Background

In its General Thoracic Surgery Database, the Society of Thoracic Surgeons (STS) describes thoracotomy as an approach in which “an incision is made between two ribs to gain access to the thoracic cage for exploration or definitive surgical therapy. ... The location and extent of the incision is dependent on the specific operation to be performed.”

Thoracotomy is performed primarily by thoracic surgeons or by emergency physicians when the life of the patient is at risk. In nonemergency situations thoracotomy may be performed to diagnose or treat a variety of conditions. Tumor removal is arguably the most common nonemergency scenario for this procedure; however, video-assisted thoracic (VAT) surgery is on the rise as an alternative because VAT is less invasive.

In emergency situations, thoracotomy may be performed to enable procedures involving the heart, such as cardiac compression or use of internal defibrillating machine paddles. Injuries to the heart causing excessive bleeding may be closed with staples or stitches via thoracotomy.

The thoracotomy incision may be made:
- On the side, under the arm (axillary thoracotomy)
- In front, through the breastbone (median sternotomy)
- From the back to the side (posterolateral thoracotomy)
- Under the breast (anterolateral thoracotomy)
- Between ribs (intercostal or muscle-saving approach) to minimize cuts through bone, nerves, and muscle

Once the procedure that required the incision is completed, the chest wall is closed and the involved layers of skin, muscle, and other tissues are closed with stitches or staples. If the breastbone was cut for a median sternotomy, it is stitched back together with wire.

Thoracotomy is a major, invasive procedure that requires general anesthesia and the use of an endotracheal tube and mechanical ventilation. Recovery is lengthy and difficult because of the trauma the procedure inflicts on the patient’s body. Complications can include pneumonia, infection, internal bleeding, and respiratory failure. Postoperative pain is intense and patients often require opioids for relief. Before performing this procedure in emergency situations, practitioners
should address specific considerations unique to the physician and facility in which it is to be performed—including the scope of the physician’s experience as well as availability of OR and recovery facilities.

Thoracotomy is included in core training requirements for emergency medicine practitioners, thoracic surgeons, and cardiovascular surgeons, and is usually performed by practitioners in these disciplines. For more information, see the following Clinical Privilege White Papers:

- Practice area 133—Emergency medicine
- Practice area 136—Cardiovascular surgery
- Practice area 154—Thoracic surgery
- Practice area 161—General surgery

**Involved specialties**

Thoracic surgeons, cardiovascular surgeons, general surgeons, trauma surgeons, emergency medicine physicians

**Positions of certification boards**

**ABEM**

The American Board of Emergency Medicine (ABEM) does not provide specific requirements for thoracotomy, but does grant board certification in emergency medicine, as well as subspecialty certification for emergency medical services. Applicants must:

- Be a graduate of a medical school approved by the Accreditation Council for Graduate Medical Education (ACGME)
- Successfully complete a minimum of 36 months of post–medical school training in an emergency medicine residency program, accredited by the ACGME or the Royal College of Physicians and Surgeons of Canada
- Hold a current, active, valid, unrestricted, and unqualified license to practice medicine in at least one jurisdiction within the United States, its territories, or Canada, and in each jurisdiction in which they practice

ABEM also recognizes specific combined training programs that have been approved in advance by the respective sponsoring boards. These include the following combined training programs:

- Emergency medicine/internal medicine
- Emergency medicine/internal medicine/critical care medicine
- Emergency medicine/pediatrics
- Emergency medicine/family medicine
**ABS**

The American Board of Surgeons (ABS) offers board certification in general surgery. Board-certified general surgery physicians have principal expertise in the diagnosis and care of patients with diseases and disorders affecting the abdomen, digestive tract, endocrine system, breast, skin, and blood vessels. A general surgeon is also trained in the care of pediatric and cancer patients and in the treatment of patients who are injured or critically ill. Some general surgeons pursue additional training and specialize in the fields of trauma surgery, surgical oncology, pediatric surgery, and other fields.

Candidates for board certification must have completed five years in specialty training.

In addition to a general certificate in general surgery, the ABS issues a general certificate in surgical critical care. A surgeon trained in surgical critical care has expertise in the diagnosis, treatment, and support of critically ill and injured patients, particularly trauma victims and patients with multiple organ dysfunction.

**ABTS**

The American Board of Thoracic Surgery (ABTS) includes competency in thoracotomy for board-certified surgeons in its operative experience requirements. The ABTS’ operative experience requirements have two parts:

1. The intensity or volume of cases
2. The distribution of cases (index cases)

Operative experience requirements include an annual average of 125 major operations performed by each resident based on the following lengths of training programs. Thoracotomy and closure are covered under postgraduate years (PGY) 1–3 as listed among the included component cases for training:

- Two-year programs: 125 major cardiothoracic operations for each year, for a total of 250 major cases
- Three-year programs: 125 major cardiothoracic operations for each year, for a total of 375 major cases
- Four-year joint training programs: 125 major cardiothoracic operations for the last two years of training, for a total of 250 major cases
- Six-year programs: for residents who started training before July 1, 2011: 125 major cardiothoracic operations for the last three years of training (PGY 4–6), for a total of 375 major cases

For residents who started training on or after July 1, 2011:

- PGY 1–3: 375 operations averaged over three years, of which 125 must be cardiothoracic operations, up to 50 of which may be component cases that include sternotomy and closure, thoracotomy and closure, left internal mammary artery takedown, saphenous vein harvest, aortic and venous cannulation,
proximal and distal anastomosis, other vascular anastomosis, and gastric/esophagal mobilization

- PGY 4–6: 125 major cardiothoracic operations for each year, for a total of 375 major cases
- PGY 1–6: 150 ABS index cases:
  - Vascular: 25
  - Skin/soft tissue/breast: 10
  - Head/neck: 5
  - Alimentary tract: 20
  - Abdomen: 30
  - Operative trauma: 5
  - Pediatric: 10
  - Plastic: 5
  - Basic laparoscopic: 30
  - Advanced laparoscopic: 10

This guideline on intensity of cases conforms to the Program Requirements in Thoracic Surgery as published by the ACGME’s Residency Review Committee for Thoracic Surgery. The application of any candidate whose supervised operative experience fails to meet the requirement listed above may be referred to the Board’s Credentials Committee for review.

**AOBEM**

The American Osteopathic Board of Emergency Medicine (AOBEM) offers a Certificate of Added Qualification (CAQ) in Emergency Medical Services (EMS) that reflects additional training of at least one year and satisfactory completion of a certifying examination in that field.

The training required for the EMS CAQ must incorporate a specific, identifiable body of knowledge within the broader practice of emergency medicine. To be eligible for examination in this subspecialty, an applicant must meet the following requirements:

- Have a valid, unchallenged, unrestricted license to practice in the state or territory where his or her practice is conducted prior to and during the examination for CAQ process
- Be a member of the AOA or Canadian Osteopathic Association in good standing
- Be a diplomate of the AOBEM and hold a valid certificate in emergency medicine
- Have completed an American Osteopathic Association (AOA)—approved training program in EMS

The AOBEM does not provide specific requirements for thoracotomy.

**AOBS**

The American Osteopathic Board of Surgery (AOBS) establishes training and
experience levels for thoracic and cardiothoracic surgeons. Cardiothoracic surgeons must meet the following requirements:

- Four years of training in general surgery followed by two years of training in cardiothoracic surgery
- Candidates who began their residency training with the required osteopathic graduate medical education 1R internship year effective in the academic year 2008 must complete five years of training in general surgery followed by two years of training in cardiothoracic surgery

AOBS does not offer specific guidance for thoracotomy competency—rather, it falls under the core set of skills necessary to perform thoracic surgery.

Positions of societies, academies, colleges, and associations

ACGME

According to the ACGME’s Program Requirements for Graduate Medical Education in Emergency Medicine, an emergency medicine residency is 36 months in length with a curriculum under the control of the emergency medicine program director.

Residents must fulfill requirements including the following:

- Treat a significant number of critically ill or critically injured patients at the primary clinical site, constituting at least 3% or 1,200 of the ED patients per year (whichever is greater). These patients should be those admitted to monitored care settings, operative care, or the morgue following treatment in the ED during off-service rotations.
- At least two months of inpatient critical care rotations, during which residents should have decision-making experience that allows them to develop the skills and judgment necessary to manage critically ill and injured patients who present to the ED.
- No less than 50% of clinical experience should take place under the supervision of emergency medicine faculty. Such experiences can include emergency medical services, pediatric emergency medicine, emergency medicine administration, and research.
- Sufficient opportunities to perform invasive procedures, monitor unstable patients, and direct major resuscitations of all types on all age groups. Residents are also expected to competently perform diagnostic and therapeutic procedures and emergency stabilization.

The ACGME also publishes Program Requirements for Graduate Medical Education in Thoracic Surgery. According to the guidelines, fellows must successfully complete a surgery residency program accredited by the ACGME prior to pursuing a two-year thoracic surgery program. Alternatively, graduates may choose to complete a seven-year joint surgery/thoracic surgery program accredited by the ACGME or a six-year integrated program accredited by the Liaison
Committee of Medical Education that encompasses core surgical education and clinical thoracic surgery education.

Residents’ operative experience should include the following:

- A minimum of 125 annual major cases
- An adequate volume of operative experience, distribution of categories, and complexity of procedures to ensure a balanced and equivalent clinical education. Categories of procedures must include but are not limited to:
  - Lungs, pleura, and chest wall
  - Esophagus, mediastinum, and diaphragm
  - Thoracic aorta and great vessels

**AOA**

According to the AOA’s *Basic Standards for Residency Training in Emergency Medicine*, training in emergency medicine should be four years in length and should prepare residents to use critical thinking in making decisions for patient management, and to demonstrate proficiency in the psychomotor skills required of a competent emergency physician.

Emergency medicine residents in AOA-accredited programs must complete a minimum of one thoracotomy procedure prior to the completion of the emergency medicine residency. It is understood that numerous critical procedures in emergency medicine are infrequent/rare. In consideration of this, some procedures may be completed after demonstrating proficiency in a simulation lab. Such procedure requirements shall be allowed with the approval and at the discretion of the program director.

The AOA also publishes *Basic Standards for Residency Training in Surgery and Surgical Subspecialties*. The guidelines state that cardiothoracic residency programs should be two years in length, following the successful completion of an AOA-approved general surgery resident program that includes an osteopathic graduate medical education residency. Clinical experience may be achieved by formal affiliation with other institutions, but this may not exceed six months outside the primary training institution. The final 12 months of the program should be spent as a chief resident in approved institutions, under supervision, demonstrating advanced-level responsibilities for complete cardiothoracic surgical patient management.

Thoracotomy-related procedures (including pneumonectomy, lobectomy, and segmentectomy) are included in the case requirements for the AOA’s general thoracic and cardiothoracic pathways.

**STS**

The STS is a nonprofit organization representing cardiothoracic surgeons, researchers, and allied health professionals. The STS offers membership to
board-certified surgeons, residents, and nonphysicians working in the field of thoracic surgery. Although STS does not publish guidelines or position statements regarding the training, credentialing, or privileging of thoracic surgeons, the society does publish Clinical Practice Guidelines on topics relevant to the diagnosis, management, and prevention of diseases or conditions within the field of thoracic surgery. The STS’ General Thoracic Surgery Database defines surgical approaches, including thoracotomy.

Positions of subject matter experts

Julio Williams, MD  
Yakima, Wash.

“If you’re doing trauma [surgery], you have to know how to do a thoracotomy. If you’re allowing someone to do the entire scope of thoracic surgery, you have to have training in general surgery and training in thoracic surgery,” says Julio Williams, MD, a cardiothoracic surgeon at Yakima (Wash.) Regional Medical and Cardiac Center.

When the physician trained can make a difference as well, he notes. “I was probably among one of the last generations trained in all aspects of general surgery,” Williams says. “Since then things have changed dramatically—there is a focus on minimally invasive procedures and an expansion of the scope of practice to acquire more skills.”

Yakima Regional has a number of thoracic surgeons privileged for and performing the procedure as part of its overall cardiothoracic unit.

In determining physician competency, Williams notes that environment plays a big part in whether an organization privileges general surgeons for thoracotomy. For example, in a large teaching hospital where specialists abound, there is little need for a non-thoracic surgeon to perform the procedure—and one might question why a surgeon would seek privileges for such a procedure in that situation, he says.

However, in rural hospitals or underserved areas with a limited number of physicians, it is common to see general surgeons performing many procedures that might be left to other specialties. Williams worked in a remote hospital in Texas, where he performed a wide array of procedures—including thoracotomy—because of his general and thoracic surgical training.

A physician’s self-awareness is one of the most important factors to consider during the privileging process, Williams says. Physicians must be prepared for the complications that may arise once a thoracotomy has been performed, and must be able to recognize when a case is out of their scope of practice or beyond their abilities, he says.
In addition, the organization granting thoracotomy privileges must have sufficient resources to care for patients following the procedure and to bring in the appropriate surgeon if necessary, he says.

**David Nestler, MD**  
*Rochester, Minn.*

From an emergency department or emergency physician standpoint, thoracotomy would only be done in a trauma situation, says David Nestler, MD, chair of quality, ED, at Mayo Clinic in Rochester, Minn. Nestler agrees with Williams’ observation that environment plays a huge factor in who can and/or should be performing thoracotomies in the ED.

“Number one, I’d want to see the physician is up to date on [advanced trauma and life support] training and is privileged for advanced trauma care at the hospital,” says Nestler. “Second, you realistically need to have this patient in the operating room within 15 minutes.” Therefore, a small hospital with a Level 1 trauma unit could accommodate an emergency thoracotomy, while a major hospital without the facilities for that next step of care after the procedure should not, he adds.

“If a thoracotomy is happening outside the OR, it might buy you 10 minutes, but the patient has to be able to get to that OR within a few minutes. Otherwise, it’s pointless,” says Nestler.

If a facility does not have the downstream emergent surgical care to treat the patient, all the trauma surgeon or emergency personnel are doing is causing undue suffering to the patient—without the ability to provide the follow-up care needed immediately after opening the chest cavity, a thoracotomy will do more harm than good, he says.

Getting an adequate number of procedures to establish competency in thoracotomy can be particularly difficult for trauma and emergency surgeons, according to Nestler. Although he’s performed numerous thoracotomies during his career, there are many skilled surgeons who may never perform the procedure, he says.

“There are things in medicine that are so rare that competency would be very difficult to assess. Most emergency departments will view this under general trauma competency rather than take apart the individual parts of trauma care,” says Nestler.

The procedure itself is relatively straightforward, but the indication of when to do it and understanding what happens once the chest is opened is the most important part of it. “What’s more important is resuscitation and recognizing when the patient has expired versus recognizing when a significant, invasive procedure may offer some hope of resuscitation,” says Nestler.
Follow-up care, which begins minutes after the chest is open, is the far more complex component to take into consideration. “If you think about it, the thoracotomy isn’t completed in the ED. It’s started in the ED and completed in the OR,” says Nestler. “We have a fixation that an ED thoracotomy is a one-time thing, but you need the close. If you can’t provide the close, you don’t provide the open.”

**Positions of accreditation bodies**

**CMS**

CMS has no formal position concerning the delineation of privileges for thoracotomy. However, the CMS *Conditions of Participation (CoP)* define a requirement for a criteria-based privileging process in §482.22(c)(6) stating, “The bylaws must include criteria for determining the privileges to be granted to individual practitioners and a procedure for applying the criteria to individuals requesting privileges.”

§482.12(a)(6) states, “The governing body must assure that the medical staff bylaws describe the privileging process. The process articulated in the bylaws, rules or regulations must include criteria for determining the privileges that may be granted to individual practitioners and a procedure for applying the criteria to individual practitioners that considers:

- Individual character
- Individual competence
- Individual training
- Individual experience
- Individual judgment

The governing body must ensure that the hospital’s bylaws governing medical staff membership or the granting of privileges apply equally to all practitioners in each professional category of practitioners.”

Specific privileges must reflect activities that the majority of practitioners in that category can perform competently and that the hospital can support. Privileges are not granted for tasks, procedures, or activities that are not conducted within the hospital, regardless of the practitioner’s ability to perform them.

Each practitioner must be individually evaluated for requested privileges. It cannot be assumed that every practitioner can perform every task, activity, or privilege specific to a specialty, nor can it be assumed that the practitioner should be automatically granted the full range of privileges. The individual practitioner’s ability to perform each task, activity, or privilege must be individually assessed.
CMS also requires that the organization have a process to ensure that practitioners granted privileges are working within the scope of those privileges. CMS’ CoPs include the need for a periodic appraisal of practitioners appointed to the medical staff/granted medical staff privileges (§482.22[a][1]). In the absence of a state law that establishes a time frame for the periodic appraisal, CMS recommends that an appraisal be conducted at least every 24 months. The purpose of the periodic appraisal is to determine whether clinical privileges or membership should be continued, discontinued, revised, or otherwise changed.

**The Joint Commission**

The Joint Commission has no formal position concerning the delineation of privileges for thoracotomy. However, in its *Comprehensive Accreditation Manual for Hospitals*, The Joint Commission states, “The hospital collects information regarding each practitioner’s current license status, training, experience, competence, and ability to perform the requested privilege” (MS.06.01.03).

In the introduction for MS.06.01.03, The Joint Commission states that there must be a reliable and consistent system in place to process applications and verify credentials. The organized medical staff must then review and evaluate the data collected. The resultant privilege recommendations to the governing body are based on the assessment of the data.

The Joint Commission introduces MS.06.01.05 by stating, “The organized medical staff is responsible for planning and implementing a privileging process.” It goes on to state that this process typically includes:

- Developing and approving a procedures list
- Processing the application
- Evaluating applicant-specific information
- Submitting recommendations to the governing body for applicant-specific delineated privileges
- Notifying the applicant, relevant personnel, and, as required by law, external entities of the privileging decision
- Monitoring the use of privileges and quality-of-care issues

MS.06.01.05 further states, “The decision to grant or deny a privilege(s) and/or to renew an existing privilege(s) is an objective, evidence-based process.” The EPs for standard MS.06.01.05 include several requirements as follows:

- The need for all licensed independent practitioners who provide care, treatment, and services to have a current license, certification, or registration, as required by law and regulation
- Established criteria as recommended by the organized medical staff and approved by the governing body with specific evaluation of current licensure and/or certification, specific relevant training, evidence of physical ability, professional practice review data from the applicant’s current organization,
peer and/or faculty recommendation, and a review of the practitioner’s performance within the hospital (for renewal of privileges)

- Consistent application of criteria
- A clearly defined (documented) procedure for processing clinical privilege requests that is approved by the organized medical staff
- Documentation and confirmation of the applicant’s statement that no health problems exist that would affect his or her ability to perform privileges requested
- A query of the NPDB for initial privileges, renewal of privileges, and when a new privilege is requested
- Written peer recommendations that address the practitioner’s current medical/clinical knowledge, technical and clinical skills, clinical judgment, interpersonal skills, communication skills, and professionalism
- A list of specific challenges or concerns that the organized medical staff must evaluate prior to recommending privileges (MS.06.01.05, EP 9)
- A process to determine whether there is sufficient clinical performance information to make a decision related to privileges
- A decision (action) on the completed application for privileges that occurs within the time period specified in the organization’s medical staff bylaws
- Information regarding any changes to practitioners’ clinical privileges, updated as they occur

The Joint Commission further states, “The organized medical staff reviews and analyzes information regarding each requesting practitioner’s current licensure status, training, experience, current competence, and ability to perform the requested privilege” (MS.06.01.07).

In the EPs for standard MS.06.01.07, The Joint Commission states that the information review and analysis process is clearly defined and that the decision process must be timely. The organization, based on recommendations by the organized medical staff and approval by the governing body, develops criteria that will be considered in the decision to grant, limit, or deny a request for privileges. The criteria must be consistently applied and directly relate to the quality of care, treatment, and services. Ultimately, the governing body or delegated governing body has the final authority for granting, renewing, or denying clinical privileges. Privileges may not be granted for a period beyond two years.

Criteria that determine a practitioner’s ability to provide patient care, treatment, and services within the scope of the privilege(s) requested are consistently evaluated. The Joint Commission further states, “Ongoing professional practice evaluation information is factored into the decision to maintain existing privilege(s), to revise existing privileges, or to revoke an existing privilege prior to or at the time of renewal” (MS.08.01.03).

In the EPs for MS.08.01.03, The Joint Commission says there is a clearly defined
process facilitating the evaluation of each practitioner’s professional practice, in which the type of information collected is determined by individual departments and approved by the organized medical staff. Information resulting from the ongoing professional practice evaluation is used to determine whether to continue, limit, or revoke any existing privilege.

**HFAP**

The Healthcare Facilities Accreditation Program (HFAP) has no formal position concerning the delineation of privileges for thoracotomy. The bylaws must include the criteria for determining the privileges to be granted to the individual practitioners and the procedure for applying the criteria to individuals requesting privileges (03.01.09). Privileges are granted based on the medical staff’s review of an individual practitioner’s qualifications and its recommendation regarding that individual practitioner to the governing body.

It is also required that the organization have a process to ensure that practitioners granted privileges are working within the scope of those privileges.

Privileges must be granted within the capabilities of the facility. For example, if an organization is not capable of performing open-heart surgery, no physician should be granted that privilege. In the explanation for standard 03.01.13 related to membership selection criteria, HFAP states, “Basic criteria listed in the bylaws, or the credentials manual, include the items listed in this standard. (Emphasis is placed on training and competence in the requested privileges.)”

The bylaws also define the mechanisms by which the clinical departments, if applicable, or the medical staff as a whole establishes criteria for specific privilege delineation.

Periodic appraisals of the suitability for membership and clinical privileges is required to determine whether the individual practitioner’s clinical privileges should be approved, continued, discontinued, revised, or otherwise changed (03.00.04). The appraisals are to be conducted at least every 24 months.

The medical staff is accountable to the governing body for the quality of medical care provided, and quality assessment and performance improvement (03.02.01) information must be used in the process of evaluating and acting on reprivileging and reappointment requests from members and other credentialed staff.

**DNV**

DNV has no formal position concerning the delineation of privileges for thoracotomy. MS.12 Standard Requirement (SR) #1 states, “The medical staff bylaws shall include criteria for determining the privileges to be granted to individual practitioners and a procedure for applying the criteria to those individuals that
The governing body shall ensure that under no circumstances is medical staff membership or professional privileges in the organization dependent solely upon certification, fellowship, or membership in a specialty body or society.

Regarding the Medical Staff Standards related to Clinical Privileges (MS.12), DNV requires specific provisions within the medical staff bylaws for:

- The consideration of automatic suspension of clinical privileges in the following circumstances: revocation/restriction of licensure; revocation, suspension, or probation of a DEA license; failure to maintain professional liability insurance as specified; and noncompliance with written medical record delinquency/deficiency requirements
- Immediate and automatic suspension of clinical privileges due to the termination or revocation of the practitioner’s Medicare/Medicaid status
- Fair hearing and appeal

The Interpretive Guidelines also state that core privileges for general surgery and surgical subspecialties are acceptable as long as the core is properly defined. DNV also requires a mechanism (outlined in the bylaws) to ensure that all individuals provide services only within the scope of privileges granted (MS.12, SR.4).

Clinical privileges (and appointments or reappointments) are for a period as defined by state law or, if permitted by state law, not to exceed three years (MS.12, SR.2).

Individual practitioner performance data must be measured, utilized, and evaluated as a part of the decision-making for appointment and reappointment. Although not specifically stated, this would apply to the individual practitioner’s respective delineation of privilege request.

**CRC draft criteria**

The following draft criteria are intended to serve solely as a starting point for the development of an institution’s policy regarding thoracotomy.

**Minimum criteria for requesting core privileges in thoracotomy**

**Basic education:** MD or DO

**Minimal formal training:** The applicant must demonstrate successful completion of an ACGME- or AOA-accredited internal medicine residency program followed by completion of a training program in emergency medicine, general surgery, or thoracic surgery.

**Required current experience:** Demonstrated current competence and evidence of the performance of at least [n] thoracotomy procedures during the previous 12
months or completion of training in the past 12 months.

Physicians must demonstrate competence and current training in advanced trauma and life support, must be certified in advanced cardiovascular life support, and must be privileged for advanced trauma care at the hospital.

References

If the applicant is recently trained, a letter of reference should come from the director of the applicant’s training program. Alternatively, a letter of reference may come from the applicable department chair and/or clinical service chief at the facility where the applicant most recently practiced.

Reappointment

Reappointment should be based on unbiased, objective results of care according to a hospital’s quality assurance mechanism. Candidates should have demonstrated current competence and evidence of the performance of thoracotomy on at least \[n\] patients in the past 24 months based on results of ongoing professional practice evaluation and outcomes.

In addition, 30 hours of CME every three years in courses on thoracotomy or related topics are required.

For more information

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