

# Cardiothoracic surgery: A specialty divided or as one

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In January 1865, Congress approved the 13th Amendment to the United States, which abolished slavery and signaled the end of a devastating civil war that threatened to divide our nation. At the same time, but on the other side of the world, Captain Thomas Musgrave and his crew of 4 onboard the schooner *Grafton* shipwrecked on Auckland Island, a remote godforsaken place in the fierce expanse of ocean between New Zealand and Antarctica. Year-round freezing rain, howling wind, and lack of adjacent shipping make Auckland Island one of the most remote and forbidding places on Earth. To be shipwrecked there meant almost certain death. Yet Captain Musgrave and his crew survived for 2 years in the face of incredible odds and set out on an epic voyage of self-rescue, probably one of the most courageous ever attempted, and preceding by 50 years a remarkably similar and more famous journey by Sir Ernest Shackleton and the crew of the *Endurance*.

Incredibly, at the same time that Musgrave and his crew were learning to survive, another ship, the *Invercauld*, wrecked at the northern end of Auckland Island, only 20 miles away but separated by impassible cliffs, chasms, and dense subalpine shrub. The crew of the *Invercauld* faced far better odds than the crew of the *Grafton*, with better resources and topography and with the advantages of numbers as there were 25 men aboard the larger ship. However, in stark contrast to Captain Musgrave, the captain of the *Invercauld* fell apart under the daunting challenge of a shipwreck in such a primitive landscape and seemingly hopeless circumstance. Nineteen of the 25 aboard the ship survived the initial wreck, but chaos ensued, and at the time of rescue 1 year later, only 3 were still alive. There was no camaraderie to bind them, and even the crisis before them did not provoke a common purpose or an ability to work together, confounded by the captain's lack of leadership. Ultimately, they deteriorated to drawing lots to see who would accept death in order to feed those remaining, a grotesque descent into cannibalism. The survivors told a sordid tale of the disintegration of human connection, sort of an adult true version of the *Lord of the Flies*.

The crew of the *Grafton* survived 2 years before their remarkable self-rescue, with no man lost and with a high degree of mutual respect and a maintenance of human dignity, although on the same island, and at the same time, an-

other crew suffered immeasurable losses. What distinguished the fate of Captain Musgrave and his men from that of the *Invercauld* survivors? And what lessons can we learn from the fate of these stranded sailors?

As Shakespeare wrote in *The Life of Timon of Athens*, "We have seen better days." Indeed, cardiothoracic surgeons have seen better times. Many are currently disappointed by the lack of status and diminishing influence that cardiothoracic surgeons possess today. We have high expectations; one might even say grandiose expectations. Those of us who are now midcareer look at the generation ahead of us with envy at the privilege, prestige, and financial rewards that came with being a cardiothoracic surgeon in the 1970s, 1980s, and early 1990s. In its heyday, cardiac surgeons ruled the hospital and were the privileged upper-class physicians in US medicine. They made more money, ran more departments, influenced more policy, and crafted more innovations than anyone else. And because cardiac surgery was the cash cow of the big hospitals, cardiac surgeons often wielded as much power as the hospital CEOs, and the cardiac surgeons accepted the responsibility and privilege that came with this supremacy. Clearly those days are long gone, but is it because cardiothoracic surgery is failing, because we are no longer important, because we have been replaced by medical interventionalists? Or is it simply because our specialty has normalized, that we have perhaps appropriately downsized to a specialty made up of mere mortals—highly capable and talented individuals caring for patients along with a similarly talented cadre of professionals in other specialties, rather than being the cardiothoracic gods of Prometheus?

Our specialty of cardiothoracic surgery has evolved to consist of 3 distinct subspecialties: adult cardiac, congenital, and general thoracic surgery (Figure 1). Cardiac and thoracic surgeons have several obvious reasons to be connected: a common history, a common body cavity, shared training programs and certification, joint professional societies, and an intermingling of surgical practice. However, thoracic and cardiac surgeons also are divided by disease processes, referring physicians, hospital relationships, research focus, and culture (Figure 2).

Why are we together? Have we perpetuated our marriage beyond its usefulness, and maybe after the love is gone? Is the link of cardiac and thoracic surgery in the United States an anachronism compared with the progressiveness seen in the rest of the world? Would our respective specialties be better served by clearer distinction of training and practice, and would this attract new students and residents to our specialties? Should we accept our differences and be more progressive as a "specialty divided"? Or are there still compelling reasons for us to stay together, to remain a specialty "as one"?

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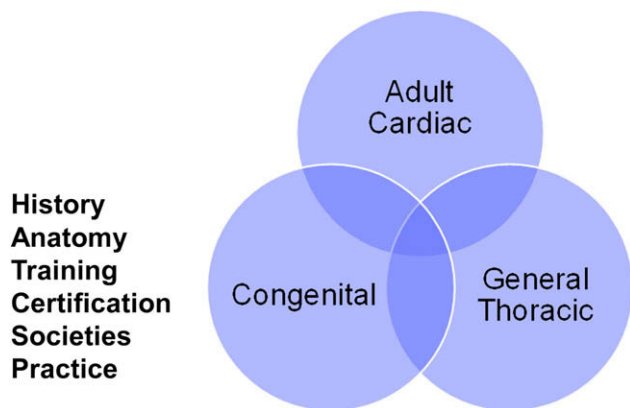


FIGURE 1. The links within cardiothoracic surgery.

Cardiac surgery and thoracic surgery are intimately connected through their common history. The 20th century saw a rapid evolution in thoracic surgery. Although initially limited primarily to the management of empyema and tuberculosis, improvements in anesthesia, positive pressure ventilation, and technical advances allowed thoracic surgeons to treat successfully lung and esophageal cancer and an expanding array of other intrathoracic pathology. Refinement of chest surgery, experience gained in wartime injuries during World War II, and the development of extracorporeal circulation launched cardiac surgery techniques, initially as a small outgrowth of thoracic surgery but quickly evolving through the 1960s and 1970s, that became the most pre-eminent components of our specialty. The ability to correct previously untreated valvular heart disease and the development of coronary bypass surgery led to an explosion of research and innovation. We trained a new generation of surgeons interested primarily or exclusively in heart surgery, and we saw a proliferation of cardiac surgery programs into nearly all major medical centers. Because of its novelty, the high stakes involved, and the vacuum of a previously unfilled need, cardiac surgeons rightly rose to the pinnacle of surgical specialists.

Not surprisingly, thoracic surgery suffered during this expansion of cardiac surgery. The need for adult heart surgeons, the prestige and remuneration, and the novelty and opportunity resulted in nearly all cardiothoracic graduates from US training programs in the 1970s, 1980s, and early 1990s choosing a career dedicated to the exciting field of cardiac surgery. A few dedicated thoracic surgeons were steadfast in their belief that general thoracic surgery was as important as cardiac surgery, that we needed to continue to train and mentor surgeons who were interested in thoracic oncology, lung transplantation, and a variety of more sophisticated interventions for airway pathology, emphysema, and esophageal disorders. In North America, the most prominent general thoracic programs were in Toronto and Boston, headed by pioneers of thoracic surgery, Grif Pearson and



FIGURE 2. The differences between cardiac and thoracic surgery.

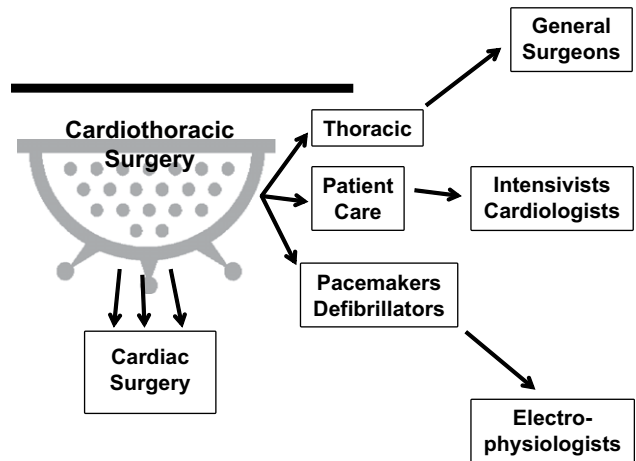
Hermes Grillo, respectively (Figure 3). However, most of our cardiothoracic training programs at that time were a thoracic surgery wasteland, providing little leadership, few role models, and minimal encouragement to enter the field of general thoracic surgery.

Throughout this period, most US training programs deemphasized thoracic surgery. In some programs, thoracic surgical cases were added on at the end of the day as an afterthought, a tedious obligation when pressured to manage a patient with lung cancer, empyema, or esophageal cancer. In other programs, there was not even this time for thoracic surgery. It didn't pay enough, it wasn't exciting, and it wasn't the reason that the cardiothoracic surgeon had chosen the specialty. We handed thoracic surgery off to our general surgery colleagues, who were more than happy to oblige. At a time when general surgery was being gutted by increasing surgical specialization, trauma and the hand-off of general thoracic surgery allowed general surgeons to perpetuate the dream of a comprehensive surgeon who could care for all patients and nearly all surgical problems, a nostalgia for the surgical traditions of the mid-20th century that continues to hobble general surgery with unrealistic expectations and regressive attitudes to this day. However, general surgeons provided critical attributes that helped them be the "thoracic surgeon" for their hospital. They were available and interested, understood the principles of oncologic staging and surgery, were willing to talk with pulmonologists and oncologists, and were accustomed and adept at the full longitudinal management of the patient, something that cardiac surgeons were starting to delegate to others.

Cardiac surgery was so successful and so rewarding that the best and brightest medical students and surgery residents flocked to the specialty. During this boom of cardiac surgery, there was so much operating to be done that the most efficient use of a cardiac surgeon's time was in the operating room, and so cardiology flourished as the "support team" for the cardiac surgeon. Cardiologists took on the role of evaluating the patient, maximizing nonsurgical therapy, counseling the patient about possible surgery, and then caring for the patient after cardiac surgery. Cardiac surgery was so successful that the more mundane components of cardiothoracic surgery were delegated to others—first general thoracic surgery, then the overall disease management of the patient with heart disease, and then even less technically



**FIGURE 3.** Hermes C. Grillo, MD (1923-2006). Pioneer in thoracic surgery and in cardiothoracic education.



**FIGURE 4.** The giving away of cardiothoracic surgery.

challenging operations, like pacemakers and defibrillators (Figure 4). In fact, today we decry percutaneous coronary interventions as the cause for contracture in the cardiac surgery business, yet it is the field of cardiac electrophysiology that is growing the fastest and becoming as significant in some centers as interventional cardiology. This work was purely cardiac surgery business until we were too busy and delegated it to our cardiology colleagues, and now we struggle to reengage as we hope that a few of these patients may be referred for atrial fibrillation procedures.

The cardiologists have done a good job and deserve the success that they have achieved. For two decades, cardiologists were lost behind the shadow of the great cardiac surgeons, yet cardiologists patiently continued to care for the whole patient, and they tirelessly developed better and better strategies to delay or avoid heart surgery. Some of these strategies may appear self-serving and promulgated for the benefit of the cardiologist, but nonetheless our cardiology colleagues have also improved the care of patients, and because they have always accepted the role of total management of a patient's heart disease, they now control nearly all patients with cardiac disease. In fact, the pendulum has swung the other way. We don't like to admit it, but cardiac surgeons have become the handmaidens of the cardiologists, a role reversal of epic proportions, and we see the cardiologists as powerful as the surgeons were in the 1980s. And we are more than ready to retool ourselves, to work hard, and to encourage the pendulum to swing back to some semblance of equanimity.

Cardiac and thoracic surgeons have remained linked together, particularly in the United States, for a variety of reasons. Historically, cardiac surgery descended from thoracic surgery, linked by a common lineage and common body cavity. Our training has been linked together since the development of thoracic surgery residency training and creation of the American Board of Thoracic Surgery. Our specialty

societies predominantly represent both sides of our specialty. However, we have created some subspecialty societies in both cardiac and general thoracic surgery, and one that is most visible and important is the General Thoracic Surgery Club, which had its first meeting in 1988 to meet the need of general thoracic surgeons who felt underserved, outnumbered, and underrepresented in our larger cardiothoracic surgical organizations at that time. This was partly in response to the 21st Annual Meeting of the Society of Thoracic Surgeons (STS), held in January 1985, where only 18% of the presented papers were general thoracic work, which was similar for both the STS and American Association for Thoracic Surgery (AATS) meetings throughout the 1980s.

In the United States, cardiac and thoracic surgeons also remain joined by a true intermingling of individual practices. The 2005 AATS/STS Cardiothoracic Manpower Survey showed that two-thirds of respondents self-reported as having a practice combining cardiac and general thoracic procedures. Only 3.5% self-reported as performing only adult cardiac operations. This seems contradictory to what our practical experience would suggest. A survey this year of the Western and Southern Thoracic memberships showed a bimodal distribution of practice, with the majority nearly exclusively performing either cardiac or thoracic surgery and 38% having a true mixed practice of cardiac and thoracic surgery. In respondents from outside the United States, these numbers show a higher degree of differentiation, with only 23% having some degree of a mixed practice.

A third major factor binding our specialty together is our combined training programs, although in most of the world, cardiac surgery and thoracic surgery have evolved independently, or conscious decisions of policy and education have resulted in separation. In 1993, a task force was assembled by the Royal College of Physicians and Surgeons in

Canada to recommend possible changes to the training requirements for cardiothoracic surgeons, with one goal being to reduce the length of training. Final recommendations were implemented in 1996, with the major change being that cardiac surgery and thoracic surgery should each become their own primary specialties.

Other countries have also separated cardiac surgery and thoracic surgery training and certification, and this translates into decreased training time. In most of the world, students enter medical school immediately after secondary school, and as a result, most physicians outside the United States start their residency training 2 to 4 years earlier than their American counterparts. Cardiothoracic surgeons outside of the United States have shorter periods of overall training after medical school, yet more training time dedicated to cardiac and thoracic surgery. Outside of the United States, 57% of surgeons have total surgical training time of 6 years or less, compared with only 12% of cardiothoracic surgeons from the United States. Less time in training US surgeons is dedicated to cardiothoracic surgery, however, despite the longer overall training. Eighty-six percent of cardiothoracic surgeons in the United States spend only 2 to 3 years in cardiothoracic training, and 54% of cardiothoracic surgeons outside of the United States spend 4 years or more in specialized training. Maintaining our combined training has a clear cost in terms of increased duration of training and a delay in the initiation of one's career, substantial deficits that discourage the interest of potential cardiothoracic surgeons.

Is there a good reason for cardiac and thoracic surgery in the United States to stay associated, as we have historically? Is it time to consider a fundamental change in our training and certification algorithm? Are our processes outdated and obsolescent as represented by the major differences seen in US- versus non-US-trained cardiac and thoracic surgeons? Are we providing the training that aspiring cardiothoracic surgeons want and need to be successful in the 21st century? When we examine more deeply the historical connection, a joint board, and a shared part of the anatomy, what do cardiac and thoracic surgery fundamentally have in common?

In fact, thoracic and cardiac surgeons are divided by disease processes, referring physicians, hospital relationships, research focus, and culture. Some would argue that the divorce between cardiac and thoracic surgery has already occurred in everything but name and that we would serve our residents and our patients better as a specialty divided. There is a lot of truth to this opinion as we consider how our specialties differ, compared with the somewhat tenuous and artificial links that keep us together. Clearly, we deal with fundamentally different diseases—the cardiac surgeon confronting cardiovascular pathology and physiology that has little relation to the common thoracic problems of oncology, end-stage lung disease, and esophageal disorders. For the cardiac surgeon, the only general thoracic pathologies

of interest are those that result in secondary changes to cardiovascular physiology, most commonly advanced lung disease being considered for transplantation or pulmonary thromboendarterectomy. And the cardiovascular interests for the thoracic surgeon relate to the need to manage central tumors that may involve major vascular reconstruction or require cardiopulmonary bypass. The closest professional relationship for the cardiac surgeon is with the cardiologists. On the other hand, general thoracic surgeons have almost no interactions with cardiologists and instead interrelate with a fairly diverse group of internists and surgeons, consisting primarily of pulmonologists, gastroenterologists, and medical oncologists but also including radiation oncologists, general surgeons, and ear, nose, and throat/head and neck surgeons. Cardiac surgeons attend cath conference, thoracic vascular conference, and maybe an electrophysiology conference, and thoracic surgeons go to the tumor board, pulmonary, and gastrointestinal conferences.

In the hospital, cardiac surgeons join with the cardiologists and hospital CEOs to create Cardiovascular Institutes or Heart Centers, and the thoracic surgeons form similar alliances within Cancer Centers, all along the principle of providing coordinated multidisciplinary care to our patients. The associations that each of us make within the hospital are almost completely distinct, with little or no overlap, and seemingly few opportunities for synergy given our disparate paths.

Cardiac and thoracic surgeons have different prerequisite training priorities as well, as evidenced by the radical revision of the Canadian training scheme in the 1990s. We can all agree that cardiac surgery is a technically demanding specialty, requiring precision, efficiency of motion, sound intraoperative judgment, and attention to the most minute detail. Yet cardiac surgeons are increasingly critical of the inefficiency of the prerequisite training in general surgery, and rightly so. Is it necessary for an aspiring cardiac surgeon to master the details of pancreatotomy, liver resection, or colonic anastomosis? This time would be better spent obtaining new and necessary skills in endovascular interventions and learning how to drive a catheter, interpret an echocardiogram, and perform a vascular anastomosis. Thoracic surgeons, however, have a lot in common with general surgeons and directly benefit from the senior general surgery operative experience obtained as part of a complete general surgery training program. Thoracic surgeons do work around the pancreas and liver and perform frequent gastrointestinal anastomosis, so gain from the experience of operating on and around these organs. Our primary skill sets are fairly unique to our subspecialty, and therefore our prerequisite and requisite training needs are different as well.

The research arenas of the thoracic and cardiac surgeon are nearly completely unique. Cardiac surgeons study ischemia-reperfusion along with techniques and substrates to

help vulnerable cardiomyocytes to survive, and thoracic surgeons study oncogenes and the molecular biology of cancer and cancer therapies. Cardiac surgeons seek funding from the National Heart Lung and Blood Institute, and thoracic surgeons are more typically funded through the National Cancer Institute. Our need for space, money, fellows, and time is the same, but virtually everything that we do is distinct from one another in science and investigation.

After all is said and done, it seems that there is little reason for us to stay together. Everything that we do is different. The preparations for residency and technical components of training are clearly distinct. We deal with completely different patients and categories of disease, and our closest professional colleagues are not each other. Our operations are different, our research is unrelated, and our cultures are often incompatible.

In the rest of the world, cardiothoracic surgeons have seen the need, or even the benefit, of separating into distinct specialties to train residents better, to develop a focused constituency, and to best advocate for their unique needs. Just 3 months ago, one of our most esteemed leaders in thoracic surgery made these same observations and called for a formal separation of our specialty. Are we just stubborn in our attempts to keep the field together in the United States, when nearly all of the rest of the world has decided that cardiac and thoracic surgery are a specialty divided?

However, we should not separate just because we are different, but only if it makes us better. There are several ways that we might improve ourselves by becoming independent specialties. The first, and perhaps the most profound, is to improve the quality and efficiency of our residency training. We have all seen the statistics of declining applicants to cardiothoracic surgery in the United States, the number first dropping below the available positions 4 years ago.

Certainly, there are a number of factors that contribute to a lack of enthusiasm for joining our specialty. The downturn in the stock market led to senior surgeons delaying retirement to bolster their stock portfolio, and practices delayed hiring new partners because of decreasing reimbursement per procedure. Suddenly there were few new cardiac surgery jobs and word was quickly out among the general surgery residents. Nothing is more chilling than concern about job availability and job security when considering a variety of career choices.

Another factor in residents' declining interest in cardiothoracic surgery is length of training and inefficiency of focus. Many feel that there are now more candidates with an increased interest in general thoracic surgery and that many of these are deterred by the contemplation of a majority of their training time dedicated to cardiac surgery when it is not their planned career. Some of these residents simply choose another field, such as surgical oncology or upper gastrointestinal surgery, and others try to short-circuit the training requirements of the American Board of Thoracic Surgery

by trying to find pseudofellowships in thoracic surgery that afford them some credibility. Others simply have the audacity to label themselves as "thoracic" surgeons to an unsuspecting public and cadre of naïve referring physicians.

On the other hand, cardiac surgeons are justifiably dissatisfied with general surgery as a prerequisite to cardiac surgery, seeing a large amount of time in rotations that are of little relevance to the future cardiac surgeon and that artificially extend the total training of the cardiothoracic surgeon. Separating into separate specialties with separate training requirements would solve both of these problems. Cardiac surgeons could complete a core requirement in surgery for 2 to 3 years and train in cardiac surgery for 3 to 4 years to achieve a more dedicated cardiac experience in a shorter period of time. Thoracic surgeons could complete general surgery training to obtain the important senior operative experience and then enter a 2-year dedicated thoracic program with only a modest cardiac experience to supplement their abilities around the central vessels. This is exactly what our Canadian colleagues instituted 12 years ago, and it seems that this would be very attractive to residents who are currently discouraged about joining our specialty.

Another important reason that fewer students are interested in cardiothoracic surgery relates to conscious lifestyle decisions by the Millennium Generation. Cardiothoracic surgery has long celebrated, or even exaggerated, the ethic of hard work and subjugation of one's own personal life to the commitment to patients and to the profession. This does not resonate with the aspiring surgeons of 2008. They are not willing to make sacrifices to self and family that have been the sine qua non of cardiothoracic surgery practices in the past. This may be a particular reason why our specialty has been enormously unattractive to women, who make up only 3% of cardiothoracic surgeons, the lowest of any specialty, including neurosurgery and orthopedics. As I have learned in a household of women, they are smarter than men, more balanced, more insightful, less often wrong, and more often beautiful! And with over 50% of our medical school graduates having these superior traits, we are not showing a career that is attractive to the women, or to the men, who are the future of our specialty.

There have been discussions about separating training and certification for thoracic and cardiac surgeons at several points over the past 10 to 15 years. But in the United States, we have consistently made active decisions to maintain joint training and a common certification, at odds with most of the rest of the world. Some would argue that we are in a crisis of identity, that critical times require critical decisions, and that now is a time to seriously reconsider whether we can be more successful standing alone than as a ill-suited and incongruous couple.

I disagree. I like us the way we are. I think we are best together. We gain more from being together than apart, and we lose more if we each go our own way. The United States

survived a bitter civil war and remained a stronger and better union, despite major differences. The crew of the Grafton survived with leadership, camaraderie, and commonality of purpose. We are a tiny specialty, much smaller than our egos would imply. But in the political, policy, and reimbursement world where we now need to be successful, we are inconsequential compared with the giants of internal medicine, cardiology, radiology, and even general surgery. Both of our specialties have a slightly larger voice, an agenda that reaches a few more ears, when we say it in concert. And I allege that each of us would be overpowered by a new partner if we forged new relationships with cardiologists, pulmonologists, or general surgeons. There would be some advantages to be sure, yet it is even less likely that our new associates would be as sympathetic and supportive as the partners that we already have.

The STS and cardiac surgeon leaders had the brilliant foresight to develop a cardiac surgery clinical database nearly 20 years ago. This was unprecedented at the time and set the standard for evaluation of outcomes before it became fashionable. The STS Adult Cardiac Database now includes over 80% of cardiac surgery practices in the United States and provides legitimate risk adjustment that is paramount in any valid effort to compare results. The database has helped to improve patient outcomes in a clear and objective way, despite the increasing age and medical comorbidity of our patients. It has also resulted in multiple important publications that set new standards of cardiac surgery care and has been important in defining the data needed for reimbursement and policy decisions for both private payors and for the federal government. The STS and cardiac surgeons are now considered the leaders in quality improvement, patient safety, and rigorous assessment of patient outcomes. This is something that we can all be proud of, even the general thoracic surgeons, because we collectively made the decision to make this investment 20 years ago—an investment that is now repaying itself substantially, both financially and in political influence.

Thoracic surgeons have been slower to adopt the establishment of a database, and we are 15 years behind our cardiac colleagues in its development. I think without the pioneering work of the cardiac surgeons, we would still not have made any progress, but with their leadership and with their current support, we now have a growing and increasingly robust general thoracic database under the leadership of Dr. Cam Wright. We are far from having the impact that the cardiac database now has, but it is a patient and methodical process. We need to get more thoracic surgeons involved. We need larger numbers of patients enrolled. We need more longitudinal follow-up. But we are achieving this, largely because of the experience of cardiac surgery and the synergy of our combined efforts.

It is easier, and maybe more expedient, to consider separating from our partner at a time of perceived strength. In the

past, cardiac surgeons may have gladly relinquished thoracic surgery when there was little interest from trainees, few advances in research and techniques, and little financial reward. Yet, at a time of contraction in some cardiac surgery practices, thoracic surgery suddenly looks valuable again. On the other hand, whereas in the past thoracic surgery was the poor cousin of cardiac surgery and needed the partnership with cardiac surgery to have any political clout, thoracic surgery has now seen a renaissance, a rebirth, and a resurgence of interest from residents interested in cardiothoracic surgery. It would be easy for thoracic surgeons now to advocate separation, at a time when we are feeling strong. More and more residents want to practice general thoracic surgery, and we see our association with cardiac surgery as an encumbrance that leads some to choose alternative careers. Yet we should not be seduced by the expediency of separation today, at a brief moment when it may suit our own self-interests as general thoracic surgeons. Two principles are at stake that make it important to stay together. The first is pragmatic. We do not know what the future holds, but rest assured that issues will change, bad times for cardiac surgeons will pass, and new challenges will face thoracic surgeons in the future. The pendulum will almost certainly swing back the other way, and the current rosy outlook for thoracic surgeons may not be as optimistic. When that happens, we will be happy to have the strength and support of our cardiac colleagues, and we should feel privileged to be able to give them a hand when things are tough in the cardiac side of the specialty. The second reason is even more important and is a matter of principle. I think that we owe each other an enormous measure of loyalty, unwavering and resolute. We have grown up together. We have trained residents together. We have celebrated successes and endured temporary setbacks. Cardiac surgeons have provided leadership, financial support, and advocacy that have benefited thoracic surgeons at innumerable times throughout the past 3 decades. Thoracic surgeons should not forget that history at a moment when we feel flush with new influence and power and when, for the first time, it is our cardiac colleagues who are facing the major stresses. We should be loyal to our joined specialty, and to our cardiac surgery colleagues, and work together to figure out ways that we can both be better.

There are some changes that we can consider to make our lives better, to reinvigorate our specialty, and to make it more attractive to medical students and residents. We need to provide more flexibility in the options to train as a cardiothoracic surgeon (Figure 5). The rigid principles of the past—5 years of general surgery, 2 years of research, and 2 to 3 years of cardiothoracic training—do not meet the interests and needs of many who would be attracted to cardiothoracic surgery. We have taken a number of steps to make this better and to provide other training options for our residents. First, the American Board of Thoracic Surgery engaged in a series of negotiations with the American Board of Surgery to develop

a new 4/3 integrated training in general and cardiothoracic surgery that leads to dual board certification. This allows some residents to select cardiothoracic training earlier, stay within their own training program, avoid the expense of the national match, and have a more individualized and intensified training in cardiothoracic surgery.

Second, the American Board of Thoracic Surgery eliminated the requirement of American Board of Surgery certification as a prerequisite to cardiothoracic certification. This has laid open even more radical adaptations to our residency training, like a dedicated 6-year cardiothoracic training program with no general surgery prerequisite. This is a bold and needed step, and we need to have more of these programs, as each program will have its own character that will give prospective cardiothoracic residents a more robust spectrum of training options from which to choose.

Giving up the requirement of American Board of Surgery certification has created another attractive pathway to cardiothoracic surgery, through the prerequisite of vascular surgery training. Last year, the American Board of Thoracic Surgery and the Thoracic Residency Review Committee approved the acceptance of *any* of the vascular surgery training pathways to be legitimate qualification for entering a cardiothoracic residency. This creates the dual advantage of providing a new career option for a vascular surgeon as well as bringing a number of residents into our training programs who already have the skills of endovascular surgery.

A second major step in the retooling of our specialty for the 21st century is already underway as well. Concerned about declining interest of residents in our specialty and a perceived bottleneck in our ability to keep practicing surgeons current with technical advances in our field, the leadership of all of our major organizations have launched a major initiative, creating a new incorporated Joint Council on Thoracic Surgery Education. This initiative will hire a new Surgical Director of Education, a cardiothoracic surgeon with experience in education and a passion about improving how we train our residents and how we keep our practicing surgeons current. This summer will debut a “boot camp” for entering residents to be partnered with senior surgeons in a concentrated environment of simulation to jump-start the learning curve within the cardiothoracic residency. This is an effort to improve both patient care and the ability of the resident to take an early and more active surgical role in their residency training. The search process for the Surgical Director of Education is underway; a decision will be made later this year, and this initiative is funded by up to 1 million dollars per year.

Finally, I think that we should seriously consider a lifestyle and attitudinal change as individuals and as a specialty. I believe that cardiothoracic surgeons, or at least some of us, should decide to work less and make less money. I know this seems like heresy, as well as contradictory to what we all feel, as we already make less and less money while working more and more to try to stay even with our expectations.

## CT Training Changes in past 5 years

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- **Elimination of ABS requirement**
- **Creation of 4/3 integrated programs**
- **Creation of dedicated 6 yr programs**
- **Creation of “thoracic track” residencies**
- **Acceptance of vascular surgery prerequisite**
- **Increase in index cases by ABTS**
- **Creation of two pathways by ABTS**
- **Incorporation of Joint Council for Thoracic Surgery Education**

**FIGURE 5.** Cardiothoracic training: changes in the past 5 years. ABS, American Board of Surgery; ABTS, American Board of Thoracic Surgery.

Maybe a more palatable term would be to consider *lifestyle improvements*, but ultimately this requires decisions about the money that we take home.

The philosopher Jean-Jacques Rousseau in his discourse on the origin of inequality (1754) argued that being truly wealthy does not require having many things; rather, it requires having what one longs for. Wealth is not an absolute, he reasoned, it is relative to desire. Rousseau stated that there were 2 ways to make man a richer: give him more money or curb his desires.

How could we hope to have more than we already have? Each of us are so amazingly fortunate to have a career with the impact on people and the challenges to ourselves—a career that is simultaneously rewarding, exciting, and makes the lives of people around us better. How can we expect a greater privilege than the one we have of being able to be cardiothoracic surgeons? I never could have dreamed of such success, and I still shake my head in wonder at what I do every day.

When I was finishing my residency and looking for a job, my most important advisor was Doug Mathisen. Doug told me, “Decide how much money that you need, how much you feel that you are worth, how much you need to support your family. Once you meet that threshold, don’t let the allure of more money dissuade you from doing what you want to do or being where you want to be.” We all feel the impact and pressure of declining reimbursement and have tried to offset these declining revenues by working more. We operate more, are home less, have abandoned our hobbies, outside interests, and even some of our friendships in our effort to maintain an income that we know was previously easy to come by as a cardiothoracic surgeon. So is there

any question why the potential future thoracic surgeons do not see us as desirable role models or as having a reasonable work–life balance?

The current generation wants assurance that they will have a job and that they will have a life, if they choose cardiothoracic surgery. They want to have a rewarding career, make enough money to live comfortably, and have time for their family and for a life beyond cardiothoracic surgery, really not an unreasonable set of expectations. The only barrier is deciding how much money is enough. Despite all the doom and gloom, we still do OK. Last year, the AATS publication *Thoracic Surgery News* ran a graph of cardiothoracic surgeon salaries on the front page to no small embarrassment to those of us who at the time were pressuring lawmakers to correct the drastic cuts in Medicare reimbursement for physicians. And if we look at current income of cardiothoracic surgeons compared with the public, compared with other professions, and even compared with other physicians, it appears that we are surviving. Cardiothoracic surgeons make more money than 99% of the US population and more than most other specialties in medicine. In my opinion, our problem is not that we make too little money but that our expectations are too high, that we long with great nostalgia for the heady days of million dollar salaries, and we look suspiciously at the colleague sitting next to us, convinced that they are making more money than we are—driving us to a frenzy of work to supposedly “make ends meet.” I do not for a minute propose that we let off the pressure on Congress and other policy makers to fairly reimburse for the very high and intense level of work that we do—to show that surgeons who operate all night to save a life may have at least a fraction of the value that is afforded to professional athletes, TV stars, or corporate executives. What I suggest is that we look within ourselves and be happy with what we have and that we consider making less money as a win–win strategy of creating more jobs, improving the quality of life for ourselves and prospective cardiothoracic surgeons, and being home more often.

Imagine what would happen if each of us decided to work 10% to 20% less and accepted a 10% to 20% reduction in our income as a result. It would be a shock, that is sure, and one that many cannot or would not consider, but let’s contemplate the advantages. First and foremost, we would need to go home earlier, eat dinner with our families, take more days of vacation, and maybe even need to dust off those hobbies that we traded in when we stayed at the hospital all the time. Imagine more time for golf, for photography, for skiing . . . more time for drinking wine and laughing with friends. The question is whether our families would be able to tolerate having us around more, but I think it might be worth a shot.

Second, we would show a different image to those who might find cardiothoracic surgery an alluring specialty. I think we would all be surprised to see a renewed interest

in cardiothoracic surgery if medical students and residents saw how exciting our careers are and simultaneously respected the balance that we have in our lives.

Finally, decreasing our own workload would automatically require a large supply of new jobs. If the supply goes up, one can rest assured that the medical students and residents will flock to fill our residency positions, particularly if they see us as positive rather than negative role models for a successful and balanced career. And at the end of the day, I think that most of us will still have enough money to meet the threshold that Doug Mathisen advised 17 years ago, that we can live well, and that we can be happy.

I hear from many of my colleagues that cardiothoracic surgery is in a crisis, that we are shipwrecked and struggling to survive. They point at declining reimbursement, encroachment on our scope of practice, increasing regulatory constraints, and declining interest of students in the specialty of cardiothoracic surgery as evidence of a specialty that is devalued, akin to the US dollar overseas. I have to admit that I resent the comments I hear so often about the crisis in cardiothoracic surgery. These comments are well intentioned and represent the disillusion and failing morale of many in our specialty. At the same time, these opinions tend to shape our psychology and magnify our discontent rather than providing a useful antidote to our ills. What we say and what we do have a profound impact on those that look to us as role models. So when we announce a crisis, it should be no surprise that the echo back from our constituents and our students reflects a crisis as well.

We are in the midst of another political season, and there is one thing that we can learn from the pollsters, pundits, and politicians: *spin*. For those running for office, the most embarrassing gaffe or most damaging exposure is just another cause for unbridled optimism. Sometimes the flaw may be briefly acknowledged, turned into a moment of humility and humanity, and as quickly, set aside and turned into an example of the candidate’s strength and superiority. Now, I am not suggesting that cardiothoracic surgeons should start acting like politicians . . . quite the opposite. We are not particularly adept at pandering to pollsters and ill-conceived opinions. We are not good at substituting popularity for honesty. We need action and would bridle with the gridlock of political expediency. But what we can learn from the politicians is how to change the message, how to make it our message, how to avoid magnifying a weakness by whining about it rather than building it into a strength. We need to make the message one of hope, passion, optimism, and promise. We need to remember why we are excited to do what we do every day and make that excitement what we talk about to our students and residents. We need to lose the word *crisis* and substitute *opportunity*. We can change the perceptions of cardiothoracic surgery by both action and words, and we need to start by changing our own perceptions and being



mindful of the power that negative words and attitudes have on those around us. More than anyone else, it is those of us sitting in this room that wield the power to influence the perceptions, the reality, and the future of our specialty. We cannot wait for others to do it for us, and we cannot let our own despondency shape the message to aspiring cardiothoracic

surgeons. We need to be self-critical and proactive to keep our specialty vibrant and rewarding “as one,” and we need to keep our words positive as we shape the future of cardiothoracic surgery, rather than feeling helpless and captive to forces around us that challenge our expectations and our status quo.