Academic Cardiac Surgery in Croatia: Perspective through Eyes of an International Collaborator

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Academic medicine has reached a cross-road around the world. The explosion of technology, new medicines and techniques, instant international communications and globalization, coupled with countries needs to reduce spiraling health care costs has lead to a questioning of the need for academic centers as they have existed in the past. Death from cardiovascular diseases continues to be among the leading causes of death around the world and so academic cardiac surgery will have to accept and master the challenges that it now faces if it is to survive and thrive in the future. Cardiac surgery in Croatia has a unique opportunity now to model itself after successful programs in Europe and the United States, which have not only survived in this new milieu, but serve as new models for academic cardiac surgery.

Key words: academic medical centers; cardiac surgical procedures; education, medical; health services research; quality of health care

A number of articles have recently asked the question of whether or not academic medicine can continue to exist given its current status and structure (1-3). Academic cardiac surgery is undergoing an evolution as well, as academic organizations and centers have recognized the need for improvement in these rapidly changing times (4,5). The American Association for Thoracic Surgery became so concerned several years ago that a yearly symposium was instituted to examine why academic careers in cardiac surgery had become less attractive and what changes could be made to solve this problem (3). Recognition of a problem is a significant part of the solution towards solving a problem. Academic medical centers have long been associated with superior clinical services, research, education of future physicians, and the development of the future direction of medicine. We would like to emphasize in this article which characteristics are necessary in an academic cardiac surgeon and what factors are critical in attaining the designation of an academic cardiac surgical center and maintaining that status.

Portfolio of an Academic Cardiac Surgeon

The elements necessary for an academic cardiac surgeon are clinical practice, research, education, and administration (6). Certainly we would all agree with these, but we would also add leadership skills and a high sense of ethics and integrity to complete the portfolio for an academic cardiac surgeon.

Clinical Practice

As pointed out by de Leval (7), “first and foremost, the successful academic surgeon must excel as a practicing surgeon.” Clinical excellence establishes ones surgical credentials. With decreasing mortality rates in both adult and pediatric cardiac surgery today, it is necessary for the academic cardiac surgeon to pursue and attain surgical excellence. One must constantly review surgical results with a critical eye so that the identification of aberrations in results can be made and appropriate steps taken to correct the problem (8). It is essential therefore to maintain a database of surgical results in order to establish a historical perspective and provide ongoing information which can be reviewed when necessary to assess results and compare them to standards (9). Although Zagreb University Hospital Center serves as the academic center for cardiac surgery in Croatia there was no comprehensive database (patient name, defect or disease process, operative surgeon, and patient outcome and complications) maintained either for adult cardiac surgery or pediatric cardiac surgery in the department or with administration from 1994 to 2003. Because of this fact it is impossible to determine if the results in cardiac surgery were comparable within the center or to other centers, either in-country or regionally (10). Furthermore one cannot review results in an organized fashion to determine where problems exist if a database is not maintained and periodically reviewed.
Research

Cardiac surgery is a relatively new specialty, with a history of about seventy years. The development of cardiac surgery is deeply rooted in research and if it is to continue as a specialty, active and aggressive research must continue. By definition the academic cardiac surgeon must be involved in research (11). Several different areas of research exist for the academic cardiac surgeon. In countries where funding for basic science and translational research is scarce, outcomes research, clinical trials, and industry-based technology research is possible with an adequate clinical caseload and patient database (12). Once a track record of logical research is established through the publication of results that document an understanding of research methodology, sound clinical principles and a commitment to clinically meaningful progress then research funding at a national or regional level can be sought. Presentations without publication have little value (13). The publication of research in journals with high impact, such as Annals of Thoracic Surgery, Journal of Thoracic and Cardiovascular Surgery, or the European Journal of Cardio-Thoracic Surgery is critical for the recognition of a developing academic cardiac surgeon; however this is becoming more difficult (14). A review of publications in the above journals over the last 10 years revealed that the only publications from Zagreb University Hospital Center regarding cardiac surgery were those related to pediatric cardiac surgery (15-17). No articles on adult cardiac surgical issues or research were published in these journals.

Education

“Teaching surgery is a fundamental mission of the academic surgeon.” The clarity of this statement by de Leval (7) should remind us that a basic part of our responsibility as academic cardiac surgeons is the education of future cardiac surgeons. Education is required at all levels, from medical students to general surgical residents, cardiac residents, and junior staff. Surgical training has historically been a hands-on experience and typically has been in the form of an apprenticeship (7). The Internet has provided another source of materials for educational purposes with sites like CTSNET – the Cardiothoracic Surgery Network (http://www.ctsnet.org). Simulators and virtual reality technology can provide valuable lessons. However, it still remains the charge of the academic cardiac surgeon to provide the guidance and experience in the real life situations. Additionally, with the explosion of new techniques in both diagnostics and surgical procedures, it is imperative that the accomplished academic surgeon educate himself or herself as well, in order to maintain and advance skills and understanding. A number of conferences should be organized and scheduled within a cardiac surgery department to promote education and stimulate self education amongst medical students, residents, and junior and senior staff. A monthly minimum would include a journal club type conference to keep abreast of the literature, morbidity and mortality conference, combined cardiology and cardiac surgery conference in both the adult and pediatric areas, and a clinical pathophysiology conference to cover specific disease/defect entities and their management. Attendance to and presentations at national and international cardiac surgical conferences is mandatory.

Administration

Academic cardiac surgeons must develop administrative skills to manage the multitude of issues that we are now faced with including patient care, departmental budgets, resident education, quality assurance, research, and scheduling. Marušić (14) describes the three vocations of academic medicine. However, an academic physician is faced with administrative duties on a daily basis. To excel as an academic cardiac surgeon one must not only embrace administrative responsibilities but appreciate their importance (7).

Leadership

The leadership characteristics of an academic cardiac surgeon are numerous. Certainly one must possess a high level of integrity. Integrity must be displayed throughout all the areas in which an academic cardiac surgeon is involved. Financial integrity means not biasing a patient operation towards a more financially remunerative procedure that is not indicated. Bowing to the financial rewards from the medical industry for utilizing a specific product over others, or using the product when it is not clinically indicated displays a serious lack of professional integrity (18). Similarly, accepting or requiring extra payment from families in order to provide care for a family member in a timely fashion, or at all, displays not only a lack of integrity, but a serious deficit in ethical standards as well. Leadership requires that the leader defines the core values of the department, provide the vision for growth, direction for the future of the department, and motivation for the team to embrace these ideas. Academic cardiac surgical leaders should provide a stimulus for residents and junior faculty to develop as future academic cardiac surgeons. Certainly this includes promoting clinical excellence, research interests, extramural education, and an involvement of these individuals in publications, cardiac surgical societies, and hospital administrative responsibilities.

Academic Cardiac Surgical Center – Requirements

The factors essential for the success of academic medical centers were described by Loop (19); an earned reputation for consistently good results, widespread clinical experience, continuous innovation, exemplary service, scientific research, education, and quality leadership. Additionally, in academic cardiac surgery, a well designed infrastructure and support system are necessary (20).

Reputation

To develop reputation for consistently good results requires having a talented and motivated staff of physicians who are driven to improve professionally. Several means are available to academic cardiac surgical centers to “spread the word” about consistently good results. Patient referral by other patients is the traditional method. Patients or parents who have a
good outcome and experience will refer others to the center. Referring physicians who see that their patients have received exceptional care will continue to refer to the center. Other avenues for developing a reputation include presentations of the center’s results at major meetings and publication of results in high impact journals. As the public has become more educated about healthcare, the demand for information concerning outcomes for care at specific institutions has increased (21).

Clinical Experience

Providing a wide range of clinical experience and activity is paramount to achieving and maintaining the status of an academic cardiac surgical center. Total patient coverage should be the standard for an academic cardiac surgical center. The recruitment and development of a faculty may be the single most important step in developing an academic cardiac surgical center (12). Recruiting and developing staff with a full range of clinical experience or interests will allow a center to provide a full range of cardiac surgical expertise. Thus, it is imperative that the academic cardiac surgical center have experts in; ischemic heart disease (both conventional and off pump coronary artery bypass revascularization), valvular heart disease (both repair and replacement) with stentless valves and homografts, in addition to standard mechanical and biological alternatives, congestive heart failure surgery with transplantation and ventricular assist devices, aortic surgery (aneurysms and dissections), pediatric cardiac surgery, and basic and clinical research (12).

Innovation

Innovation, both clinical and administrative, provides the academic cardiac surgical center with the opportunity to continue to serve as a leader in their referral area. The introduction of innovations in the clinical arena can lead to improved care for the patients, provide the center with updated techniques and motivate the medical staff. During the last 10 years, a number of innovations were introduced at Zagreb University Hospital Center; the use of modified ultra filtration, fast track cardiac anesthesia and post-care, extra corporeal membrane oxygenation for post-operative cardiac support in the pediatric population, Ross procedure, many other pediatric cardiac surgical procedures, and off-pump coronary artery bypass. Administrative innovations are those that make the center more efficient and cost-effective, providing the opportunity for improvement within the system. Examples would include day of surgery admission for patients with elective surgery, institution of quality assurance programs, establishing committees to review clinical protocols, and eliminate wasteful or redundant practices. However, as stated by Loop (19) the enemy of every hospital is voluminous paperwork, indecisive middle management, difficult with compliance, poor service, bad attitude, and a lack of understanding that the greatest cost improvement lies in improving the efficiency of the system.

Service

Service excellence as defined by Baumgartner et al (12) “is service that creates an atmosphere where quality care is provided to patients in a considerate and expeditious manner and where referring physicians are addressed in a similar way.” Clinical service, i.e., the delivery of academic cardiac surgery, should be organized in such a way that service excellence is an integral part. Today, when there are so many cardiac centers for a patient to choose from, service excellence is just another way for academic cardiac surgical centers to separate themselves from their competitors. The delivery of health care is no longer traditional, it is now the business of health care delivery (19), regardless of whether it is in a market-driven health care economy or a social health care system.

Research and Education

Research is the cornerstone of academic cardiac surgical centers. A good academic cardiac surgical center will conduct and incorporate basic science, translational and clinical research into the portfolio of services it provides (12). The old days of carrying out animal experiments in “wet labs” to develop or refine a procedure have all but disappeared today and have been replaced by basic science or translational research requiring the collaboration of several disciplines (7,12,22). Funding for research (20) is a major problem in Croatia and dependence upon corporate support is high. However, if appropriate disclosures and conflicts of interest are reported, if the clinical well-being of the patients is respected, and if the research funding is managed and dispersed with integrity, then corporate funding is possible (7,12,18,23). An important source of research in the age of rapid communications is international collaboration (22). Alternatively, collaboration with a well established university whether in Europe (24) or the United States could provide educational and research opportunities. Educating the future cardiac surgeons of Croatia is mandatory for the academic cardiac surgical center. A structured program is essential in the education of cardiac surgical residents. Senior staff in cardiac surgery should provide the framework for the educational process. The technical skills of cardiac surgery still require mentored apprenticeship, but pathophysiology, diagnostic modalities, and post-operative care issues can be learned through a combination of readings (journal club), didactic lectures, case conferences (combined cardiology-cardiac surgery conference), and morbidity and mortality conferences. Periodic testing of the residents through the use of standardized tests, like the cardiac surgery in-service examination in the United States, enables the residents to identify deficits in their education and the faculty to recognize deficiencies in the educational system. Lastly, a definitive time period for the training program with graduated operative responsibility and a comprehensive written and oral final examination for certification must be in place.

Infrastructure/Support Systems

Academic cardiac surgical centers in the United States usually have the infrastructure needs to provide high volume quality cardiac surgery. Croatia is still re-
covering from the effects of the war and specialties requiring sophisticated and expensive equipment have suffered the most (23). An academic cardiac surgical center should be built to incorporate new operating rooms, additional intensive care units (ICU) space and technologically advanced equipment.

Quality Leadership

The driving force behind academic medical centers and academic departments within these centers is the leadership. Leaders must have a vision, clearly ennunciate it to the staff, stimulate motivation, and serve as a mentor. The requirements of leadership were clearly defined by Loop (19): recruit and retain leaders for the center, the department and division, serve as a model of honesty and integrity in all decisions, keep politics to an absolute minimum, acknowledge that failure in management is simply due to bad executive decisions and direction, understand that the organization will not tolerate bad executive direction, failure to deliver on commitments and procrastination. In continental Europe there is a tendency to preserve many of the relics of the past in academic medicine to the extent that some department chairman function without regard to quality, integrity cost effectiveness, or utilization review (25). Although this situation has improved in Croatia since the war, the individual and collective mind set are still present (26).

Conclusions and Recommendations

Significant strides have been made in Croatia in the field of cardiac surgery since the war. However, there is no academic center for cardiac surgery. A national database should be established so that the Ministry of Health can be knowledgeable of individual surgeon results and the results of the cardiac surgical departments in different hospitals. Research needs to be emphasized more than it is at present and collaboration between the existing cardiac surgical departments would provide sufficient clinical material for research projects. Collaboration with an academic cardiac surgical center in Europe or the United States should be actively pursued for the purposes of organized cardiac surgical resident education, research, and clinical experience in complex cases. The implementation of quality assurance programs (27) and innovative administrative changes to decrease the costs associated with cardiac surgery must be implemented. Ideally a new center with an optimal number of operating rooms, ICU beds, and technologically advanced equipment should be built for the creation of an academic cardiac center. New leadership in cardiac surgery must be found to stimulate these changes and bring integrity to academic cardiac surgery in Croatia.

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References


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