

# Thoracic Surgery

**Institution:** Nashville VA Medical Center & Vanderbilt University Medical Center

**Duration:** 6 weeks

**Supervising Physician:** Eric L. Grogan, M.D.

**Contact Information:** 615-300-2900

**Year of Training:** PGY-4

## Educational Objectives:

During this rotation, the resident will better understand the pathophysiology of thoracic diseases including lung, esophagus, and chest wall diseases. The resident will identify the general risks and complications of thoracic surgery operations, and learn the preoperative and postoperative care of patients undergoing thoracic surgery operations

Evaluation of the resident's understanding of the patient and disease process will be reviewed (in part) at the time of operation and through resident-faculty interaction. Feedback will be verbal and timely; residents are encouraged to establish a dialogue with the faculty to facilitate feedback.

Residents are expected to notify Dr. Grogan and meet with him when starting the service.

### Other Comments and Responsibilities

Daily rounds will include the General Care Wards and the Intensive Care Unit at the VA.

### Medical Knowledge and Patient Care:

#### I. CHEST WALL

##### **A. Anatomy, Physiology and Embryology**

*Learner Objectives:*

- Understands the anatomy and physiology of the cutaneous, muscular, and bony components of the chest wall and their anatomic and physiologic relationships to adjacent structures;
- Knows various operative approaches to the chest wall.

*Clinical Skills:*

- Recognizes the normal and abnormal anatomy of the chest wall.

##### **B. Acquired Abnormalities and Neoplasms**

*Learner Objectives:*

- Evaluates and diagnoses primary and metastatic chest wall tumors, knows their histologic appearance, and understands the indications for incisional versus excisional biopsy;
- Knows the radiologic characteristics of tumors.

*Clinical Skills:*

- Performs a variety of surgical incisions to expose components of the chest wall and interior thoracic organs.

##### **C. Congenital Abnormalities**

*Learner Objectives:*

- Recognizes pectus excavatum and pectus carinatum, understands possible physiologic disturbances, and interprets diagnostic tests to identify such physiologic disturbances;
- Understands the indications for the operative treatment of congenital chest wall abnormalities;
- Knows the complications of reconstruction of congenital chest wall abnormalities and their management.

*Clinical Skills:*

- Reads and interprets diagnostic x-ray and performs physiologic examinations for congenital chest wall defects and thoracic outlet syndromes.

#### II. LUNGS AND PLEURA

##### **A. Anatomy, Physiology, Embryology and Testing**

*Learner Objectives:*

- Understands the arterial, venous and bronchial anatomy of the lungs and their inter-relationships;
- Understands the lymphatic anatomy of the lungs, the major lymphatic nodal stations, and lymphatic drainage routes of the lung segments;

- Knows the indications for different thoracic incisions, the surgical anatomy encountered, and the physiological impact;
- Knows the indications for plain radiography, CT scan, magnetic resonance imaging, and PET scanning for staging of lung cancer;
- Knows the indications, interpretation, and use of nuclear medicine ventilation /perfusion scanning (V/Q scan) to determine the operability of candidates for pulmonary resection;
- Understands the methods of invasive staging (e.g., endobronchial ultrasound (EBUS) mediastinoscopy, Chamberlain procedure, scalene node biopsy, thoracoscopy);
- Knows how to interpret pulmonary function tests.

*Clinical Skills:*

- Reads and interprets pulmonary function studies, ventilation/perfusion scans, pulmonary arteriograms and arterial blood gases, and correlates the results with operability;
- Applies knowledge of thoracic anatomy to the physical examination of the chest, heart, and vascular tree;
- Uses knowledge of chest, pulmonary, and cardiac physiology to interpret tests involving the thoracic cavity and to understand and treat diseases of the chest and its contents;
- Reads and interprets plain radiography, CT scans, magnetic resonance imaging, and PET scanning of the chest.

**B. Non-Neoplastic Lung Disease**

*Learner Objectives:*

- Understands diagnostic procedures used to evaluate non-neoplastic lung disease;
- Knows the common pathogens that produce lung infections, including their presentation and pathologic processes, and knows the treatment and indications for operative intervention;
- Understands the natural history, presentation and treatment of chronic obstructive lung disease;
- Understands the pathologic results and alterations of pulmonary function due to bronchospasm;
- Understands the mechanisms by which foreign bodies reach the airways, how they cause pulmonary pathology, and the management of patients with airway foreign bodies.

*Clinical Skills:*

- Diagnoses and treats patients with bacterial, fungal, tuberculous, and viral lung infections;
- Manages patients with chronic obstructive lung disease, bronchospastic airway disease, foreign bodies of the airways, and hemoptysis;
- Performs thoracentesis, mediastinoscopy, mediastinotomy, flexible and rigid bronchoscopy, thoracoscopy, and open lung biopsy.

**C. Neoplastic Lung Disease**

*Learner Objectives:*

- Understands TNM staging of lung carcinoma and its application to the diagnosis, therapeutic planning, and management of patients with lung carcinoma;
- Evaluates and diagnoses neoplasia of the lung, using a knowledge of the histologic appearance of the major types;
- Knows the signs of inoperability;
- Understands the complications of pulmonary resection and their management;
- Understands the indications for resection of benign lung neoplasms;
- Understands the indications for resection of pulmonary metastases.

*Clinical Skills:*

- Evaluates patients with lung neoplasia and recommends therapy based on their functional status, pulmonary function and tumor type;
- Performs staging procedures (e.g., EBUS, bronchoscopy, mediastinoscopy, mediastinotomy, and thoracoscopy);
- Performs operations to extirpate neoplasms of the lung (e.g., local excision, wedge resection, lobectomy);
- Performs bedside bronchoscopies and placement of tracheostomies and/or mini-tracheostomies;
- Recognizes and treats the early signs of non-cardiac pulmonary edema.

**D. Diseases of the Pleura**

*Learner Objectives:*

- Is familiar with the clinical presentation of benign and malignant diseases of the pleura;
- Understands the types of pleural effusions, their evaluation and treatment;
- Understands the indications, contraindications, and complications of video assisted thoracic surgery and has a working knowledge of the equipment.

*Clinical Skills:*

- Evaluates pleural effusions and recommends appropriate therapy;

- Performs invasive diagnostic studies (e.g., incisional and excisional biopsy, needle biopsy, fluid analysis);
- Places tube thoracostomy and performs chemical or mechanical pleurodesis;
- Performs video assisted thoracoscopic surgery as necessary for the diagnosis and treatment of pleural disease;
- Places pleuroperitoneal shunts.

### **III. TRACHEA AND BRONCHI**

#### **A. Anatomy, Physiology and Embryology**

*Learner Objectives:*

- Understands the anatomy and blood supply of the trachea and bronchi;
- Understands the endoscopic anatomy of the nasopharynx, hypopharynx, larynx, trachea, and major bronchi;
- Understands and interprets pulmonary function studies of the trachea and bronchi;
- Understands the radiologic assessment of the trachea and bronchi.

*Clinical Skills:*

- Interprets plain radiographic analyses, CT scan, MRI, and pulmonary function studies involving the trachea and bronchi;
- Performs endoscopy of the upper airway, trachea and major bronchi.

#### **B. Congenital and Acquired Abnormalities**

*Learner Objectives:*

- Understands congenital abnormalities and idiopathic diseases of the trachea;
- Understands the etiology, presentation and management of acquired tracheal strictures and their prevention;
- Understands the radiologic evaluation of tracheal abnormalities.

*Clinical Skills:*

- Evaluates diagnostic tests of the trachea and bronchi;
- Performs laryngoscopy and bronchoscopy of the trachea and bronchi, including dilation of stenosis;
- Performs tracheostomy.

### **IV. MEDIASTINUM AND PERICARDIUM**

#### **A. Anatomy, Physiology and Embryology**

*Learner Objectives:*

- Understands the anatomic boundaries of the mediastinum and the structures found within each region;
- Understands the embryologic development of structures within the mediastinum and the variations and pathologic consequences of abnormally located structures;
- Understands the radiologic assessment of the mediastinum including CT scan, MRI, contrast studies, and angiography;
- Understands the aberrations caused by pericardial abnormalities and their effects on the heart and circulation.

*Clinical Skills:*

- Reads and interprets mediastinal plain radiographs, CT scans, MRI, and contrast studies.

#### **B. Congenital Abnormalities of the Mediastinum**

*Learner Objectives:* Upon successful completion of the residency program:

- Is able to diagnose mediastinal cysts.

*Clinical Skills:* During the training program, the resident:

- Reads and interprets plain radiographs, CT scans, and MRIs and contrast studies of congenital abnormalities of the mediastinum.

#### **C. Acquired Abnormalities of the Mediastinum**

*Clinical Skills:* During the training program the resident:

- Performs diagnostic tests and operations on the mediastinum;

#### **D. Congenital and Acquired Abnormalities of the Pericardium**

*Learner Objectives:*

- Understands the physiologic consequences of increased pericardial fluid and the techniques for diagnosis and management.

*Clinical Skills:*

- Uses an understanding of abnormal physiologic findings to diagnose pericardial pathology;
- Performs diagnostic tests and therapeutic interventions for the treatment of pericardial tamponade, pericardial effusions, and constrictive pericardial disease.

### **V. DIAPHRAGM**

#### **A. Anatomy, Physiology and Embryology**

*Learner Objectives:*

- Knows the embryologic origin of the diaphragm;
- Understands the anatomy of the diaphragm and adjacent structures;
- Understands the neural and vascular supply of the diaphragm and the pathologic consequences of injury;
- Understands imaging studies for assessing the diaphragm.

*Clinical Skills:*

- Uses knowledge of the normal anatomy and physiology of the diaphragm to treat primary or contiguous abnormalities;
- Evaluates and interprets radiographic studies of the diaphragm, including fluoroscopy, CT scan, and MRI.

**B. Acquired Abnormalities, Neoplasms**

*Learner Objectives:*

- Knows evaluation methods for penetrating injuries of the diaphragm;
- Understands the etiology, diagnosis, and treatment of diaphragmatic paralysis.

*Clinical Skills:*

- Interprets plain and contrast x-rays, fluoroscopy, CT scans, and MRI of the diaphragm;

**C. Congenital Abnormalities**

*Learner Objectives:*

- Understands the anatomy of congenital diaphragmatic hernias;
- Understands the physiologic consequences of diaphragmatic hernias;
- Knows the indications for operative repair of diaphragmatic hernias.

*Clinical Skills:*

- Performs operative treatment of adults with delayed presentation of diaphragmatic hernias;
- Manages eventration of the diaphragm in children and adults.

**VI. ESOPHAGUS**

**A. Anatomy, Physiology and Embryology**

*Learner Objectives:*

- Understands the anatomy, embryology, innervation, and vascular supply of the esophagus and adjacent structures;
- Understands the physiologic function of the esophagus and pharynx;
- Understands the radiographic evaluation of the esophagus.

*Clinical Skills:*

- Interprets esophageal plain radiographs, contrast studies, CT scans, MRI, intraluminal echo;
- Orders and interprets manometric and pH studies of the esophagus;
- Performs rigid and flexible endoscopy of the pharynx and esophagus.

**B. Acquired Abnormalities**

*Learner Objectives:*

- Understands the pathophysiology, histology, complications, and dx of esophageal reflux;
- Understands the indications for and principles of anti-reflux operations;
- Understands the clinical presentation, diagnosis, and management of paraesophageal hernias;
- Knows the clinical presentation, causes, diagnosis, and treatment of motility disorders of the esophagus;
- Understands the clinical presentation, diagnosis, and management of esophageal perforation;
- Understands the clinical presentation, diagnosis, and management of chemical injuries and trauma of the esophagus.

*Clinical Skills:*

- Interprets esophageal plain radiographs, contrast studies, CT scans, MRI, manometry, pH studies, and intraluminal echo;
- Performs esophagoscopy, foreign body removal and biopsy;
- Uses various operative approaches to different parts of the esophagus;
- Performs anti-reflux operations including management of strictures;
- Performs resection and reconstruction using various esophageal substitutes;
- Evaluates and manages patients with esophageal motility disorders, performs myotomy and resection of diverticula;
- Manages the complications of esophageal operations;
- Uses video assisted thoracic surgery for esophageal diseases where appropriate.

**C. Neoplasms**

*Learner Objectives:*

- Understands the types of benign esophageal neoplasms, their clinical presentation, diagnosis, and treatment;

- Understands the types of malignant esophageal neoplasms, their clinical presentation, diagnosis, histologic appearance, and treatment;
- Understands the TNM staging of esophageal cancer;
- Understands the principles of patient management after esophageal resection;
- Understands the nutritional management of patients with esophageal neoplasms.

*Clinical Skills:*

- Evaluates malignant and benign esophageal tumors and recommends overall management, including neoadjuvant therapy;
- Performs diagnostic tests for esophageal neoplasms and correlates the results with clinical staging;
- Performs esophagectomy through various approaches;
- Performs reconstruction with various esophageal substitutes;
- Diagnoses and manages complications of esophageal surgery;
- Manages nutritional needs after esophageal surgery;
- Performs palliative operations for obstructing esophageal lesions.

**Practice-Based Learning and Improvement**

**Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. Residents are expected to develop skills and habits to be able to meet the following goals:**

- ✓ Write an accurate, detailed, and legible preoperative assessment and counseling note on all patients for which he/she serves as surgeon of record.
- ✓ Utilize assigned journal articles as well as available textbook chapters and information technology (including PubMed search and literature review)
- ✓ Participate in the education of patients, families, students, residents, and other health professionals.
- ✓ Incorporate formative evaluation feedback into daily practice.

**Interpersonal and Communication Skills**

- ✓ The resident should ensure that the attending is aware of the progress of all patients on the service.
- ✓ The resident should clearly, accurately, and respectfully communicate with nurses and other Hospital employees.
- ✓ The resident should clearly, accurately, and respectfully communicate with referring and consulting physicians, including residents.
- ✓ The resident should clearly, accurately, and respectfully communicate with patients and appropriate members with their families about identified disease processes (including complications), the expected courses, operative findings, and operative procedures.
- ✓ The resident should ensure that clear, concise, accurate, and timely medical records are maintained on all patients.
- ✓ The resident should be able to clearly and accurately teach medical students and junior residents about the procedures performed on this rotation when qualified to do so by hospital and program policy.

**Professionalism**

**Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents must:**

- ✓ Demonstrate compassion, integrity, and respect for others.
- ✓ Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
- ✓ Demonstrate sensitivity to issues of age, race, gender, and religion with patients, family, and members of the healthcare team.
- ✓ Demonstrate respect for patient privacy and autonomy.
- ✓ Remain honest with all individuals at all times in conveying issues of patient care.
- ✓ Respond to the needs of the patient above one's own needs and desires.
- ✓ Maintain high standards of ethical behavior in all professional activities.
- ✓ Demonstrate a commitment to the continuity of patient care to carrying out professional responsibilities or through assuring that those responsibilities are fully and accurately conveyed others acting in his/her stead.
- ✓ Understand the institutional policy on duty hours and remain compliant with all duty hour regulations. Residents must enter the number of hours spent in the hospital into the tracking system within 24 hours of duty.
- ✓ Be properly and professionally attired at all times while engaged in patient care.
- ✓ Be properly and professionally groomed at all times when engaged in patient care.

- ✓ At all times treat patients, families, and all members of the healthcare team with respect.
- ✓ Reliably be present in prearranged places at prearranged times except when actively engaged in the treatment of a medical or surgical emergency. The resident must notify the appropriate supervisor if he or she will be unable to be present.
- ✓ Remain compliant with all required training designated by the institution.

**Systems-based practice**

- ✓ The resident should be able to assess the risks and benefits of all options for treating patients with surgical illness.
- ✓ The resident should be able to summarize the financial costs, potential complications, and long-term expectations for planned procedures.
- ✓ The resident should recognize the differences between the three hospital systems in which he or she will participate: federal, university, and private.
- ✓ The resident should be able to determine the benefit of additional treatment by other services such as plastic surgery, interventional radiology, and orthopedics.
- ✓ The resident should be able to determine and convey to appropriate individuals the instruments and other materials necessary for all procedures.

**Description of Clinical Experiences:**

- ✓ Refer to General Surgery Residency Orientation Manual

**Description of Didactic Experiences:**

Refer to General Surgery Residency Orientation Manual

Please see the Thoracic Surgery website for exact times and locations of conferences:  
<https://ww2.mc.vanderbilt.edu/thoracic/49739>

**Evaluation Process:**

Faculty will evaluate residents based upon the ACGME core competencies. Faculty will evaluate residents at the end of the rotation in writing. Residents will evaluate faculty teaching and education efforts as well as each rotation at its conclusion.

**Other Important Rotation Information:**

- ✓ Daily rounds will include the General Care Wards and the Intensive Care Unit at the VA and the Vanderbilt University Hospital.
- ✓ Surgery residents are expected to achieve at least 1 full clinic day each week