertise, ongoing participation in quality assessment program relevant to the surgeon's practice	Yes	Yes
Hospital Compare	A database that is part of the Centers for Medicare & Medicaid Services (CMS) Hospital Quality Initiative and provides information on hospital performance and quality of care based on consumer perspectives so that patients can assess and compare hospitals.	Hospital Compare is based on data from HCAHPS and evaluates hospitals by the same guidelines as HCAHPS	No	Yes
Federation of State Medical Boards (FSMB)	An organization representing all state medial and osteopathic boards in the United States that license physicians and sponsors the United States Medical Licensing Examination.	Medical knowledge, patient complaints, violations of the law	Yes	Yes
Internet clinical scores	A database of direct patient opinions of physicians, provided through various sources, including Healthgrades.com, RateMDs.com, and Yelp.	Professionalism, communication, timeliness	No	Yes
Hospital-Acquired Condition Reduction Program	A government program that provides incentives for hospitals to reduce the number of undesirable patient conditions resulting from their stay in the hospital and that could have been avoided by adjusting hospital reimbursement rates accordingly.	Foreign objects retained after surgery, air embolism, blood incompatibility, pressure ulcers, falls, poor glycemic control, catheter-associate infections, surgical site infections, deep vein thrombosis, pulmonary embolism, pneumothorax	Yes	No
American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP)	A program that collects information on and provides a risk-adjusted ranking of preventable surgical complication rates to encourage providers to improve care.	Surgical complications rates, surgical site infections, urinary tract infections, readmission rates, surgical outcomes	Yes	No
Centers for Medicare & Medicaid Services Surgical Care Improvement Project (CMS SCIP)	A collaborative healthcare organization that collects data on surgical complication rates based on established guidelines.	Rates of infection, cardiac, venous thromboembolism, vascular, and respiratory, complications of surgery	Yes	No

skills. Additionally, most have been tied to performance evaluations and even salary and discipline up to and including loss of licensure. To our knowledge, this is the first comprehensive listing of the various agencies that evaluate surgeon performance.[141]

MENTORING AND DEVELOPMENT

Mentoring

A formal leadership training program for surgical trainees should include mentoring. Mentoring is the active process by which an experienced, empathetic person guides another individual in the development and self-recognition of their own vision, learning, core competencies, and professional development. Halstead established the concept of a surgical mentor who directly provided the trainees with professional and technical guidance. Halstead's concept went beyond a simple preceptorship by emphasizing clinical decision making based on scientific evidence. His goal was to develop surgeons who would go on to become outstanding leaders and innovators in the field. Although surgery has changed dramatically since Halstead's era, mentorship remains crucial in surgical training. In addition to teaching technical skills, clinical judgment, and scientific inquiry, modern-day mentors must also model effective communication, empathy, humanism, and the prioritization of competing professional and personal activities.

The mentor must also be an experienced and trusted advisor committed to the success of the mentee. A greater level of trust and commitment distinguishes the mentor from the teacher. More than a teacher, a mentor is a coach. The goal of a teacher is to pass on a defined level of knowledge for each stage of a student's education. The underlying premise is a limited level of advancement for the student. The coach, on the other hand, has the sole purpose to make his or her student the best at their game, with an unlimited level of advancement. Modern mentorship implies a partnership between the mentor and the mentee. Surgical residency program chairs and program directors must recruit and develop faculty "coaches" to mentor residents to optimize their potential. Emeritus Chair of the University of California, Los Angeles Head and Neck Surgery, Dr. Paul Ward, said it best: "We strive to produce graduates of our residency program who are among those who change the way we think and practice."[142] Having more than 25 former residents become chairs of academic head and neck surgical programs, Dr. Ward embodied the role as a surgeon's coach. The responsibilities of an effective mentor are summarized by Barondess: "Mentoring, to be effective, requires of the mentor empathy, maturity, self-confidence, resourcefulness, and willingness to commit time and energy to another. The mentor must be able to offer guidance for a new and evolving professional life, to stimulate and challenge, to encourage self-realization, to foster growth, and to make more comprehensible the landscape in which the protégé stands."[143]

One of the major goals of mentors is to assess the aptitudes and abilities of mentees with regard to the appropriateness of their vision for their surgical career. Proper selection of the appropriate mentor can bring to the mentee much needed wisdom, guidance, and resources and can expand the scope of his or her vision. In addition, the mentor can refine the leadership skills taught to mentees in formal training programs. Highly successful surgeons most often have had excellent surgical mentors. It is impressive to note that more than 50% of United States' Nobel laureates have served under other Nobel laureates in the capacity

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of student, postdoctoral fellow, or junior collaborator.[144] In academic medicine, evidence-based studies have shown benefits to the mentees that include enhanced research productivity, higher likelihood of obtaining research grants, and greater success in obtaining desired positions in practice or at academic institutions.[145] Mentoring provides benefits to the mentors themselves, including refinement of their own personal leadership skills and a strong sense of satisfaction and accomplishment.

Mentorship is essential to accomplish the successful development of surgical trainees and to help cultivate their vision. Therefore, formal leadership training programs that have a goal of training the future leaders in surgery should include mentoring.

Modeling Leadership for Medical Students and the "Hidden Curriculum"

Medical students enter school with great empathy, excitement, optimism, and an idealistic vision. They have self-selected to enter a profession of healing and achieved entry into a highly coveted graduate training program with centuries of tradition. Yet, these medical students are naive to the actual practice of medicine and its professional norms. Along the way to becoming a doctor, many medical students lose some of the optimism, empathy, and excitement, particularly during their first and third years of school. Some students come to see the patient-physician relationship as an afterthought to providing care.[145,146] Through the "hidden curriculum," formal leadership training, and modeling of professional behavior, surgical residents, and attendings can help medical students to realize their vision of becoming empathic physicians.

Traditionally, medical schools and professors have unknowingly relied on a hidden curriculum to mold these idealistic students into capable professionals. The hidden curriculum is the informal social norms learned by students implicitly, based on their observations of resident and attending behavior. The hidden curriculum has always been present in education, for better or worse, and may be unmasked and studied, but cannot be eliminated. Medical students actively engage in seeking out mentors, and naturally and subconsciously look to their mentors for cues on how to conduct themselves as physicians, the same way in which a child learns how to behave from a parent or older sibling. Whether or not the witnessed behavior is a positive example of professionalism, the student will begin to perceive that behavior as normal and acceptable. For better or worse, the professional norms of medicine (the Hippocratic oath, respect to patients and colleagues, ethical conduct, personal accountability, empathy, and altruism) are modeled in every personal encounter. It is imperative that all resident and attending surgeons understand that the medical students are observing them closely. When resident and attending surgeons model professional behavior, the hidden curriculum becomes a useful tool for professional development.[147-150] This consistent modeling of professional behavior is one necessary component of leadership.

During their clinical years, medical students experience both an exponential growth in knowledge and a measurable decline in empathy towards their patients. Initially, medical students are filled with excitement and wonder during their first patient encounters. The rapid pace of clinical work, acquisition of knowledge, and intense experiences create stress for the student, both positively and negatively. Scrubbing into the operating room, witnessing the passing of a patient, helping deliver a baby, and studying for boards are impactful milestones that each student experiences in a matter of months. Due to the

challenges of their work, students naturally have doubts about their own career choices and abilities, even as they experience growth and success. However, as students gain knowledge and abilities, they also come to see commonly encountered clinical problems as routine work. As familiarity and comfort with clinical problems increases, the excitement and wonder experienced by the student decreases. It is during this time that a decline in student empathy occurs, typically in their third year of medical school.[151] In medicine, even routine clinical work still requires extraordinary attention to detail, and compassionate care must be delivered to every patient, every time. This attention to detail and compassionate delivery of care are the hallmark of the true professional. It is important that surgical residents and attendings always model positive behavior.

Previously, medical schools instructed students in anatomy, physiology, pathology, and clinical medicine, but left the acquisition of professionalism to the informal hidden curriculum. The Carnegie Report, published in 2010 at the 100-year anniversary of the Flexner Report, called for medical education to promote "the progressive formation of the physician's professional identity."[152] To this end, many medical schools nationwide emphasize early professional education and an integrated curriculum. The Liaison Committee on Medical Education (LCME) sets standards for administrative and faculty leadership that manage the curricular model and educational affairs of students; however, formal leadership education is not explicitly required at this time. However, career exploration, mentoring, and advising are instrumental responsibilities of each medical school and a requirement of the LCME. Establishing a leadership program that is perpetual and coexists within an integrated curriculum will support this endeavor.[153] A longitudinal leadership program beginning at the onset of medical school can establish a pattern of ethical behavior, professionalism, balance, wellness, and strong character. Indeed, many medical schools are shifting to a new, integrated style curriculum with early professional development as the standard.[154]

This chapter has emphasized, in an intentional way, the importance of establishing a vision and goals. Throughout the process of becoming a physician, medical students will trade some of their idealism and optimism for a refined vision and a set of goals that become a part of their professional identity. This newly matured vision will guide the future these students create. The future leaders of medicine and surgery are current medical students. To foster a climate of professionalism and empathy, medical students should be taught in an environment of formal leadership training, from the first day of medical school through graduation. In addition to leadership training, medical students will inevitably acquire some of the traits and habits of their resident and attending mentors through the hidden curriculum. In this way, the modeling of professional behaviors by surgical residents and attendings can serve to reinforce professionalism and may help to ward off the empathy decline experienced by medical students in their clinical years.

Tools to Measure Leadership Outcomes in Healthcare

There is evidence that leadership training improves healthcare quality. The ACGME, via its core competencies, has recognized technical skills, surgical judgement, and nontechnical skills as qualities essential to develop in residents.[155,156] The objective measurement of nontechnical skills is difficult. Table 1-5 includes a list of methods for assessing nontechnical skills currently in use by some residency programs. The Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey is in the early phases of being applied to individual physicians, but it has been applied to hospitals as a whole for several years.

Table 1-5

Leadership assessment toolbox

METHOD OF LEADERSHIP MEASUREMENT	DESCRIPTION
Multifactor Leadership Questionnaire (MLQ)	The MLQ is a questionnaire based on the differences between transformation and transactional approaches of leadership. It identifies leadership qualities through the rater's beliefs about effective leadership.
NEO Five-Factor Personality Inventory (NEO)	NEO explores different facets of five different personality traits—neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness—through a questionnaire.
Surgeon's Leadership Inventory (SLI)	The SLI is a questionnaire based on literature on leadership in surgery and surgeon's leadership behaviors observed in the operating room. It includes eight elements of surgeon's leadership in the operating room, which are maintaining standards, managing resources, making decisions, directing, training, supporting others, communicating, and coping with pressure.
Patient feedback	Patient complaints are inversely related to leadership effectiveness and can thus be used as opportunities to improve and as a measure of leadership.
Objective Structured Clinical Examination (OSCE)	The OSCE can be administered in a controlled environment with attending feedback on various aspects of leadership tackled in the practice cases. Videotaped sessions provide further opportunities for improvement as residents will be able to later observe their own behaviors and reflect on ways to improve their approach to the case presented.
Consumer Assessment of Healthcare Providers and Systems (CAHPS)	CAHPS surveys are based on aspects of healthcare that matter most to patients, such as physician communication. The results are made public and can be used to shed light on areas of leadership physicians can improve on to work towards a patient-centered approach to care.

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Leadership can be evaluated through instruments such as the Multifactor Leadership Questionnaire, the NEO Five–Factor Inventory, and the Surgeon's Leadership Inventory. The Multifactor Leadership Questionnaire (MLQ) analyzes leadership aptitude as either a transactional or a transformational style.[157] Leadership based on transaction focuses on completing and rewarding the tasks, whereas leadership based on transformation focuses more on the motivation for completing the tasks and emphasizes a positive and encouraging working environment for the team.[158,159] In a study applying the questionnaire to five surgeons in a single hospital, surgeons who scored higher on the transformational section were more focused on promoting an open environment for all the attendings, residents, nurses and other staff in the operating room. This transformational style correlated with greater communication. These findings are important in showing that lack of communication is often a leading factor in surgical errors.

The use of an MLQ in 2008 studying surgical residents showed a significant association between transformational leadership and overall perceived team effectiveness and resident satisfaction.[158-159] The questionnaire also found that the residents, as leaders, placed less value on the individual needs of their colleagues, possibly reflecting a high sense of independence and frequent changes in teams due to rotations among services. This finding helped identify an area of leadership training on which the program can focus to help further develop a more supportive team atmosphere amongst the residents. In 2011, a study administered the NEO Five-Factor Personality Inventory (NEO) to a group of surgical residents. NEO, which assesses personality on five broad strokes, including neuroticism, openness, agreeableness, extroversion, and conscientiousness, found that the surgeons scored above the national average on most of the factors tested but below average on agreeableness. This is a measure of altruism and tolerance, among other related factors. This result corresponded with the MLQ administered to the same group of residents and therefore highlighted areas of leadership that required modification.[158,159]

The Surgeon's Leadership Inventory (SLI) is a helpful guide for residency programs.[160] The SLI grades surgeons on eight different elements of leadership, as listed in Table 1-6. As with the MLQ and NEO questionnaires, the SLI can be used to assess the growth of leadership ability in surgery residents. Table 6 provides a list and description of the different elements assessed by the SLI.[141]

LEADERSHIP TRAINING FOR THE PROSPECTIVE SURGEON

Prospective surgeons such as medical students and premedical students may have no better source for developing the personal attributes necessary for a successful career than current surgical attending surgeons and current residents. When surveyed, these doctors emphasized accountability, resilience, and high personal standards for oneself as critical tools. Prospective surgeons are advised to pursue perfectionism and be self-critical, cautioning against taking these traits to far towards neurotic behavior. Critical leadership skills of teamwork and learning to take initiative are mandatory in modern medicine and must be learned early. Innovation is highly desirable.[162]

Residents, on the other hand, are closer to becoming independent. To some extent, they have already been selected for their leadership, innovation, and resiliency through the process

Table 1-6	
Surgeons Leadership Inventory (SLI)	
ELEMENT	DESCRIPTION
Maintaining standards	Practicing safe and quality patient care by following established protocols and asking for help when needed
Making decisions	Making informed judgments and communicating decisions with relevant personnel
Managing resources	Appropriately assigning resources and tasks to team members
Directing	Clearly communicating expectations and instructions and demonstrating confidence in leadership ability
Training	Educating and training team members when the opportunity arises
Supporting others	Offering assistance where appropriate and encouraging open communication
Communicating	Sharing information in a timely manner and encouraging input from others
Coping with pressure	Showing flexibility when required to meet goals

Data correlating patient complaints in a large number of hospitals show that improved leadership is associated with better hospital climate, improved performance, and a lower number of complaints.[161]
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of the match. During training their progression from novice to expert is necessarily rapid. A graded tool for all procedure based specialties including surgery – OpTrust – has been recently validated to facilitate the resident's transition to leadership across five domains including questioning, planning, instruction, problem solving, and leadership.[163]

As emphasized throughout this chapter, the concept of training leadership skills early applies particularly to junior faculty and residents. The resident-surgeon-manager conference is one model for integrating department members of various experience levels into a results-based leadership conference. In this conference, various stakeholders including attorneys, persons with business experience, and risk management experts are brought in as guest participants. Exercises were immersive and included case-based discussions, role-playing, simulation, and interactive lecture. Topics included teamwork, learning negotiating techniques, time management, risk management, balance, giving feedback, and creating immediate, goal-oriented action plans.[86]

EARLY CAREER DEVELOPMENT AND ESTABLISHING ONESELF

A variety of methods have been proposed for the professional development of new attending surgeons. "Speed Mentoring"— 10-minute pairings of senior and junior surgeons answering preset questions—have been studied at national conferences with promising results. These sessions could be spread out over several days and integrated into a busy surgeon's schedule.[164]

A study of department chairs and award-winning surgeon-scientists identified perseverance and team leadership skills as critical factors for development in the young attending surgeon. Chairs advocated protected time for research, financial support, and mentorship as departmental level support that the surgeon scientist should actively seek out in their first position. The surgeon-scientist compared to the pure clinician faces a different set of challenges, particularly the financial challenge of funding research and clinical duties competing for time and attention with research interests.[165]

One study addressed surgeon behavior in the operating room to assess the leadership style most associated with strong leadership. Based off of this study, surgeons who are trained to collaborate, consult others appropriately, be polite (simple "please" and "thank you"), and create a safe space for their operating room staff to voice concerns will demonstrate good leadership. However, surgeons who demonstrate nonconstructive criticism, destructive humor, steer conversation away from the current case, and express frustration will be perceived as demonstrating poor leadership. Under this system, surgeon behavior can be categorized—conductor, elucidator, delegator, engagement facilitator, tone setter, being human, and safe space maker—in order to provide individual feedback for professional development.[166]

SENIOR FACULTY DEVELOPMENT: TRANSITIONING TO DEPARTMENTAL LEADERSHIP AND LEGACY BUILDING

The presence of experienced, senior academic surgeons within a department represents an opportunity. The formal development of a plan for late career transitioning through departmental leadership roles all the way to emeritus status naturally initiates a constructive process when thought out years in advance. The plan should be agreeable to the senior faculty member in question as well as departmental leadership and hospital stakeholders. Once in place, the senior academic surgeon and department will both thrive thanks to a shared vision, mutual understanding, and clear goals and transition points. Departmental leadership can use the transition plan to look ahead at the future of their department years down the line.[167]

Recognition of senior academic surgeons with departmental leadership, promotions, and emeritus status is a privilege earned by the academician over a lifetime of work; however, for the department it represents an opportunity to shape the values and culture of the faculty body as a whole. The continued visibility, model, and influence of such leaders will have a trickle-down effect on the rest of the department. Surgical leaders are part of a large and extraordinary network facilitated by mentorship and decades of professional collaboration. Exceptional senior academic surgeons may often experience the "multiplier-effect" whereby one excellent leader trains several, who go on to train several more until the culture of surgery nationwide is influenced.[168]

Although there are no mandatory ages for which surgeons must retire as in other professions, such as airline pilots, the issue of aging and when to cease practice has been controversial. There are some, however few, reports of physicians practicing after the decline of their skill and becoming dangerous. As a whole, the profession has been unable to prevent this. Nationwide, from 1975 to 2015, the number of physicians practicing after age 65 has increased by 374%. Some hospitals and healthcare organizations have implemented mandatory cognitive and physical evaluations as a condition of continued practice. In the absence of more robust professional initiatives our field may see legislative oversight in the future.[169] The authors believe that a formally planned transition emphasizing the values of leadership and legacy-building offers a more palatable alternative.

CONCLUSION

Although there are several definitions of leadership and a variety of leadership styles, all share the common goal of improving patient care in the modern era. All forms of leadership require a vision and willingness—the willingness to assume the responsibility to lead, continue learning, practice effective communication styles, and resolve conflict. Effective leadership can change surgical departments and improve patient care through innovation. A growing body of evidence suggests the mastery of leadership requires practice through intentional curricula and reinforcement through mentorship.

Surgical leadership is bred through its training programs. Thus, innovation in surgical training programs is needed to enhance the development of leadership skills of surgical trainees, to prepare them for practice in modern healthcare systems, and to optimize patient care, as well as compliance with requirements set forth by regulatory institutions governing surgery and surgical education. A growing body of literature supports the value of effective leadership in improving patient care, productivity, and the work environment while it validates the ability to measure the impact of leadership training. Therefore, it is of paramount importance to teach modern leadership principles and skills to surgical trainees in order to create a new generation of surgeon leaders who will shape the modern era of surgery in the context of rapidly evolving science, technology, and systems of healthcare delivery.

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