Timeless lessons from the past and present leaders of cardiothoracic surgery part 2: Character development

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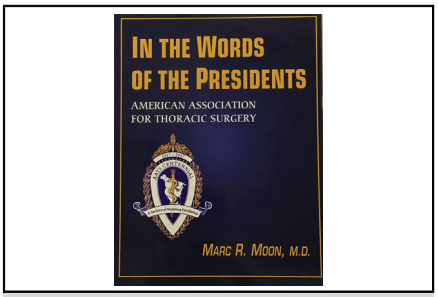
Since 1917, the American Association for Thoracic Surgery (AATS) has promoted core values that define our professional standards. Each year, these messages are delivered in the form of the presidential address. Synthesized from a lifetime of operating and learning to navigate both personal and career-related challenges, the words of the AATS presidents are an invaluable resource for all. Our objective was to analyze these messages and reflect upon lessons that are particularly relevant to young surgeons. The first part of this series, which focused on professional accomplishment, has already been published.[1] Here, we present the second of the 2-part series, which discusses character development by exploring themes of humanism, maintaining well-being and life balance, leadership, and the future of cardiothoracic surgery (CTS) and resident education.

The methods utilized in this project have been previously described.[1] Twenty-eight former AATS presidents were selected based on the availability of their presidential addresses and interviews from *In the Words of the Presidents*.[2] Qualitative analysis was performed by 4 integrated CTS resident physicians who independently read the presidential addresses and interviews, identified major themes relevant to young surgeons, and compiled salient quotations (Table 1).



Among the central texts: *In the Words of the Presidents* by Marc R. Moon.

CENTRAL MESSAGE

Professional excellence is a core component of a successful career in cardiothoracic surgery. The collective wisdom from leaders in the field is encapsulated here for aspiring surgeons.

PERSPECTIVE

Training in cardiothoracic surgery is a technically demanding experience that also requires constant reflection and introspection. This article highlights major themes from the words of past and present leaders in the field that emerged as salient topics for young surgeons. Their collective wisdom can be formative during training and deserves a place in resident education.

See Commentaries on pages 998, 999, and 1000.

ON HUMANISM AND THE DOCTOR–PATIENT RELATIONSHIP

The modern surgical environment imposes many obstacles to humanistic care. Castenada observes that the hospital environment can be dehumanizing, placing gowns that are half exposed on patients' bodies, and shaving the hair off of their chests.[2] Sometimes the goal of the patient, which is to become well, free of pain, and to live autonomously, and the goal of the surgeon, which is to eradicate disease, do not always match. Lastly, the bureaucratic pressures that constantly drum up the bottom line can stand in the way of exercising compassion and patience.

Cohn[3] believed that no degree of technical and innovative excellence would suffice without our ability to touch and relate to patients in a humanistic manner, coining it among the 11 qualities that "the CT surgeon of the 21st century ought to be." David[2] corroborated that certain things in surgery should never change, and

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TABLE 1. Analysis of thematic content of American Association for Thoracic Surgery (AATS) presidential addresses

President	President No.	Year	Title of presidential address	Theme			
				Humanism	Balance	Leadership	Future
Ferguson	62	1981	The Crisis of Excellence	✓			✓
Spencer	63	1982	Intellectual Creativity in Thoracic Surgery			✓	
Malm	66	1985	New York: A Bellwether for Thoracic Surgery				✓
Austen	89	1988	Eight Former Presidents of the AATS. The Boston Connection*		✓	✓	
Pearson	70	1989	Adventures in Surgery	✓	✓		
Waldhausen	72	1991	The Association at 75: The Challenge of the Future	✓		✓	✓
Ochsner	73	1992	Giants				✓
Castaneda	74	1993	The Making of a Cardiothoracic Surgeon: An Appolonian Quest	✓		✓	
Wallace	75	1994	Reflections—Projections!	✓	✓		✓
Loop	78	1997	The First Living and the Last Dying			✓	
Cohn	79	1998	What the Cardiothoracic Surgeon of the 21st Century Ought to Be.	✓		✓	
Cosgrove	80	1999	The Innovation Imperative		✓	✓	✓
Cox	81	2000	Changing Boundaries	✓	✓	✓	
Gardner	82	2001	Our Heritage and Our Future			✓	✓
Crawford	83	2002	Thoracic Surgery Education—Responding to a Changing Environment		✓		✓
Cooper	84	2003	Thank You for Being a Doctor	✓	✓		✓
David	85	2004	For Everything There Is a Season				✓
Jonas	86	2006	Rewards, Risks, and Responsibilities of Globalization for the Cardiothoracic Surgeon		✓	✓	✓
Lytle	87	2006	Who We Are—Who We Will Be			✓	✓
Miller	88	2007	Anti-Memoirs of Rocinante*			✓	
Spray	89	2008	The Quality Conundrum				✓
Patterson	90	2009	Non solus—A Leadership Challenge	✓		✓	
Kron	91	2010	Surgical Mentorship		✓	✓	✓
Smith	92	2011	To Model Excellence			✓	✓
Schaff	93	2012	Leadership and Scholarship: Unintended Consequences, Unexpected Benefits		✓	✓	✓
Sugarbaker	94	2013	Clarity of Purpose, Focused Attention: The Essence of Excellence				✓
del Nido	95	2014	Technological Innovation in Cardiothoracic Surgery: A Pragmatist's Approach			✓	✓
Coselli	96	2015	Competition: Perspiration to Inspiration "Aut inveniam viam aut faciam"			✓	✓

*Manuscript of the presidential address was not available for review, so *In the Words of the Presidents*[2] was reviewed for thematic content information.

included in them the value of "caring for your fellow man."

Young surgeons can commit to humanism in their day-to-day lives by recalling that patient care is fundamentally a privilege: Surgeons are blessed to have patients and their families who are willing to entrust them with the important task of healing their loved ones. This trust transforms our profession from a technical endeavor into one that is "both an art and a science," one where we "enjoy the consummate satisfaction of applying

physical skills and fundamentally humane activity of supporting [patients].''[4]

In addition to simply being present at the bedside, Cooper[5] states: ''We must maintain the highest standards of ethical and moral behavior and avoid the temptation of putting self-interest ahead of that of our patients and our profession.'' Patterson,[6] whose primary focus was ''to address the mandatory requirement for behavioral excellence,'' considered surgeon behavior the most essential ingredient in successful team building and performance. He clarified that good behavior need not be a form of soft empathy, but rather a fair and balanced respect for the goals of the individuals as well as those of the enterprise. Perhaps Smith[2] summarized this principle most succinctly, saying that ''without question, our character and our qualities are more important than what we do with our hands.'' Castenada[7] remarked that educating surgeons in the humanities can further buttress their character. He stated, ''it is our responsibility as educators to not only train residents to cut here and put stitches there, but to teach respect for human life'' by pursuing the humanistic tradition; that is, the Appolonian quest. This is what elevates surgeons to be the ''true healers of mankind, rather than glorified technicians.''[7]

ON BALANCE AND PERSONAL LIVES

del Nido[2] said it this way: ''Stick to the long-term view. Someday your babies are going to be big kids and adults and you want them to remember you not as a fleeting vision in the moment but as someone who had meaning in their life.''

Many of the former AATS presidents describe marriage and family among the most rewarding elements of their lives. It was something that helped them find balance.[6] However, they also shared that these endeavors required as much, if not more, hard work, flexibility, mutual support, respect, and patience as their careers.[8,9] Cosgrove[2] described it as a constant pull between things that are competing for time, energy and attention, causing guilt or a sense of not being able to do it right or be the best for everyone. Some shared more specific advice about relationships, such as the need for couples to truly understand each other's characteristics and career ambitions before marriage. Finding the right partner allows many to ''without any sort of pressure or issues, pursue the time commitments that have been necessary to do the things that I have had to do.''[2] Jonas[2] eloquently described a surgeon's family as being ''part of a team that is helping care for your patients and your patients' families.'' We have to be there for our families, but our family members must be prepared to be a part of the team balancing act.

Regardless of the details, a sense of gratitude toward spouses was universal among the past presidents. ''My wife devoted herself to my career and our family,'' said Cooper.[2] ''She has paid a very heavy price for being the helpmate and supporter without whom I could not have had both a family and a career.''[2]

With regard to balance, the mentors consistently commented on changes in work hour regulations that have taken place since their training eras[2]:

- ''Every other night and every other weekend for 7 years,''
- ''The training that we went through was draconian,''
- ''We almost never came home…It was the hardest thing I've ever done in my life,''
- ''It was 36 hours on and 12 hours off for 5 years,'' and
- ''We never talked about work–life balance.''

Many past presidents firmly believe that they derived positive attitudes and lessons from this degree of investment. According to Wallace[2] and Spray,[2] being with patients at the bedside as long as necessary was a nonnegotiable principle and commitment; a defining aspect of their training. Cooper[2] remarked that they used to ''practically crawl into bed with a sick patient and not get out until that patient was better or died.'' Coselli[2] agreed that previous work hours enabled young surgeons to be ''immersed into the clinical aspect of patient care.''

Yet, there was also a general sentiment that this was not conducive to balance[2]:

- ''Current surgeons-in-training will be able to receive excellent training despite duty hour regulations because of more selective teaching'';
- ''I think 80 hours is enough work for anybody in a week, and that comes from somebody who probably worked 120 to 130 each week during residency''; and
- Although I never tired of working back then, ''the reality is that [it] doesn't necessarily make you a better surgeon and it doesn't make you a better human being. I doubt I will say on my dying day, 'I wish I did 1 more operation!'''

The presidents also commented on other aspects that helped them find greater balance and purpose:

- ''Work towards making work inherently purposeful and well-rounded because a greater sense of fulfillment at work leads to a better personal life''[5,10,11];
- ''A lot of master surgeons never went to 'work,' instead they went to do something they enjoyed''[2]; and
- ''Find spirituality, which helps navigate difficult decisions and find hope and work with great, like-minded people.''[12]

ON LEADERSHIP

Several former AATS presidents touched on the qualities that define a leader[2]:

- "If you expect certain things out of the people who work under you, you have to be willing to excel and lead the way";
- Leadership is something you emanate "somewhat with your brain… and somewhat with your hands, but mostly…with your heart"; and
- True leadership takes work and practice to hone. In transitioning to chief executive officer, Cosgrove said, "I worked like hell for a while just trying to figure it out."

Many reflected on the leadership qualities of their predecessors. A theme that consistently emerged was gratitude toward mentors who displayed an ability and willingness to serve others. Cohn[2] recalled the story of "Dr Shumway's favorite expression [being] that he was the 'world's best first assistant,'" which helped develop a culture of teaching under his leadership. del Nido[2] was reminded of the example that Dr Sabiston set for the department by always giving him the time of day even when he was extremely busy. He states that although they seem like minor gestures, they are critically important and "not really minor to the young individuals who want to get involved." Patterson[2] describes Dr Pearson as the most academically generous person he has ever known, for whom "the success of his residents and colleagues was most important." Lastly, Casteneda[2] describes leadership in its ultimate form: measuring one's legacy not by how much he or she accomplished, but rather by how much he or she helped others accomplish. He shares proudly that "there are 43 chiefs of pediatric cardiac surgery in the world right now that trained with us, an accomplishment that is perhaps most gratifying as an academic teacher."

In this model, leadership replaces ego. There is no fear of hiring those who are smarter than oneself because a true leader hopes that his successor will surpass him. At the level of the department, this means that a leader is responsible for supporting his or her juniors' careers and rewarding individuals fairly for their contributions. A leader helps individuals believe that they are vitally important to the entire operation:

- "It is not the chief alone but rather the team that will create a vibrant clinical program"[2];
- There should not be a penalty for sharing the case load, "which facilitates treating patients in a timely fashion and facilitates individuals developing special surgical [or other] interests, such as going to the laboratory or doing administrative work"[2];
- Taking responsibility "for both successful and failed endeavors" shows you have their back, which makes them more likely to go along with the leader's decision[3];
- "Everything else flows from surround[ing] yourself with colleagues that are outstanding and help[ing] them get what they need to create an environment where you all can be successful"[2];
- "If we can lead the way toward solutions in a manner that places the patients' best interests foremost and is not considered as professional self-interest, we can do much to restore our relationship with the public and restore professionalism to our profession"[13]; and
- "Not everybody [needs to] be a triple-threat—instead, the division has to be a triple-threat."[2]

Another quality consistent with promoting others is having a vision and tenaciously working toward making the vision a reality. Ochsner[2] reflected on his time with Dr Debakey, a leader who epitomized this concept, "who wanted perfection, and wanted you to do everything that he could do." Sometimes this means taking risks, instead of blindly following bottom-lines or quality measures.[14] In the words of Spray,[2] "If surgeons hadn't been willing to take risks, many of the congenital heart operations that are commonplace today never would have happened."

Having a vision is a good first step, but it is insufficient to stop there. A leader must clearly communicate a plan and follow through. Cosgrove did this quite literally by performing live broadcasts of minimally invasive procedures, which simultaneously educated the public on the new frontiers in CTS and promoted his institutional vision.[2] Smith recalled a lesson Dr Reemtsma taught him when he first joined the faculty.[2] Not only did he encourage his team to be creative and bold, "he wanted the world to know that we were the first to do something new" through publications.[2] The world is not going to magically discover your work—be proactive by writing and speaking up at meetings.

Finally, leaders must be open to seeking out diverse ideas and models. Many of the past presidents spent a substantial amount of time learning at other institutions, either during or after their training, which significantly influenced the course of their careers[9,14]:

- "A surgeon was performing an upper lobectomy on a young woman… The surgeon had injected Novocaine… but used no anesthesia other than an acupuncture needle… she got up off the operating table and walked back to her room. It was just incredible"[2];
- "Even when you've trained in an excellent program for several years with great mentors, it is still very helpful for young surgeons to see other programs, other great surgeons, and just observe"[2]; and
- "[If I] ever got to be a chief or chairman and could build [my] own department it would be built from

representatives of the best programs around the country so that we would have several different ways."[2]

ON THE FUTURE OF CTS

There was consensus among many former AATS presidents that the future of CTS remains positive, perhaps now more than ever. There have been moments in history when the outlook of CTS was shrouded in pessimism.

- "Surgery of the heart has probably reached the limits set by Nature to all surgery…"[2];
- "Any surgeon who would attempt an operation on the heart should lose the respect of his colleagues"[5];
- As new technologies have revolutionized our surgical treatment of CT diseases, there has been frequent doom-saying about "…no more TB surgery…no more CABG, then percutaneous valves"[2]; and
- "There has been a lot of skepticism about what has happened to surgical practice, including the bureaucracy that surrounds it, the automation that has crept its way in and concerns about economics."[2]

Despite these predictions, the field has continued to thrive. To many, the practice of CTS remains profoundly rewarding and fulfilling because of the nature of the work and the backdrop of constant innovation.[15] Cooper[5] said it best: "It is a privilege and a responsibility to be a CT surgeon at this point in history. We have at our disposal unprecedented resources that empower us as never before to perform miracles for our patients." Also, according to Schaff[2] there is increasing demand for CTS surgeons, "not only because of retirement…but the aging population that makes up the bulk of our patients." At the other end of the spectrum, congenital heart surgery remains ripe for innovation because many current procedures are palliative rather than curative. In the words of del Nido,[2] this is the beginning of the "incremental stage of improving upon what the pioneers developed." In fact, according to Spray,[2] "the biggest challenge will be to determine how we are going to deal with our success… we have created a very large population of adults [who would have otherwise died] who present a whole new set of therapies and…research opportunities." In short, as Coselli stated,[2] "Our better days are ahead of us."

The challenges of the future will require innovative mindsets.[16] In his presidential address, David[5] shared, "Life is a dynamic process and the only certainty is change… Change is inevitable and is even desirable" because it implies progress and better outcomes. "Will thoracic surgery survive when the very operations we perform are being replaced by less invasive techniques practiced by other specialties?" asked Cosgrove.[15] "The answer is 'yes' if we are willing to innovate and change."[15] Gardner[9] stated, "If there is not the precise opportunity that you envisioned for yourself, make it happen at the next best place," because some of the most valuable opportunities are unpredictable.

Furthermore, as beneficiaries of a rich tradition, we must embrace our obligation "to attract, motivate, and mentor the next generation of CT surgeons."[5] There has been a decrease in the number of applicants and a contraction in CTS training programs recently, which has led to an increase in the average age of practicing surgeons. Crawford predicted a shortage of CTS specialists around 2020.[2] To inspire aspiring surgeons early on, the AATS presidents suggest that we[2]:

- Continue to champion the academic mission, prioritizing excellent teaching and ensuring that new entrants receive the best possible training;
- "…Show them how much we love doing what we do. Show them how much we enjoy taking care of patients, show them our dedication, and show them the positive impact we can have on our patients"; and
- "Figure out a way to make the 50% of bright young medical students, who happen to be women, interested in thoracic surgery."

Our standards, however, should not change. The reason to join the ranks of CTS are not because it is "…a safe, stable field" or a safe harbor, said Smith.[2] Instead, future aspiring surgeons can glimpse the vision of something to aspire to throughout their lifelong commitment to the field, "…something exciting… making it a challenge that is worth overcoming… and a sense that every stitch mattered."[2] Cox[2] invoked John F. Kennedy: "We choose to go to the Moon and do the other things not because they are easy but because they are hard."

OUR REFLECTIONS

Every aspect of a CTS specialist's career stems from his or her patients. As young surgeons, it is easy to view humanism or ethics as "soft" or "gray" areas of patient care. But on further reflection, we began to notice how powerful some of these humanistic elements can be among the surgeons at our institution. When they round on their patients every single day, including weekends, or make telephone calls from home to check on patients even late in the evening, we take note and aim to emulate them in our own careers. It was also profound to reflect on the notion of always remembering the sanctity and the privilege of patient care. It was evident these surgeons went on to accomplish monumental feats at a national level because of—not despite—their unwavering commitment to patient care. Although we are often

pulled in many directions by competing duties as residents, their words help us remember that patients should remain the true center in CTS.

Our own involvement in bedside patient and family counseling has evolved significantly as we have observed the limitless potential for expressing empathy and bridging communication. We have made a habit of rounding on patients multiple times in a day, even when it goes beyond our clinical duties, because doing so has rendered our work in the operating room more meaningful. Some of us now routinely sit down with patients and their families to go over the operation plan, including illustrations and other multimedia to aid in their understanding. We now make every effort to be present for some of our patients' most challenging experiences, such as end-of-life conversations and breaking bad news, recognizing that the captain of the ship analogy applies to all patient care, even out of the operating room. We derive inspiration and motivation for both technical and scholarly excellence from our patients. We practice technical skills at home to take better care of patients, and to find meaningful research questions, not just from the literature, but also out of genuine desire to help those in our care. This has also rendered our scholarly activities more personal and meaningful.

To learn to take care of oneself is ultimately to learn to take better care of one's patients. With regard to balance, it was enlightening to read their words because the topic is seldom discussed among cardiothoracic surgeons at work. The reality is that as young surgeons we are simultaneously transitioning into cardiothoracic surgeons and into adults. Many of us began our program as individuals singularly focused on training, yet we may emerge at the end as a partner or a father who is also a surgeon. We may experience profound losses or changes. Therefore, we will inevitably experience the struggle to find balance between work and life/family as they compete for our limited time and energy. In a sense, it is reassuring to learn from our mentors that they have been able to be successful in their careers despite closely holding onto the values of family and balance. At the same time, it is humbling to hear that finding balance is far from easy, often leading to feelings of guilt or of being inadequate in either setting. We believe that embracing the tension and creating coping mechanisms early on in our training instead of postponing dealing with these issues until they become significant is prudent. Ultimately, we can only take care of patients as humane surgeons if we protect our own humanity deliberately.

True leadership elevates others. With regard to leadership, advice by from Casteneda[2] is particularly salient to all young surgeons: one's legacy is measured not by one's own accomplishments but rather by what one has helped others accomplish. This is a metric that young surgeons are often oblivious to because much of one's early professional aspirations consist of enlarging one's own repertoire of skills and accomplishments. For us, this has translated into regular informal orientations and simulation meetings among residents, where upper-level residents offer their juniors salient advice and teach operative techniques before beginning new rotations. Additionally, the former AATS presidents remind us that leadership is something to deliberately practice, like other surgical skills. Take the initiative to reach out to help others and build sustainable, mutually beneficial relationships with colleagues. At our program, we maintain a culture of sharing ideas instead of guarding against each other out of competition. We are actively trying to dispel notions of tit-for-tat while maintaining a healthy competitive spirit. The group's success supersedes that of any individual's success.

Embrace technology. A defining characteristic of this field is continuous evolution, defined by the rapid implementation of transcatheter technologies, which may seem disorienting or bleak to young surgeons. We are caught within a transition within a transition because we must acclimate to the demands of residency, yet navigate the evolving landscape of surgical and interventional techniques.[17] These optimistic passages from mentors who not only survived, but also thrived, through changes that seemingly threatened the future of our field—such as the emergence of percutaneous coronary interventions—reminds us that the future of CTS remains bright. We take to heart what the mentors prescribe as the necessary characteristic for success in this time of change: adaptability. To lead the evolution, we must remain abreast of the newest technologies and forge partnerships with other, multidisciplinary fields. The surgeons-in-training at our institution actively establish working relationships with fellows from other disciplines—such as interventional cardiology and heart failure—early on in our training by rotating through these services. We participate in weekly multidisciplinary conferences to discuss patient scenarios and also are in the process of establishing heart team research meetings.

Lastly, having been inspired by these mentors to pursue the field of CTS, we are heavily engaged in the recruitment process to continue to recruit the best and the brightest into this vibrant field. We agree wholeheartedly that we have to actively reach out to aspiring surgeons as early as the first year of medical school and even during undergraduate years and show them how much we love doing what we do. Specifically, we have decided to utilize

social media platforms for identifying these students and to that end created a Twitter account with more than 900 followers to date. We hope to engage these aspiring CTS specialists in the future by continuing to share inspiring and educational materials as well as provide an avenue through which we can converse with this group on their needs, concerns, and ideas. We are also dedicated to compiling and sharing important, timely advice for this community.[18]

CONCLUSIONS

Training in CTS is a technically demanding experience that also requires constant reflection and introspection. We have highlighted 8 major themes from the words of past and present leaders in the field of CTS that emerged as particularly salient topics for young surgeons to ponder during early development. The wisdom shared by past and current leaders in the field about their fascinating and influential careers can be formative during training, and certainly ought to have an important place in our education.

References

1. Han JJ, Kelly JJ, Iyengar A, Patrick WL, Sultan I. Timeless lessons from the past and present leaders of cardiothoracic surgery part 1: professional accomplishment. *J Thorac Cardiovasc Surg*. 2019;158:1602-6.
2. Moon MR. *In the Words of the Presidents*. Beverly, MA: American Association for Thoracic Surgery; 2017.
3. Cohn LH. What the cardiothoracic surgeon of the twenty-first century ought to be. *J Thorac Cardiovasc Surg*. 1999;118:581-7.
4. Jonas RA. Rewards, risks, and responsibilities of globalization for the cardiothoracic surgeon. *J Thorac Cardiovasc Surg*. 2007;134:1-14.
5. Cooper J. Presidential address 2003. *J Thorac Cardiovasc Surg*. 2006;132:747-52.
6. Patterson GA. Non solus—a leadership challenge. *J Thorac Cardiovasc Surg*. 2010;140:495-502.
7. Castaneda AR. The making of a cardiothoracic surgeon: an Appolonian quest. *J Thorac Cardiovasc Surg*. 1994;108:806-12.
8. Crawford FA Jr. Thoracic surgery education—responding to a changing environment. *J Thorac Cardiovasc Surg*. 2003;126:1235-42.
9. Gardner TJ. Presidential address: our heritage and our future. *J Thorac Cardiovasc Surg*. 2002;124:649-54.
10. del Nido PJ. Technological innovation in cardiothoracic surgery: a pragmatist's approach. *J Thorac Cardiovasc Surg*. 2015;150:755-61.
11. Coselli JS. Competition: perspiration to inspiration "Aut inveniam viam aut faciam." *J Thorac Cardiovasc Surg*. 2016;152:1215-22.
12. Kron IL. Surgical mentorship. *J Thorac Cardiovasc Surg*. 2011;142:489-92.
13. Wallace RB. Reflections—projections! *J Thorac Cardiovasc Surg*. 1995;110:1287-90.
14. David TE. For everything there is a season. *J Thorac Cardiovasc Surg*. 2005;130:961-5.
15. Cosgrove DM. The innovation imperative. *J Thorac Cardiovasc Surg*. 2000;120:839-42.
16. Lytle BW. Who are we—who will we be? *J Thorac Cardiovasc Surg*. 2008;135:965-75.
17. Han JJ, Brown C, Swain JD. Surgical training in an era of change and innovation. *J Am Coll Cardiol*. 2019;74:814-7.
18. Smood B, Nguyen SN, Kelly JJ, Han JJ. Integrated cardiothoracic surgery: developing a successful residency application. *J Thorac Cardiovasc Surg*. October 16, 2019 [Epub ahead of print].