Transesophageal Echocardiography (TEE) - Single Service

Clinical Guidelines for Medical Necessity Review

Version: 3
Effective Date: October 31, 2024

Important Notices

Notices & Disclaimers:

GUIDELINES SOLELY FOR COHERE'S USE IN PERFORMING MEDICAL NECESSITY REVIEWS AND ARE NOT INTENDED TO INFORM OR ALTER CLINICAL DECISION MAKING OF END USERS.

Cohere Health, Inc. ("**Cohere**") has published these clinical guidelines to determine medical necessity of services (the "**Guidelines**") for informational purposes only, and solely for use by Cohere's authorized "**End Users**". These Guidelines (and any attachments or linked third party content) are not intended to be a substitute for medical advice, diagnosis, or treatment directed by an appropriately licensed healthcare professional. These Guidelines are not in any way intended to support clinical decision making of any kind; their sole purpose and intended use is to summarize certain criteria Cohere may use when reviewing the medical necessity of any service requests submitted to Cohere by End Users. Always seek the advice of a qualified healthcare professional regarding any medical questions, treatment decisions, or other clinical guidance. The Guidelines, including any attachments or linked content, are subject to change at any time without notice.

Other Notices:

Fee schedules, relative value units, conversion factors and/or related components are not assigned by the AMA, are not part of CPT, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein.

Guideline Information:

Specialty Area: Cardiovascular Disease
Guideline Name: Transesophageal Echocardiography (TEE) (Single Service)

Literature review current through: 3/22/2024
Document last updated: 10/31/2024
Type: [**X**] Adult (18+ yo) | [_] Pediatric (0-17yo)

Table of Contents

Medical Necessity Criteria

Service: Transesophageal Echocardiography (TEE)

General Guidelines

- **Units, Frequency, & Duration:** Single procedures performed as needed for defined criteria.
- **Criteria for Subsequent Requests:** Based on subsequent events as described in medical necessity criteria.
- **Recommended Clinical Approach:** Transesophageal echocardiography provides a more comprehensive evaluation of the presence of intracardiac thrombus in the setting of prolonged episodes of atrial fibrillation or episodes of indefinite duration. Compared to transthoracic echo imaging, its superior visualization of the left atrial appendage can assess the safety of both outpatient elective cardioversions and acute inpatient cardioversions. TEE is also valuable for evaluating other heart structures, including better imaging of mitral valve function and the atrial septum, both of which can have clinical significance for a patient with atrial fibrillation.

  Transesophageal echocardiography (TEE) can be useful for valvular disease patients when transthoracic echocardiography results are inconclusive or discordant with history and physical exam. TEE is particularly useful in patients with mitral regurgitation to assess mitral leaflet anatomy when considering the mitral leaflet repair or MitraClip procedure feasibility. TEE is also useful in assessing the presence of infective endocarditis and/or left atrial thrombus. TEE is an integral part of minimally invasive valve interventions, including TAVR and MitraCLip procedures.

  Transesophageal echocardiography (TEE) can identify the cause of stroke by detecting potential intrathoracic sources of embolism. TEE is more expensive, more invasive, and takes longer to perform than TTE, but it is more sensitive, especially for patent foramen ovale and left atrial appendage.
- **Exclusions:** For patients with short-duration atrial fibrillation (less than 48 hours) and no history of a thromboembolic event, transesophageal echocardiography is usually not indicated (see Non-Indications below).

Medical Necessity Criteria

Indications

➔ **Transesophageal Echocardiography (TEE)** is considered appropriate if **ANY** of the following is **TRUE**:

- The patient has paroxysmal or persistent atrial flutter/fibrillation with a CHA_2DS_2-VASc score greater than or equal to 2 presenting for planned cardioversion[1]; **OR**
- As a follow-up procedure if **ALL** of the following are **TRUE**:
  - Initial imaging yielded an intracardiac thrombus or evidence of left atrial stasis; **AND**
  - The patient has had a minimum of 3-6 weeks of therapeutic anticoagulant therapy[2]; **OR**
- The patient has a CHA_2DS_2-VASc score greater than or equal to 2 (high-risk for thromboembolism) before catheter ablation if an intracardiac echocardiogram is not planned during the ablation; **OR**
- As an imaging modality to visualize atrial anatomy during catheter or surgical procedures for left atrial appendage occlusion/obliteration if **ANY** of the following is **TRUE**[3]:
  - During catheter or surgical procedure; **OR**
  - 45 days after a catheter or surgical procedure; **OR**
- The patient is presenting with atrial flutter with any history of left atrial appendage thrombus, regardless of anticoagulation status; **OR**
- To evaluate known or suspected valvular heart disease when TTE provides insufficient or discordant information; **OR**
- Further cardiac imaging is needed before mitral valve intervention; **OR**
- Further cardiac imaging is needed before TAVR intervention; **OR**
- To re-evaluate suspected prosthetic valve dysfunction when it would help guide therapy; **OR**
- Within three days of a mitral valve repair, TEE is appropriate to exclude the presence of intracardiac mass, thrombus, or vegetation; **OR**
- The patient has a prior valve replacement or repair and clinical symptoms or signs suggest prosthetic valve dysfunction, even when TTE does not show valve dysfunction; **OR**
- Intraprocedural guidance for **ANY** of the following valve interventions:
  - Valve surgery for infectious endocarditis; **OR**
  - Transcatheter aortic valve replacement (TAVR); **OR**
  - Mitral valve intervention, MitraClip; **OR**

- The patient has known or suspected infectious endocarditis and **ANY** of the following is **TRUE**:
  - Nondiagnostic TTE results; **OR**
  - Intracardiac device leads are present; **OR**
  - Change in clinical signs or symptoms (e.g., new murmur, embolism, persistent fever, HF, abscess, or atrioventricular heart block); **OR**
  - High risk of complications (e.g., extensive infected tissue, large vegetation on initial echocardiogram, or staphylococcal, enterococcal, or fungal infections); **OR**
  - The patient is being considered for an early change to oral antibiotic therapy for stable IE treatment and the TEE is being ordered as **ANY** of the following:
    - A baseline TEE before switching to oral therapy; **OR**
    - A repeat TEE 1 to 3 days before completing the oral antibiotic regimen; **OR**
  - The patient has a prosthetic valve in the presence of persistent fever without bacteremia or a new murmur; **OR**
- The patient has a suspected cardiac mass, tumor, thrombus, or cardiac source of embolus; **OR**
- The patient has *Staphylococcus aureus* bacteremia with or without a known source; **OR**
- The patient has a mechanical prosthetic valve and signs or symptoms of **ANY** of the following:
  - Prosthetic valve obstruction; **OR**
  - An embolic event; **OR**
- TEE is needed for intraprocedural guidance during surgery; **OR**
- TTE provided insufficient or discordant information; **OR**
- The patient has known or suspected infectious endocarditis (IE); **OR**
- There is suspicion of a cardiac mass, tumor, thrombus, or cardiac source of embolus; **OR**
- The patient is known or suspected to have **ANY** of the following:
  - Pericardial constriction[3-4]; **OR**
  - Pericardial disease due to mass, malignancy, thrombus, or cardiac embolus[4]; **OR**
  - Cardiac compression by a loculated pericardial hematoma; **OR**
  - Pericardial thickening inadequately defined by a transthoracic echocardiogram (TTE)[5]; **OR**
  - The patient had a recent cardiovascular surgery or intervention - a complication is suspected; **OR**
- The patient has a known or suspected cardiovascular source of embolus with no identified noncardiac source[6-7]; **OR**

- The patient has **ANY** of the following documented within or planning within 3 months:
  - A cardiac interventional procedure (surgical or transcatheter) is planned; **OR**
  - Systemic embolization has occurred, and **ANY** of the following is **TRUE**:
    - A cardiac source (such as an ASD or PFO) is suspected; **OR**
    - Concern for endocarditis; **OR**
    - The patient has a history of atrial fibrillation; **OR**
- The patient is to have an ablation/pulmonary vein isolation; **OR**
- TEE is needed for surgical planning for **ANY** of the following:
  - Ebstein's anomaly if TTE images are inadequate to evaluate tricuspid valve morphology and function[8]; **OR**
  - Mitral valve intervention[9-11]; **OR**
  - Transcatheter aortic valve replacement (TAVR)[1]; **OR**
- There is a concern for a baffle leak in a patient with d-TGA with an atrial switch, and the TTE was inadequate to confirm[8]; **OR**
- The patient has an atrial septal defect (ASD) to evaluate pulmonary venous connections[8]; **OR**
- Williams syndrome or patients suspected of having supravalvular aortic stenosis[8]; **OR**
- The patient has had a prior valve replacement or valve repair and clinical symptoms or signs that suggest prosthetic valve dysfunction, even if TTE does not show valve dysfunction[9]; **OR**
- The patient is pregnant and has a mechanical prosthetic valve and **ANY** of the following has occurred:
  - Prosthetic valve obstruction; **OR**
  - An embolic event[9]; **OR**
- For better visualization of cardiac structures, which may hemodynamically contribute to atrial arrhythmias; **OR**
- For visualization of the atrial septum during transseptal puncture during ablation of left-sided arrhythmia substrate[7]; **OR**
- For evaluation of structural heart disease not defined by TTE; **OR**
- Diminished left ventricular function or dilated cardiomyopathy before a VT ablation to rule out intracardiac thrombus.[7]
- Repeat imaging (defined as repeat request following recent imaging of the same anatomic region with the same modality), in the absence of established guidelines, will be considered reasonable and necessary if **ANY** of the following is **TRUE**:
  - New or worsening symptoms, such that repeat imaging would influence treatment; **OR**
  - One-time clarifying follow-up of a prior indeterminate finding; **OR**

- In the absence of change in symptoms, there is an established need for monitoring which would influence management.

Non-Indications

➔ **Transesophageal Echocardiography (TEE)** is not considered appropriate if **ANY** of the following is **TRUE**:

- The patient has undergone advanced imaging of the same body part within 3 months without undergoing treatment or developing new or worsening symptoms[12]; **OR**
- The atrial fibrillation duration is reliably defined and is less than 48 hours in a patient with a CHA_2DS_2-VASc score of less than 2[1]; **OR**
- Another imaging modality (e.g., CT, MRI) is requested simultaneously to evaluate for intracardiac thrombus; **OR**
- The patient has a history of esophageal pathology (e.g., stricture, malignancy, fistula, diverticulum), recent surgery of the esophagus, active GI bleeding, esophageal varices (relative), or prior surgery (relative); **OR**
- The patient has suspected atrioesophageal fistula following atrial fibrillation ablation; **OR**
- The patient has a history of undiagnosed dysphagia; **OR**
- Routine TEE for a patient with a prosthetic valve; **OR**
- The purpose is to screen for structural cardiac abnormalities in the absence of an established diagnosis, sign, or symptom; **OR**
- Routine reassessment of global and regional left ventricular function, especially if TTE is technically adequate.

Level of Service

Inpatient or Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description/Definition
93312	Real time transesophageal echocardiography with 2-dimensional (2D) image documentation, M-mode recording, probe placement, image acquisition, interpretation, and report
93313	Real time transesophageal echocardiography with 2-dimensional (2D) image documentation and placement of transesophageal probe only
93314	Interpretation and report only of real time transesophageal echocardiography with 2-dimensional (2D) image

	documentation and image acquisition
93315	Transesophageal echocardiography (TEE) with probe placement, image acquisition, interpretation, and report
93316	Transesophageal echocardiography (TEE) for placement of transesophageal probe only
93317	Interpretation and report only of transesophageal echocardiography (TEE) with image acquisition
93318	Real time transesophageal echocardiography (TEE) with probe placement, 2-dimensional (2D) image acquisition and interpretation
93355	Transesophageal echocardiography (TEE) for guidance of transcatheter closure of left atrial appendage, with quantitative measurements, probe manipulation, interpretation and report
C8925	Transesophageal echocardiography (tee) with contrast, or without contrast followed by with contrast, real time with image documentation (2d) (with or without m-mode recording); including probe placement, image acquisition, interpretation and report
C8926	Transesophageal echocardiography (tee) with contrast, or without contrast followed by with contrast, for congenital cardiac anomalies; including probe placement, image acquisition, interpretation and report
C8927	Transesophageal echocardiography (tee) with contrast, or without contrast followed by with contrast, for monitoring purposes, including probe placement, real time 2-dimensional image acquisition and interpretation leading to ongoing (continuous) assessment of (dynamically changing) cardiac pumping function and to therapeutic measures on an immediate time basis

Medical Evidence

Garg et al. (2016) reviewed 1581 direct current cardioversion cases at the Cleveland Clinic between January 1996 and December 2012, to assess the risk of thromboembolism in patients within 48 hours of atrial fibrillation onset without prior therapeutic anticoagulation. This risk was compared to patients being treated with anticoagulants. In Group 1, TEE was performed before 33 cardioversions, with six reporting mild to moderate smoke (spontaneous echocardiographic contrast suggesting low blood flow velocities that may lead to thromboembolic events) and no thrombus or severe smoke noted. Group 2 patients received 11 TEEs before cardioversions with three revealing mild to moderate smoke. Two neurological events were experienced within 30 days of cardioversion in Group 3 patients, in which 140 of the cardioversions were preceded by TEE reporting mild to moderate smoke and five with severe smoke, with no patients having left atrial thrombus. The study concluded that there exists a significantly greater risk of thromboembolic events in patients undergoing electrical cardioversion within 48 hours of becoming symptomatic and no therapeutic anticoagulation.[1]

Joglar and colleagues (2024) developed the 2023 guideline for the diagnosis and management of atrial fibrillation for the American College of Cardiology and the American Heart Association. Evaluated studies recommended TEE to assess for successful closure of the left atrial appendage (LAA), most notably presence of thrombus or leakage around the area of closure. Based upon the ACUTE trial (Assessment of Cardioversion Using Transesophageal Echocardiography), precardioversion anticoagulation for at least 3 weeks is recommended.[2]

In the 2017 appropriate use criteria for multimodality imaging in valvular heart disease, Doherty et al. state that TEE is rarely appropriate for initial evaluation of an asymptomatic patient, and in symptomatic patients, may be appropriate in the setting of suspected acute mitral or aortic regurgitation as well as respiratory failure or hypoxemia of uncertain etiology. TEE is stated to be appropriate for suspected infectious endocarditis of native or prosthetic valves, endocardial leads, positive blood cultures or new murmur. The committee stated that TEE is also appropriate for suspected cardiac mass, tumor or embolus, in certain cases of mitral and aortic regurgitation, and further evaluation of valvular masses. A number of other evidence-based appropriateness recommendations may be found in the guideline.[3]

References

1. Garg A, Khunger M, Seicean S, Chung MK, Tchou PJ. Incidence of thromboembolic complications within 30 days of electrical cardioversion performed within 48 hours of atrial fibrillation onset. *JACCCEP.* 2016;2:487-494.
2. Joglar JA, Chung MK, Armbruster AL, et al. 2023 ACC/AHA/ACCP/HRS guideline for the diagnosis and management of atrial fibrillation: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *J Am Coll Cardiol*. 2024;83:109–279.
3. Doherty JU, Kort S, Mehran R, et al. ACC/AATS/AHA/ASE/ASNC/HRS/SCAI/ SCCT/SCMR/STS 2019 Appropriate Use Criteria for Multimodality Imaging in the Assessment of Cardiac Structure and Function in Nonvalvular Heart Disease. *J Am Coll Cardiol*. 2019;73(4):488-516. doi:10.1016/ j.jacc.2018.10.038
4. Chiabrando JG, Bonaventura A, Vecchié A, et al. Management of acute and recurrent pericarditis: JACC State-of-the-Art Review. *J Am Coll Cardiol*. 2020;75(1):76-92. doi:10.1016/j.jacc.2019.11.021
5. Adler Y, Charron P, Imazio M, et al. 2015 ESC Guidelines for the diagnosis and management of pericardial diseases: The Task Force for the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology (ESC). Endorsed by: The European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J*. 2015;36(42):2873-2885. doi:10.1093/eurheartj/ehv479.
6. Saric M, Armour AC, Arnaout MS, et al. Guidelines for the use of echocardiography in the evaluation of a cardiac source of embolism. *J Am Soc Echocardiogr.* 2016;29(1):1-42. doi:10.1016/j.echo.2015.09.011
7. Hahn RT, Abraham T, Adams MS, et al. Guidelines for performing a comprehensive transesophageal echocardiographic examination: recommendations from the American Society of Echocardiography and the Society of Cardiovascular Anesthesiologists. *J Am Soc Echocardiogr*. 2013;26(9):921-964. doi:10.1016/j.echo.2013.07.009
8. Stout KK, Daniels CJ, Aboulhosn JA, et al. 2018 AHA/ACC Guideline for the management of adults with congenital heart disease. *J Am Coll Cardiol*. 2019;73(12):81-192. doi:10.1016/j.jacc.2018.08.1029
9. Otto CM, Nishimura RA, Bonow RO, et al. 2020 ACC/AHA guideline for the management of patients with valvular heart disease. *J Am Coll Cardiol*. 2021;77(4):25-197. doi:10.1016/j.jacc.2020.11.018

10. Baumgartner H, De Backer J, Babu-Narayan SV, et al. 2020 ESC Guidelines for the management of adult congenital heart disease: The Task Force for the management of adult congenital heart disease of the European Society of Cardiology (ESC). *Eur Heart J*. 2021; 42(6):563–645. https://doi.org/10.1093/eurheartj/ehaa554.
11. Doherty JU, Kort S, Mehran R, Schoenhagen P, Soman P. ACC/AATS/AHA/ASE/ASNC/HRS/SCAI/SCCT/SCMR/STS 2017 Appropriate Use Criteria for Multimodality Imaging in Valvular Heart Disease. *J Am Coll Cardiol.* 2017;70(13):1647-1672. doi:10.1016/j.jacc.2017.07.732
12. Wasser EJ, Prevedello LM, Sodickson A, Mar W, Khorasani R. Impact of a real-time computerized duplicate alert system on the utilization of computed tomography. *JAMA Intern Med*. 2013;173(11):1024-1026. doi: 10.1001/jamainternmed.2013.543. PMID: 23609029.

Clinical Guideline Revision History/Information

Original Date: October 10, 2022		
Review History		
Version 2	3/22/2024	
Version 3	October 31, 2024	Edited repeat imaging criteria language.