

How to be a young successful academic cardiothoracic surgeon



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Traditionally, 3 pillars are considered to be the cornerstone of academic surgery: clinical service, research, and education. These tenets must be built on a solid foundation when starting one's career. After the completion of a fellowship, when choosing a faculty position, it is important to understand this academic model and build a promotional portfolio (Figure 1). The intent of this article is to familiarize graduating cardiothoracic fellows with all the various elements that are necessary for building a successful career. It includes advice on the selection of programs that incorporate opportunities that can help young clinicians grow and build a platform for faculty development and mentorship within an institution.

After deciding on an academic path and clinical niche (cardiac, thoracic, or both), a fundamental question for narrowing the job search space is to match the "best" program to one's aspirations and interests, which may lie in research or education. Previous experience with similar interests that aligns with the applicant's would certainly make the transition into practice smoother. Therefore, it's important to select an institution that enhances and strengthens one's area of interest, where the components to building a rewarding career are already set in place. For instance, a position that focuses on recruiting patients for clinical trials requires the infrastructure to recruit, enroll, and monitor patients registered in the trial, and it will be difficult to launch this type of career at a site that does not routinely conduct this type of research without a major endowment. It is therefore crucial to carefully scrutinize the practice, workload, chief of the division, partners, and ancillary support of all the open positions before selecting one.

DELIVERING EXCEPTIONAL CLINICAL CARE

The utmost priority for becoming a world-class surgeon is earning a stellar reputation, the crux of which is providing

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CENTRAL MESSAGE

Understand the 3 pillars of academic surgery (clinical service, research, and education) and carve out a path to become a leader and innovator in the field.

PERSPECTIVE

As one embarks on their career in academic cardiothoracic surgery, it is important to understand all the elements and various metrics that will make it successful. How to balance all these elements concomitantly and still manage to become an excellent clinician scholar is vital to one's personal and professional growth.

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excellent clinical care while developing a wide referral base (Figure 1).¹ Therefore, at the outset of embarking on a practice in cardiothoracic surgery, new attendings should introduce themselves to cardiologists, gastroenterologists, and pulmonologists at the new institution and build a practice referral. Gradually, introductions to interventional cardiologists, medical and radiation oncologists, radiologists, and pathologists will also be made. All these service lines integrate closely with cardiothoracic surgery, and therefore it is important to network with these groups of physicians. If the host institution does not have multidisciplinary boards, which is atypical, then the initiative should be taken to build one. Tumor boards and multidisciplinary conferences are a great resource for networking at a home institution, and they allow for opportunities to engage service lines in various research projects when needed. Gaps within the system should be identified early, since it will become difficult to



FIGURE 1. The key elements to building a successful career as an academic cardiothoracic surgeon. The foundation of a career is built on good clinical care and patient outcomes followed by growth in the education and research arena, followed by national reputation and leadership.

find the time to explore ways to bridge them when clinical responsibilities become “super-busy.” For example, if an institution does not have an adult congenital heart surgery working group or a complex foregut surgery conference or a lung cancer screening/smoking-cessation program, one should take the initiative to collaborate and launch such working groups and even try to make them accredited by the Accreditation Council for Continuing Medical Education. Other opportunities may exist, such as building a regional extracorporeal membrane oxygenation program or starting an annual transplant regional consortium to review organ-sharing and outcomes with an aim to learn from each other. These are great ways to network inside and outside the institution. Furthermore, volunteering to give grand rounds and lectures to internal medicine department and other local institutions (especially private) can help foster relationships and seek further referral base.

Finally, the most important aspect of one’s practice is to have good outcomes. This is critical when faced with complicated cases, anatomy, and re-do cases. To ensure sound decision-making when faced with a difficult case, especially early in one’s career, it is important to be humble and seek the opinion of colleagues as they may have encountered such a patient in the past and are likely to be experienced. If foreseeable challenges are presented in the form of a complex procedure in the operating room, ask a senior partner to be available for help—as asking for help, especially ahead of time, demonstrates good judgment.²

CONDUCTING TOP-NOTCH RESEARCH

It is very important to be introspective and take the time to determine immediate- and long-term research goals. For clinicians who have conducted either bench or translational research and want to pursue a clinician–scientist track,

understand that a high level of resilience is necessary to pursue this path. Several failures and setbacks are likely to be encountered during set up of a laboratory, application for funding, and publishing. However, if directing an independent laboratory is a driving passion, then job opportunities that offer a start-up package for a laboratory should be prioritized. It is strongly advisable to have a compelling idea and bring a clear and sound research plan to job interviews. Previous laboratory experience and research mentorship will enhance competitiveness. This is a major undertaking and investment for the institution, and they will perform due diligence to determine that candidates are vested in the research, have previous bench research experience, and will have favorable odds for delivering results as promised. Also, be aware that quite often a clinician–scientist will earn less income than a clinician.

The quality of peer-reviewed publications is an important parameter that is scrutinized; therefore, work should be submitted to high-impact journals. While case reports will bulk up a curriculum vitae, it is not the way to build a name nor a career. In early career stages, it is best not to pigeonhole oneself as an expert on any one subcategory of research. For the first 3 to 5 years, publish on different topics within your discipline, look for funding opportunities, volunteer to be on journal editorial review boards, and determine where passions lie.³ Over the next 5 years, research should become more narrowly focused. As a niche is developed, work should be submitted to national and international societies. Eventually, peers will recognize your contributions that will lead to invitations to speak at grand rounds and various surgical societies.⁴

EDUCATING ONESELF WHILE EDUCATING OTHERS

One of the most rewarding aspects of academic surgery is the ability to teach and mentor rising students and residents. This is also critical for an educational portfolio.⁵ As part of an academic practice, there is an expectation to teach rotating medical students, residents, and fellows, along with active participation at morbidity and mortality conferences, journal clubs, residency interviews, and general educational lectures. During the acclimatization period to the hospital, didactic sessions and journal clubs should be initiated by reaching out to medical students, general surgery residents, and cardiothoracic fellows. There are various ways to teach residents. One of the best ways to engage students and residents is to conduct simulation teaching, with blended classroom and remote video conferencing sessions to discuss difficult cases or challenging topics in the field. Given the emerging role of simulation in minimally invasive and robotic surgery, it is now easier to simulate cases outside the operating room either in live-pig animation labs or robotic teaching consoles. Leading a simulation effort is not seamless⁶; it has its challenges as it requires vision, creativity in resource management, and

team leadership skills to manage and oversee the conduct of these activities. Such sessions will help build relationships with the house-staff and identify those residents who are interested in pursuing a career in cardiothoracic surgery. It is rewarding to guide residents and educate them about career pathways as it allows mentorship of the next generation while leaving a legacy of work and knowledge behind. There are also opportunities to work with trainees on different research projects. As part of an academic institution, participation in residency interviews and mock orals will be expected. Often, clinician scholars do not receive enough compensation for their time nor recognition for their efforts in education. The concept of educational value units and compensation for them has long been debated but has yet to be incorporated into a payroll budget at most institutions.⁷ If interested in education and in becoming part of the graduate medical education office (either as a representative of general surgical residency or cardiothoracic fellowship program), it would be appropriate to ask for reduced clinical full-time equivalent requirement, pay compensation, or both upfront.

As one's practice grows, it is necessary to keep abreast of the latest literature and technology, especially once training is completed and there is less time and expectation to constantly attend lectures and journal clubs. At this point, it is vital to transition to a self-learning process. To become an exceptional clinician, scrubbing in complex cases with senior colleagues is invaluable, as it can help build a rapport with them while getting on-the-job training. It is best to decipher the nuances of a new work environment early on, including learning novel ways to approach clinical dilemmas in terms of surgical technique and decision-making. Requests can be made to the departmental chair or division chief to attend training workshops to learn surgical techniques and technologies that were not covered earlier. For example, a cardiac surgeon may not have learned robotic surgery or a thoracic surgeon may want to enhance their skills in endobronchial ultrasound, navigational bronchoscopy, or endoscopic myotomy/mucosal resection. Seniors in the field should be sought who can help bring goals and aspirations to fruition and can serve as mentors by offering proper guidance in decision-making.⁸ While little literature has been written about losing referrals to robotic and minimally invasive surgeons, it is critical to recognize how a practice can suffer if one does not keep up with state-of-the-art tools and techniques. It is therefore crucial to self-reflect once in a while, and remain competitive in the practice.

Finally, clinicians are mandated by their respective boards to report their continuing medical education credits as well as ensure their administrative paperwork is completed on time, including renewal of state practicing licenses, a Drug Enforcement Administration Certificate, controlled substance registration, and hospital credentials.

Whenever possible, it is advisable to delegate such administrative work to dedicated staff. Clinicians also have to renew their certificate every 5 years and retake board examinations every 10 years or so. All of these points are essential to remember when getting inundated with work.

STEPS TO BECOMING A SURGEON LEADER

When settling into an academic program, it is important to understand how career promotion works. To maintain an upward trajectory, it is critical to meet with the departmental chair and division chief regularly. As clinical volume starts to grow, it is important to participate in various research projects with colleagues and engage in opportunities for growth. While research and education form the crux of one's passion into academic surgery, it is equally vital to understand billing, charges, and collections. A better understanding of this finance/business aspect of medicine will foster one's growth in administrative pursuits.

Good mentorship is key to early career academic success. Identify good mentors that are often other colleagues and department/division chief—communicate with them often and welcome the opportunity to mentor others.^{9,10} These mentor-mentee relationships should be treasured, and the investment of both the mentor and the mentee is paramount. Equally important to having mentors is having sponsors. While mentors will help with career guidance and offer advice on cases, clinical decision-making, and participation in projects, sponsors will help elevate a career. Sponsors are typically experts in the field and may have been past teachers or mere professional acquaintances. Effective sponsors will find opportunities to present research findings or facilitate engagement in activities that lead to career advancement. To lay the groundwork for finding sponsors, it is advantageous to attend national meetings, participate in seminars and symposia, discuss research ideas with internal and external peers, and make introductions to the giants in the field who can potentially serve as sponsors in the future.

It is advisable to volunteer to participate in institutional committees that are aligned with personal interests and direction of academic growth. For example, if actively pursuing an independent basic science laboratory, then become active in a precision medicine or a biorepository committee. Simultaneously, explore funding opportunities that will support laboratory work and attend grant writing or clinical trial workshops. If, however, the intention is to pursue an administrative path in the future, then ask to join operational, finance, and/or business committees on campus, as they will enhance business acumen. On the other hand, if surgical ethics is a main interest, then participate in an ethics committee on campus or look for global medicine opportunities that can broaden awareness about various cultural values. Finally, for a career as an educator, get involved with the surgical program director and be more active with teaching and curriculum design committees

along with working in collaboration with the graduate medical education office, accreditation organizations, and/or the Board. Lastly, if interested in advancing a career with a focus in research, education, or administration, one should look into avenues to pursue additional training. This can be in the form of clinical trial workshops or pursuing various degrees such as MBA, PhD, a master's in statistics, or a master's in public health depending on aspiration and interest. Often, academic institutions will offer a reduced tuition for faculty members to defray the cost, but pursuing these degrees will require protected time from division/department chief and approval. It is always prudent to first find out if the institute is vested in you before pursuing these degrees, as the "cost" of pursuing additional training only pays off when it is applied. Make sure that passion accompanies a career choice as all these activities are time-consuming and leave less room for clinical work and family. If interested in pursuing a nonclinical focus, it is important to have a different pay structure and full-time equivalent model that is tailored to one's own interest and practice to remain committed and be successful.

It may be necessary to turn to mentors and/or sponsors early on for opportunities to speak and give lectures, starting first at home institution. Talks should focus on ongoing research or a recently authored study. When possible, reach out to local company representatives to offer educational seminars for residents on topics and hands-on training on topics of interest. Such training sessions can allow recognition of leadership potential by a program director or department chair, which can lead to invitations for attending or organizing leadership workshops. Soon after joining an academic program, an application for an academic appointment that meets qualifications according to the institutional guidelines set by the promotions committee will have to be submitted. Once this application has been put forward, the next promotion portfolio should be researched and explored. It is critical to become familiar with the institution's promotion portfolio to learn early what the requirements will be for advancement and promotion. This will help maintain focus to ensure that one's career is heading in the right direction, as most institutions have defined metrics for progress. Ascertain whether faculty development committees are available, as they can provide invaluable guidance and direction to academic growth; some institutions have now incorporated them into their infrastructure.¹⁰

While it is not possible to attend all national cardiothoracic surgical meetings, identify 2 annual meetings that can be attended regularly. As years go by, there will be opportunities to attend and present talks at more meetings. Attempt to submit research abstracts either from a home institution, which may require institutional review board approval (unless the host institution already has an active institutional review board), or from a national database

such as the Society of Thoracic Surgeons, National Cancer Database, or the National Surgical Quality Improvement Program. When attending these meetings, search for opportunities to join a subcommittee that will help advance career goals. In addition, become an ad hoc reviewer for reputed journals in the field. Much like an author, each paper that is reviewed and critiqued gets scored by the editorial board and the reviewer is assessed based on the number of papers that are reviewed for the journal, the turnaround time, and the quality of review. If exemplary, the reviewer may then be invited to join an editorial board, which is quite an honor and beneficial to career advancement.

INNOVATE ALONG THE WAY

Innovation is truly the "cherry on top" of one's career in medicine. However, innovation cannot be rushed and only comes with time. While it is important to think of ideas outside the box, be careful of doing so at the early stages of career development, as it may impact patient outcome. Novel approaches should be discussed with the department/division chief first—as their experience will be invaluable. Over time, new skill sets will be acquired that will allow challenging situations to be addressed in different ways. Before embarking on these difficult situations, it is necessary to carefully perform a self-evaluation and to seek opinions from colleagues and mentors. If a novel strategy or technique is devised, then present it at meetings and publish it. If there is potential for device or software development, reach out to the intellectual property and patent department before discussing or publishing any material on the subject as a prior publication or presentation on the product can affect patent development.

To be innovative in medicine does not always translate into developing a new device, technique, or product. An innovative idea can range from a simple implementation of a new pain protocol, to developing a novel scoring tool for postoperative outcomes that impacts patient satisfaction, to complex devices and artificial intelligence technology.

KEEP AN EYE ON THE BIGGER PICTURE

Undoubtedly, the greatest achievement for any surgeon who is deemed "successful" in their career is volume and good clinical outcomes. Therefore, nothing should cloud good clinical acumen and sound judgment. The hospital finance department will constantly examine case load and revenue and judge success based on relative value units. While national reputation and publications will parallel scholarship, handling a high clinical workload and performing efficient billing and documentation makes one "a good citizen."

A word of caution against social media is warranted. Given the exponential rise of interest of promoting oneself on social media, be wary of becoming too active on such

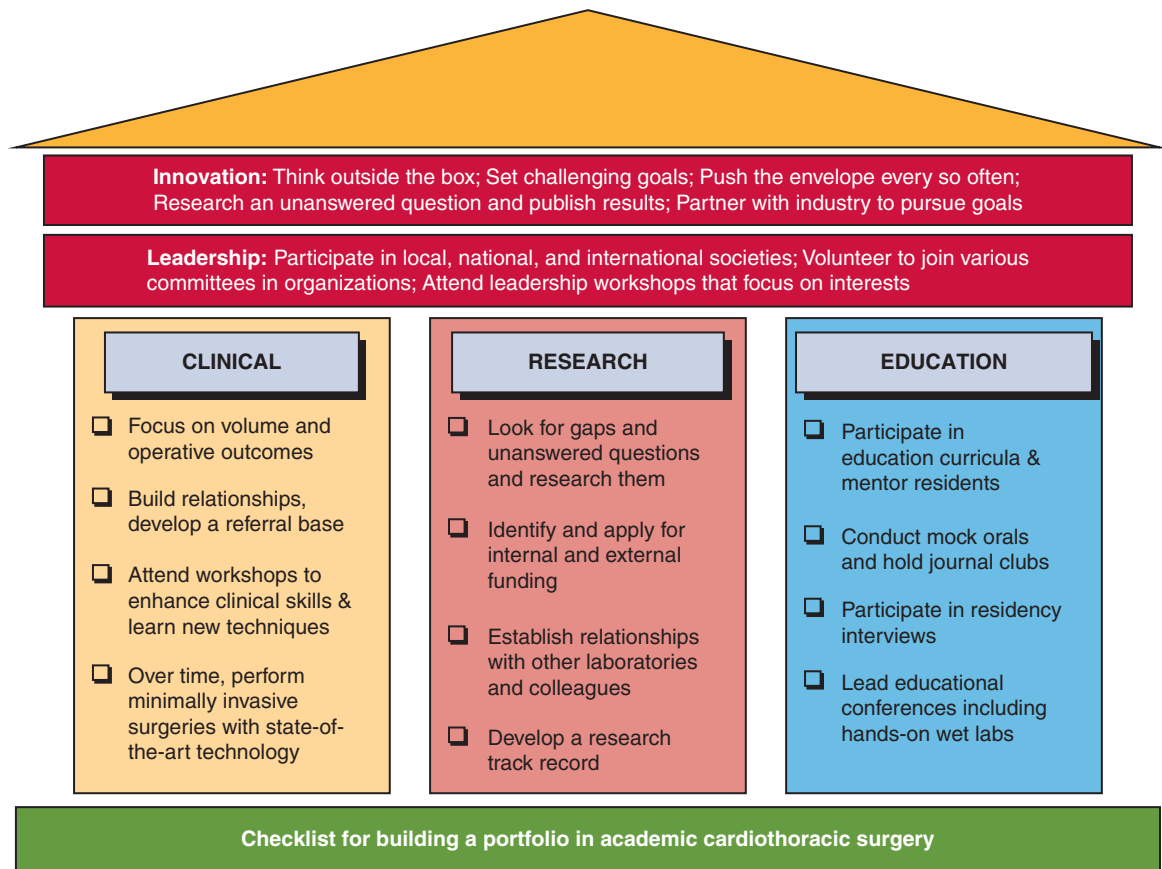


FIGURE 2. Checklist for career development based on the 3 pillars of the academic mission. Pioneers in surgery envision new ways to innovate and cultivate these pillars.

platforms too early in the career. While social media is an excellent avenue for networking and professional growth, early adoption of “routinely” posting may bring undeserved attention.

Finally, and perhaps most importantly, ensure that while the checklist is long, there should be time set aside for both career and family (parents, spouse, and kids). Learn to say no early on, take time to reply to e-mails, do not accept offers too hastily, and effectively manage time. Sometimes it is necessary to tell peers and department chiefs that “I’ll get back to you on that soon” or “I’ll think about it.” There will be several moments of stress and setbacks, both in personal and professional lives, and at these moments it is important to speak to peers and mentors who have endured similar situations. To help reduce attrition, many institutions have physician wellness programs that offer assistance for dealing with personal issues and work-related problems.

CONCLUSIONS

For those choosing an academic career in cardiothoracic surgery, all 3 pillars of service, research, and education, must be adequately addressed for promotion and career

advancement (Figure 2), but the proportion of these areas will vary over the arc of professional life and based on personal preferences. When contemplating and executing a career plan, always try to leave a legacy behind. Keep in mind that success will be built upon being humble, self-critical, having the ability to constantly learn from others, and remaining passionate about cardiothoracic surgery.

Conflict of Interest Statement

Dr Khaitan is a consultant for Vericel.

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