# CORE COMPETENCY GOALS AND OBJECTIVES OF THE CARDIAC SURGERY ROTATION AT LOYOLA UNIVERSITY MEDICAL CENTER

**Program Leadership**

Program Director – Anthony Perez-Tamayo, MD, PhD

Associate Program Director – Zaid Abdelsattar, MD, MS

Program Coordinator – Ann Fehrman

**Overall Goals & Objectives**

The Loyola University Thoracic Surgery Residency Program aims to provide its residents with the highest quality training in order to prepare them to become safe, effective, independent and successful thoracic and cardiovascular surgeons. This is accomplished by:

1. Training the resident to provide competent, comprehensive and high quality medical and surgical care to the thoracic and cardiovascular patient.

2. Cultivating the knowledge, skillset and attitudes required to demonstrate competency in patient care, medical knowledge, practice-based learning, interpersonal communication skills, professionalism, and systems-based practice.

3. Fostering high quality medical and surgical care in an environment that recognizes limitations in duty hours, while minimizing resident fatigue and maximizing resident education.

4. Providing a professional and collegial environment that facilitates multidisciplinary collaboration, paving the way for professional development and clinical excellence.

5. Following an academic curriculum in a rich learning environment that enables the resident to obtain certification by the American Board of Thoracic Surgery.

6. Assisting the resident in transitioning into practice, whether in academic or private thoracic and cardiovascular surgery positions.

**Cardiac Surgery Service**

Provided below are the specific educational objectives, and clinical skill acquisition goals for residents within the Loyola University Thoracic Surgery Residency Program while on Cardiac Surgery Services/Rotations. The program is under the auspices of the Residency Review Committee for Thoracic Surgery of the Accreditation Council for Graduate Medical Education (ACGME), and supported by faculty and staff within the Department of Cardiovascular and Thoracic Surgery.

Thoracic Surgery Residents rotating on Cardiac Surgery will be expected to work toward meeting the Loyola University Thoracic Surgery Residency Program's goals and objectives.

As referenced above for the General Thoracic Service, residents on Cardiac Surgery Services will be evaluated in the ACGME core competencies of:

1. Patient care

2. Medical knowledge

3. Practice-based learning and improvement

4. Interpersonal and communication skills

5. Professionalism

6. Systems-based practice

**Patient Care:**

1. The *first year resident* should demonstrate an ability to medically manage postoperative cardiovascular surgery patients using a multidisciplinary team approach

2. The *first year resident* should develop the surgical skills required to perform the core cardiovascular surgical procedure of sternotomy, cannulation, initiation and separation of cardiopulmonary bypass, proximal and distal coronary anastomoses, valve implantations, and atrial septal defect and heart procurement with direct supervision.

3. The *first year resident* should apply the principles of recovery from cardiovascular surgery, rehabilitation, hemodynamic monitoring, mechanical support, management of temporary chest closure and intensive care needs of the individual patient.

4. The *first year resident* should demonstrate sensitivity to the unique physical and emotional needs of patients with cardiovascular ailments

5. The *first year resident* should demonstrate appropriate empathy for surgical patients and provide appropriate postoperative care with regard to patient instruction and counseling, anticoagulation, wound care, rehabilitation, and follow-up care.

6. The *first year resident* should develop the surgical skills required to perform the core cardiovascular surgical procedures of urgent cardiopulmonary bypass, mechanical support, delayed chest closure, re-exploration for bleeding, and the management of deep sternal wound infection. In addition, the first year resident should have the basic fundamental to be able to triage emergencies (aortic dissection, urgent coronary artery bypass grafting, cardiac perforation).

7. The *first year resident* should demonstrate the skills in the surgical exposures required to perform the core cardiovascular surgical procedures with supervision.

8. The *Second year Resident* should demonstrate skills required to perform the core cardiovascular surgery procedures such as aortic surgery, redo sternotomy, aortic valve repair and valve sparing root replacement, aortic arch surgery, multivalve surgery, hypertrophic cardiomyopathy, basic congenital cardiac surgery, heart and lung procurement, heart implantations and ventricular assist device placement under supervision.

Measures for assessing ***patient care competencies*** include:

1. Global evaluation plus core surgical skills assessment [New innovations].

2. Clinical research through chart review of defined reconstructive procedures related to patient outcome.

3. Direct observation within:

a. Specialty journal clubs.

b. Departmental and division Morbidity and Mortality conferences.

c. Specialty case based clinical conferences.

**Medical Knowledge:**

1. The *first year resident* should learn to obtain an accurate history and perform a thorough physical examination with formulation of a differential diagnosis for patients with common cardiovascular diagnoses.

2. The *first year resident* should be able to demonstrate and have knowledge of the relevant anatomy for the cardiovascular surgical procedures.

3. The *second year resident* should be able to provide accurate patient assessment, delineate treatment alternatives, and determine appropriate indications for surgical procedures.

4. The *second year resident* should understand and be ready to demonstrate the relevant surgical approaches for cardiovascular surgical procedures.

5. The *second year resident* should prepare and understand the proper use of the instrumentation systems for the core cardiovascular surgical procedures.

6. The *second year resident* should read and understand the published literature regarding the long-term results as well as the prevention and management of complications associated with specific cardiovascular patient diagnoses.

7. The *second year resident* should be able to present and discuss, at weekly conferences, the advantages and disadvantages of various surgical procedures and must be familiar with the limitations of these procedures as it applies to the patient’s voiced expectations.

8. The *Second year Resident* should understand and be ready to demonstrate the relevant surgical approaches for re operative cardiovascular surgical procedures.

9. The *Second year Resident* should be familiar with different procedures available to address cardiovascular problems that require operation, e.g., knowing when percutaneous procedures are feasible or preferred, or minimally invasive surgical procedures are appropriate.

Measures for assessing ***medical knowledge competency*** include:

1. Global evaluation plus surgical skills assessment [New innovations].
2. In service training exam (TSITE)
3. TSDA weekly quizzes
4. Annual mock oral examinations
5. Direct observation within:

a. Specialty journal clubs.

b. Departmental and division Morbidity and Mortality conferences.

c. Specialty case based clinical conferences.

**Practice Based Learning**

1. The *first year resident* should actively perform background reading for each day’s surgical cases by reading from suggested textbooks, articles and digital media.

2. The *first year resident* should develop a systemic method of interpreting diagnostic studies, e.g., angiography, CT, echocardiography, MRI and nuclear imaging.

3. The *first year resident* should be able to risk stratify the patient

4. The *second year resident* will simulate best practices and recommendations from assimilating the evidence from peer review papers discussed at journal clubs and clinical based conference presentations

5. The *second year resident* should acquire the ability to be a primary clinical research investigator including project organization, data acquisition, and preparation for presentation/publication.

6. The *Second year Resident* should teach first year and assist with organization of weekly conference presentations.

Measures for assessing ***practice based learning*** include:

1. Global evaluation plus surgical skills assessment [New innovations].
2. In service training exam (TSITE)
3. TSDA weekly quizzes
4. Annual mock oral examinations
5. Direct observation within:

a. Specialty journal clubs.

b. Departmental and division Morbidity and Mortality conferences.

c. Specialty case based clinical conferences.

**Interpersonal and Communication Skills**

1. The *resident* should demonstrate the ability to engage with other relevant disciplines (e.g., cardiology, anesthesiology, perfusionists) in the integrated approach to therapeutic intervention, through daily interaction, and weekly conferences.

2. The *resident* should develop empathetic skills recognizing the life threatening and chronic nature of these entities and be able to communicate clearly and effectively these issues to the patient and family members.

3. The *resident* should develop positive collaborative interactions with other team members and ancillary support staff to affect patient-centered interventions.

Measures for assessing ***interpersonal and communication skills*** include:

1. The global evaluation tool [New innovations].

2. Direct observation within:

a. Specialty journal clubs.

b. Departmental and division Morbidity and Mortality conferences.

c. Specialty case based clinical conferences

**Professionalism**

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. The resident is expected to demonstrate:

1. The residentshould demonstrate a commitment to carrying out professional responsibilities through integrity, compassion, and respect

2. The residentshould demonstrate responsiveness to patient needs including being sensitive and responsive to the patient’s age, cultural beliefs, disabilities, and expectations

3. The residentshould demonstrate commitment to excellence and ongoing professional development

4. The residentshould demonstrate appropriate ethical principles with respect to patient confidentiality, informed consent, and business practices.

Measures for assessing ***professionalism competency*** include:

1. The global assessment [New innovations].

2. Patient complaints and testimonials

3. Direct observation within:

a. Specialty journal clubs.

b. Departmental and division Morbidity and Mortality conferences.

c. Specialty case based clinical conferences.

**Systems Based Practice**

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. The overarching goals and objectives in this core competency are to:

1. Work effectively in various health care delivery settings and systems relevant to their clinical specialty

2. Coordinate patient care within the health care system relevant to their clinical specialty

3. Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate

4. Advocate for quality patient care and optimal patient care systems

5. Work in inter-professional teams to enhance patient safety and improve patient care quality

6. Participate in identifying system errors and implementing potential systems solutions.

7. Practice cost-effective care without compromising quality, promote disease prevention, demonstrate risk-benefit analysis, and know how different practice systems operate to deliver care.

Specifically:

1. The *first year resident* should be aware of institutionally directed initiatives to improve quality and safety

2. The *first year resident* should apply appropriate investigation and treatment options in a fashion that demonstrates cost awareness

3. *First year residents* should adopt evidence-based best practices when appropriate and expected from the institution

4. *First year residents* should be aware of the consequences and decisions made in patient management on other disciplines integral to the collective appropriate intervention to patient management

5. *First year residents* should learn how to prepare patients for surgery in the electronic environment

6. *First and* s*econd year residents* provide appropriate triage of patients with general thoracic surgery emergencies

7. The *second year resident* should be able to incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate

8. The *second year resident* should develop a method for evaluation of patients with complex diagnoses and learn how to organize a clinical practice

Measures for evaluating ***systems-based practice*** include:

1. Global assessment [New innovations].

2. Compliance with institutionally directed and mandated educational modules.

**Academic and Research Involvement**

Research and academic publication is a requirement for the successful training program. Residents are encouraged to formulate a research plan as early as their match notification. The residency program leadership and coordinator can facilitate communication with faculty members who have matching interest. The resident will be assigned a faculty mentor and will meet on a monthly basis with the residents to assist and advise them on their research project and assess their projects.

**Rounds and Conferences**

Daily rounds and patient care responsibilities will be assigned specific to the individual service. In general for the Adult Services, daily rounds will include the General Care Wards and the Intensive Care Unit at the Hines VA and Loyola University Medical Center.

Our residents are required to participate in

1. Weekly TSDA Curriculum Conference
2. Weekly Departmental Conference, including specialized conferences such as:
   1. Monthly Journal Club
   2. Monthly Mortality and Morbidity Conference
   3. Monthly Clinical Decision Making Conference
   4. Weekly multidisciplinary tumor board at Loyola University Medical Center and/or Hines VA Hospital
   5. Congenital Anatomy Human Specimen Lab
   6. Grand Rounds
3. Resident Teaching Conference
4. Cardiac Surgery Conference
5. Thoracic Surgery Practice Management Improvement and Quality Improvement Conference
6. Additional rotation specific didactic conferences
7. Residents are required to attend the Outpatient Clinic for their respective service at least one day per week at Loyola University Medical Center and/or Hines VA Hospital

**Operative Case Criteria**

The operative experience requirement of the American Board of Thoracic Surgery for a 2 year program include a minimum annual average of 125 major operations performed by each resident for a total of 250 major cases. In addition, the resident must meet the minimums for index cases performed as primary surgeon for major cases, minor cases and other requirements.

These requirements, as set forth by the American Board of Thoracic Surgery, are shown in the table below.

The program faculty will meet with the residents to discuss their progression in their operative volume and distribution of index cases to ensure completeness.





**Milestones**

This section presents milestones designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation.

For each period, review and reporting will involve selecting milestone levels that best describe a resident’s current performance and attributes. Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education.

Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels.

**Level 1:** The resident demonstrates milestones expected of an incoming resident.

**Level 2:** The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

**Level 3:** The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

**Level 4:** The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

**Level 5:** The resident has advanced beyond performance targets set for residency and is demonstrating “aspirational” goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Level 4 is designed as the graduation target and does not represent a graduation requirement. Making decisions about readiness for graduation is the purview of the residency program director. Study of milestone performance data will be required before the ACGME and its partners will be able to determine whether milestones in the first four levels appropriately represent the developmental framework, and whether milestone data are of sufficient quality to be used for high-stakes decisions.

Some milestone descriptions include statements about performing independently. These activities must conform to ACGME supervision guidelines, as well as institutional and program policies. For example, a resident who performs a procedure independently must, at a minimum, be supervised through oversight.















**SUMMARY (GENERAL THORACIC)**

In summary, the Loyola University Thoracic Surgery Residency Program will ensure the trainees progress appropriately and meet and/or exceed the core competency requirements, milestones and operative experiences over the 2 year training period.

Year One

1. Obtain working knowledge of chest anatomy and physiology of all of the standard general thoracic diagnoses, i.e., lung cancer, esophageal cancer, hiatal hernia, chest wall tumors, pleural disease, etc…

2. Perform thoracotomy and chest closure

3. Initiate exploration and dissection of the chest or abdomen

4. Understand staging procedures and studies

5. Perform simple general thoracic procedures, e.g., wedge resection, antireflux procedures, mediastinal mass resections

6. Insertion of VATS camera and laparoscopic camera

7. Care for general thoracic patients who underwent surgery

8. Perform basic consultations and preoperative evaluation of general thoracic patients

9. Obtain understanding of indications and timing of surgical intervention for general thoracic surgical diseases

10. Understanding staging and oncologic physiology

11. Obtain ability to interpret CXR, CT, PET, MRI and angiographic imaging

12. Interpret pulmonary function data from PFTs and VQ scans

13. Learn principles of straightforward lobectomy and esophagectomy

Year Two

1. Understand complex postoperative problems and their management

2. Perform complex surgical procedures, e.g. completion pneumonectomy, redo thoracotomy, esophagectomy, sleeve lobectomy, colon or jejunal interpositions, and tracheal resection and reconstruction

3. Participate in lung transplant in adults

4. Work through difficult decisions in thoracic surgery

**Summary (Cardiac Surgery)**

Year One

1. Obtain working knowledge of cardiac anatomy and physiology
2. Obtain understanding of indications and timing of surgical intervention for acquired heart defects.
3. Obtain ability to interpret angiography, CT, echocardiography, MRI and nuclear imaging
4. Interpret hemodynamic data from cardiac catheterization
5. Perform sternotomy and chest closure.
6. Cannulation in adults with acquired heart disease.
7. Understand cardiopulmonary bypass techniques.
8. Assist with and develop independent skills for coronary artery bypass grafting, valve replacement, atrial septal defects and simple aneurysms.
9. Assist with and develop independent skills for TAVR
10. Central and peripheral cannulation techniques for ECMO.
11. Care for the post cardiac surgery adult in the ICU and on the floor
12. Perform basic consultations and preoperative evaluation of adults with acquired heart disease.

Year Two

* 1. Perform complex cardiac surgery including valve repair, multiple valve replacement, and aneurysm repair
  2. Perform heart procurement in adults.
  3. Perform redo sternotomy in a safe and well thought of fashion
  4. Perform TAVR
  5. Understand the conduct of circulatory arrest.
  6. Learn placement of ventricular assist devices in adults.
  7. Assist with and develop independent skills to perform more complex procedures including aortic root replacement, complex valve repairs, multi-valve surgery, endocarditis surgery, thoracoabdominal aneurysm repair, heart implantation, and ventricular assist devices.
  8. Perform complex emergency consultations and preoperative evaluations of patients with heart disease.