

**UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL
ANESTHESIOLOGY RESIDENCY PROGRAM**

ANESTHESIA FOR THORACIC SURGERY/CA-3 ELECTIVE

The CA-3 resident will be allowed to elect an additional one to two month experience providing anesthesia for thoracic procedures at the Memorial Campus, with additional experience at University Campus whenever complex thoracic procedures are scheduled. They also can elect to rotate at Rhode Island Hospital. The focus of this rotation is the development of independence in the management of often complex thoracic procedures, as well as a greater depth of understanding of the anesthetic implications of these cases. We expect the residents to be able to more readily evaluate and develop treatment plans regarding patient care issues than during their previous experience in the Thoracic Anesthesia rotation. This rotation, like the core rotation in Thoracic Anesthesia, is designed to enhance your overall knowledge, understanding, and application of thoracic anesthesia principles.

Goals

The goals of this rotation include the development of

- Consultant level understanding of preoperative concerns in the evaluation of thoracic surgery patients, as well as the co-morbidities encountered
- Comprehensive subspecialty knowledge from self-directed learning as well as the didactic curriculum
- Proficiency in the technical skills required to properly monitor patients undergoing thoracic surgery
- Proficiency in the elements required to properly conduct an anesthetic for thoracic surgery, including placement of lung isolation devices, management of one lung ventilation, placement and management of thoracic epidurals
- Advanced understanding of the physiology and physiologic deviations encountered in thoracic surgery, including hypoxic pulmonary vasoconstriction, compliance and resistance, dead space vs. shunt vs. VQ mismatch, distribution of ventilation in various positions
- Advanced understanding of pathology and pathophysiology encountered in thoracic surgery patients

Objectives

Because this is an advanced rotation, the expectation is that all objectives from the Basic Thoracic Anesthesia Rotation have been met.

I. Patient Care

At the conclusion of the rotation, the resident should be able to demonstrate the ability to function as a thoracic anesthesia consultant by successfully being able to:

- Perform an appropriate pre-anesthetic evaluation pertinent to the patient presenting for thoracic surgery, as well as appraise and make recommendations about the impact of the patients co-existing diseases and the impact that these will have on the safe administration of anesthesia

- Determine the appropriate level of subspecialty consultation , as needed
- Formulate an appropriate anesthetic plan for each case with attention to the appropriate use of intra-operative monitoring
- Conduct safe anesthetics for non-complex thoracic surgical cases including bronchoscopy and mediastinoscopy, with minimal guidance
- Conduct a safe anesthetic for thoracotomy, lobectomy, pneumonectomy, mediastinal mass resection, video-assisted thoracoscopic surgery (VATS) and esophagogastrectomy, with moderate to minimal guidance, depending upon the patient comorbidities and surgical complexities.
- Formulate an appropriate plan for post-operative pain management with specific attention to the control of post-thoracotomy pain
- Develop a plan for post-operative extubation or post-operative mechanical ventilation for thoracic surgical patients
- Discuss the common complications and risks of various thoracic surgical procedures, as well as anticipate and manage such complications; with particular emphasis on recognition and management of intra-operative hypoxemia
- Insert and manage thoracic and lumbar epidural catheters for post-thoracotomy analgesia with minimal assistance
- Insert, position and manage double lumen endotracheal tubes (DLT's) and, if pertinent, bronchial blockers (BB's) with minimal guidance
- Demonstrate skill in the use of fiber-optic bronchoscopy to insert DLT's and, where pertinent, BB's.
- Skillfully perform invasive interventional procedures including, but not limited to:
 - a. central venous lines
 - b. arterial lines
 - c. pulmonary artery catheters
 - d. neuraxial analgesia for pain control
- Correctly interpret and manage the results of all invasive monitoring

II. **Medical Knowledge**

At the conclusion of the rotation, the resident should be able to:

- Describe the normal anatomy and physiology of the lung
- Discuss pharmacology issues pertinent to the pulmonary system
- Describe and understand pulmonary function testing
- Discuss and explain the rationale of induction and maintenance of anesthesia techniques for thoracic surgery

- Discuss physiological changes related to one-lung ventilation
- Describe the pathophysiology and discuss the anesthetic implications for thoracic surgery
- Explain the sequential steps in establishing one-lung ventilation
- List the indications and potential complications of arterial catheterization, bronchoscopy, double lumen endotracheal tube placement, thoracic and lumbar epidural catheters and techniques of intercostal nerve block
- List criteria for the post-operative extubation of the thoracic surgery patient
- List common postoperative problems and their treatment for the thoracic surgery patient
- Describe the management of post-operative ventilation of the thoracic surgery patient

III. Practice-based Learning and Improvement

At the conclusion of the rotation, the resident should demonstrate an awareness of:

- both surgical and anesthetic factors in the development of intra-operative and/or post-operative complications
- the different anesthetic methodologies which could have been employed to potentially effect a more positive anesthetic experience
- importance of self-directed learning
- the need and ability to review medical literature, as well as integrate information, with the care of the patient, particularly as it pertains to pain management

IV. Interpersonal and Communication Skills

At the conclusion of the rotation, it will be expected that the resident will demonstrate:

- an ability to gather all relevant preoperative data, utilizing and communicating with consultants effectively
- an understanding of the various stages of the surgical procedure and the normal expectations for each, with the ability to observe, act and communicate effectively with the surgical team
- an ability to discuss the planned procedure and analgesic options with a patient clearly and in a readily understandable manner
- effective communication skills, as well as caring and respectful behavior, when interacting with patients and their families
- teaching skills essential for creating a positive learning environment, including involvement in the education of medical students

V. Professionalism

At the conclusion of the rotation, it is expected that the resident will:

- demonstrate an awareness of each patient's circumstance, both physical and emotional, and treat them accordingly

- effectively communicate with consultants, as well as with surgical and peri-operative support team members
- Demonstrating reliability and dependability
- Exemplify compassionate and appropriate patient care

VI. Systems-based Practice

At the conclusion of their training, the resident should demonstrate:

- an understanding of the similarities and differences between the two campus systems
- an ability to discuss the different aspects of both, with the development of ideas to effect positive change at such sites
- an understanding of their role as a patient care advocate
- familiarity with the costs associated with the delivery of anesthesia care
- an understanding of the constraints associated with management of the operating room and be able to integrate this understanding into best patient care practices