Building a multi-institutional cardiothoracic surgical program has the same guiding principles and values as a traditional single institutional program: ensuring high-quality patient care, training and fostering residents, recruiting and retaining quality faculty, and contributing to basic and clinical research. With a well-designed infrastructure and support system, this more complicated type of organization may permit academic cardiothoracic surgical programs to compete effectively and grow in a constantly changing economic and political environment. (J Thorac Cardiovasc Surg 2001;121:S8-11)
In a separate thoracic surgery rotation, residents will be caring for patients with complex esophageal diseases. Each resident will participate in the esophageal laboratory and learn about esophageal physiology, motility studies, endoscopy, and the pathology of cancer, Barrett’s esophagus, and other related diseases. The residents also develop skills with rigid bronchoscopy for pulmonary and mediastinal diseases. With this combined thoracic experience, residents are exposed to high-level tertiary and quaternary care. We believe this rotation and the complexities encountered at this facility afford residents the opportunity to understand and become complete physicians, who are learning to take care of patients with complicated conditions rather than just becoming good technical surgeons.

The children’s hospital provides a large case volume of congenital heart disease, with the service performing more than 800 cases each year. This large volume provides the cases from which residents learn all aspects of care for the child with congenital cardiothoracic problems. Residents are exposed to the basic common abnormalities, such as atrial and ventricular septal defects, coarctation of the aorta, and tetralogy of Fallot, for which they are expected to perform the surgery. They are also exposed to the more complex lesions of hypoplastic left heart syndrome, transposition of the great vessels, and other single ventricle anomalies. To support this very large service, we have a dedicated cardiothoracic unit where additional support services are available. The cardiothoracic unit team consists of a pediatric intensive care medical director, the cardiothoracic surgical resident, the cardiothoracic surgical pediatric subspecialty fellow, 2 pediatric intensive care fellows, and 3 nurse practitioners. The resident is supervised by 3 surgical faculty staff. In the operating room theater, there are 2 open-heart rooms. With the size of the case volume, the cardiothoracic resident and the cardiothoracic surgical pediatric fellow are never in conflict in terms of scrubbing on cases. Each of these individuals has a room in which they operate for that day. The children’s hospital offers a supportive environment so that the cardiothoracic residents are not overwhelmed and can learn from this wealth of congenital experience.

The third institution is the county medical center. The services at the county hospital are resident-operated with faculty supervision. Residents are responsible for the preoperative evaluation, the intraoperative assessment and performance of the surgery, and the postoperative care. There are combined cardiology and cardiac surgery conferences in which residents are central participants, along with the attending surgeons, in the decisions made. The benefit of the county service is that residents become the primary surgeons, with attending supervision. It is an environment that offers residents an opportunity to provide complete care to the patients. In their third and final year, residents return to the service, as safe, competent, and independent surgeons. They now function as physicians who can technically take care of patients in the operating rooms, in addition to being able to assess preoperatively the type of operation the patient will need in conjunction with the referring cardiology service. Postoperatively, residents, who will independently manage complications that are inherent to the practice of cardiothoracic surgery, will care for the patients.

The fourth teaching facility is the private community hospital, which is a large multi-specialty hospital in the adjacent city. The service is organized with 3 teaching faculty members. During the past calendar year, more than 600 procedures were performed by that service. Residents work under the direction and supervision of the attending faculty. Additional support for this service includes a surgical physician assistant, a general surgery resident from the general surgery training program, and a nurse coordinator. The support system allows residents to draw maximum benefits from the large case volumes to which they are exposed, without becoming overwhelmed. In this environment, residents can refine their technical skills, while obtaining the experience of working with private practice cardiologists and physicians. The community environment is totally different from the academic-based environment. One of the first lessons learned by residents at this hospital is how to take care of the patient in conjunction with the referring physician, rather than having the patient being solely cared for by the cardiothoracic surgical service. This may be one of the most important lessons from this rotation. The private environment also teaches residents how to deal with managed care in a system that emphasizes cost containment and a short hospital stay, as long as patient care is not compromised.

Our training program, based on a multi-institutional approach, is designed to provide residents a complement of hospitals from which they can derive rich learning experiences. It provides a university-based hospital with high-complexity tertiary cardiac and thoracic cases; a children’s hospital with a large volume of congenital heart and thoracic diseases; and a private community hospital where residents learn and refine their technical skills, while learning the nuances and realities of private practice and working with community physicians. As part of their finishing school, residents become the surgeons-in-charge at the county medical center, where they work as the primary sur-
geons along with attending staff caring for patients with all varieties of cardiothoracic diseases. We believe this is the strength of a multi-institutional teaching program where each facility has certain strengths that can enhance the residents’ education. The geographic challenges of such a teaching program require that we bring the residents together at least twice a week with conferences that unify the residency at the core university hospital campus.

Department and faculty organization

To be successful with the inherent increased complexity of a multi-institutional program, the leadership must have organizational skills and adequate supporting administrative staffing. There must be a “standard of care” to ensure that the same high-quality surgical and perioperative care occurs throughout all of the hospitals of the program. This is essential for the patient and is increasingly being demanded by third-party payors, both of whom want high quality of care close to home. The advantages of a large group practice include flexibility in scheduling and in the staffing of cases. This can allow junior and tenure-track surgeons time to become active in laboratory and clinical research. Revenue generated by the group in excess of salary and other overhead, can be reinvested for the academic advancement of the faculty, the department, and the university. A centralized administrative staff allows for support of both the academic and the community practice with economy of scale. This centralized structure, which includes a single in-house billing department, avoids redundancy in administration and surgery scheduling and allows for consistency in patient coordination and education.

There are intrinsic challenges involved in a multi-institutional program. It is imperative that cohesion of the clinical faculty be maintained at the various hospitals, where they may have very different interests and motivations. Faculty security can be ensured by a constant flow of patients to the group. With a multi-institutional program, a “down month” at one facility is not translated into a month-to-month salary variance. A clinical faculty member’s salary is determined by several components. The clinical productivity of the faculty member is a starting point. However, many other factors are involved, such as participation in the teaching program, writing clinical or basic research grants, teaching conference participation, helping with day-to-day operations of scheduling and regulatory compliance, and regional/departmental administrative responsibilities at each affiliated hospital. The philosophy of the department has been to give to the faculty member a more than “fair” salary, while avoiding the inherent competition that arises from incentive systems based solely on clinical productivity.

The department should build and foster an environment for the diverse faculty to participate in teaching programs and conferences. To maintain the department’s academic mission with a large number of faculty, there are weekly meetings, including a journal club, case presentations, and a morbidity and mortality conference, in which both the residents and the entire faculty participate. This creates a two-way street of education and feedback for both the residents and the faculty members, while allowing for regional surgical independence under the larger departmental umbrella. All members of the faculty are encouraged to attend at least one of the major academic cardiothoracic meetings each year. The department also provides “physician extenders” such as physician assistants, nurse coordinators, and regional support staff, which allow the surgeons to concentrate on their practices and related interests. There are also regular meetings of the faculty to discuss the day-to-day departmental operations and business practice issues, thus maintaining a dialogue among all members of the group. This forum allows for all faculty members to participate in clinical, administrative, and financial issues.

The department has and supports extensive basic, translational, and clinical research. Having a core group of investigators with self-supporting, grant-funded laboratories has enhanced the academic environment and increased prestige for the entire faculty and department. The size and scope of the faculty and clinical volume of the group allows for participation in clinical trials, both single and multi-center in nature.

Clinical results for all members of the department at each of the institutions in the program are maintained as part of a centralized database. This allows for submission to the Society of Thoracic Surgeons national database, and also provides outcome and quality assurance data that are now mandatory for establishing and maintaining contracts with third-party payors and managed care organizations, as well as for the hospitals for which the department provides surgical care. The results from this database and other departmental activities are maintained on a Web site that has become an important source of patient referrals from physicians, as well as directly by the patients.

In the end, building a multi-institutional program has the same guiding principles and values as a traditional single institutional program: ensuring high-quality patient care, training and fostering residents who are
the future and our legacy, recruiting and retaining quality faculty, and contributing to basic and clinical research which will allow for the continued evolution of our field. With a well-designed infrastructure and support system, this more complicated type of organization, with the inherent geographic distances involved between the institutions, may permit cardiothoracic surgical programs to compete effectively and grow in a constantly changing economic and political environment. With miles of freeways often separating the hospitals, residents, and faculty in our multi-institutional program—and in keeping with the philosophy of rational hedonism in Southern California—a nice car wouldn’t hurt.

Address for reprints: Vaughn A. Starnes, MD, Hastings Professor and Chairman, Department of Cardiothoracic Surgery, Keck School of Medicine of the University of Southern California, 1510 San Pablo Street, Suite 415, Los Angeles, CA 90033 (E-mail: vstarnes@surgery.usc.edu).