Cohere Medicare Advantage Policy - Transthoracic Echocardiogram (TTE)

Clinical Guidelines for Medical Necessity Review

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Important Notices

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Other Notices:

Guideline Information:

Specialty Area: Diagnostic Imaging

Guideline Name: Cohere Medicare Advantage Policy - Transthoracic Echocardiogram (TTE)
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Type: [**X**] Adult (18+ yo) | [**X**] Pediatric (0-17 yo)

Table of Contents

Medical Necessity Criteria

Service: Transthoracic Echocardiogram (TTE)

Benefit Category

Not applicable.

Please Note: This may not be an exhaustive list of all applicable Medicare benefit categories for this item or service.[1-4]

Related CMS Documents

Please refer to CMS Medicare Coverage Database for the most current applicable CMS National and Local Coverage.

- Local coverage determination, LCD. Echocardiography (L37379)
- Local coverage determination, LCD. Transthoracic Echocardiography (TTE) (CGS) (L34338)
- Local coverage determination, LCD. Transthoracic Echocardiography (TTE) (NGS) (L33577)
- Billing and Coding: Transthoracic Echocardiography (TTE) (A56781)

Recommended Clinical Approach

Transthoracic echocardiography (TTE) can be useful for patients with possible cardiac etiology for chest pain or shortness of breath, heart failure, palpitations, arrhythmias, lightheadedness, dizziness, syncope, TIA, stroke, or peripheral embolic event.[5,6] It can also be used for the evaluation of suspected valvular heart disease, pericardial disease, or pulmonary hypertension. Appropriate use criteria for repeat echocardiograms are more stringent than first-time studies.

Evaluation of Potential Harms and Clinical Benefits

Cohere Health uses the criteria below to ensure consistency in reviewing the conditions to be met for coverage of transthoracic echocardiography (TTE). This process helps to prevent both incorrect denials and inappropriate

approvals of medically necessary services. Specifically, limiting incorrect approvals reduces the risks associated with unnecessary procedures, such as complications from surgery, infections, and prolonged recovery times.

The potential clinical harms of using these criteria may include:

In comparison with other diagnostic modalities, TEE is relatively safe and noninvasive. However, the insertion and manipulation of the ultrasound probe can cause oropharyngeal, esophageal, or gastric trauma.

- Soreness and pain at the injection site or infection: Venous access can be challenging, particularly in patients with small or collapsed veins. Complications of IV injections also include phlebitis, infiltration, extravasation, and infections.[7]
- Increased healthcare costs and complications from the inappropriate use of emergency services and additional treatments.

The clinical benefits of using these criteria include:

- Evaluation of structure and function of the heart, valves, and proximal aorta without radiation
- TTE allows detailed insight into cardiac structure and function, including the configuration and changing dimensions of the chambers, cyclic variations in myocardial thickness, and valve motions throughout the cardiac cycle. The proximal great vessels and the pericardium can also be directly visualized, although transesophageal echocardiography (TEE) often permits better visualization of the thoracic aorta and great veins than TTE.[8]
- TTE allows the serial evaluation of pericardial effusion and evaluation of left ventricular function during antineoplastic chemotherapy following cardiac surgery.[2]
- TTE allows estimation of pulmonary artery systolic pressure or sequential evaluation of the transmitral velocity profile in patients with mitral stenosis, to evaluate changes in gradient or valve area.[2]
- Enhanced overall patient satisfaction and healthcare experience.

This policy includes provisions for expedited reviews and flexibility in urgent cases to mitigate risks of delayed access. Evidence-based criteria are

employed to prevent inappropriate denials, ensuring that patients receive medically necessary care. The criteria aim to balance the need for effective treatment with the minimization of potential harms, providing numerous clinical benefits in helping avoid unnecessary complications from inappropriate care.

In addition, the use of these criteria is likely to decrease inappropriate denials by creating a consistent set of review criteria, thereby supporting optimal patient outcomes and efficient healthcare utilization.

Medical Necessity Criteria

Indications

- ➔ **Transthoracic echocardiogram (TTE)** is considered appropriate if **ANY** of the following is **TRUE**[5-6, 9]:
  - The patient has chest pain (or ischemic equivalent) and clinical evidence of valvular, pericardial, primary myocardial disease, or congenital heart disease; **OR**
  - The patient has chest pain (or ischemic equivalent) and an additional sign or symptom, including shortness of breath, abnormal electrocardiogram (ECG), palpitations, transient ischemic attack (TIA), stroke, or a peripheral embolism; **OR**
  - The patient has syncope or pre-syncope[5]; **OR**
  - Prior testing (e.g., chest X-ray, ECG, cardiac biomarkers) suggested heart disease or structural heart abnormality; **OR**
  - There is a suspicion of hypertensive heart disease; **OR**
  - The patient requires evaluation of right ventricular function with suspected pulmonary hypertension or pulmonary embolism; **OR**
  - The patient has known or suspected infective endocarditis[10]; **OR**
  - The patient has an embolic event that is unexplained; **OR**
  - Evaluation of infiltrative and ventricular tumors and masses, including quantification of their extent and hemodynamic consequences; **OR**
  - CAMZYOS™ (mavacamten) treatment: Patients with symptomatic obstructive hypertrophic cardiomyopathy New York Heart Association (NYHA) Class II-III may be prescribed mavacamten by a certified and enrolled provider and pharmacy through a restricted program called the CAMZYOS Risk Evaluation and Mitigation Strategy (REMS) program.[17-18] This requirement is due to serious risk of heart failure due to systolic dysfunction associated with this agent in this population; however, there are few options for treatment and improvement in the health status on this agent

in select patients leading to the REMS program to provide treatment while furthering understanding of the risk: benefit ratio.[17,19-20] This program requires echocardiograms if **ANY** of the following is **TRUE**:
    - Baseline study; **OR**
    - 4, 8, and 12 weeks after treatment initiation, then every 12 weeks thereafter; **OR**
    - 4 weeks after interruption of treatment; **OR**
    - 4 and 12 weeks after any dose change (including restart of treatment); **OR**
    - 4 and 12 weeks after initiating a weak CYP2C19 inhibitor or a moderate CYP3A4 inhibitor; **OR**
- The patient has **ALL** of the following[23]:
    - **ANY** of the following indications:
        - Prior procedure/surgery for correction of atrial septal defect (ASD); **OR**
        - Partial anomalous pulmonary venous connection repair; **AND**
    - **ANY** of the following indications[23]:
        - Worsening symptoms; **OR**
        - Change on exam suggestive of repair failure; **OR**
        - Surveillance (with no worsening symptoms) and **ANY** of the following:
            - Post-device closure can be done at 1 week, 1 month, 3-6 months, 1 year and then every 2-5 years; **OR**
            - Post-surgical closure can be done at 30 days, then one year, and afterwards every 2-5 years; **OR**
            - Every 3-12 months in patients with significant residual shunt, valvular or ventricular dysfunction, arrhythmias and/or pulmonary hypertension; **OR**
- The patient has prior ventricular septal defect (VSD) repair and **ANY** of the following[23]:
    - Worsening symptoms; **OR** or
    - Change on exam suggestive of repair failure; **OR**
    - Surveillance (with no worsening symptoms) and **ANY** of the following:
        - Post-procedure/surgery at 1 month, then 1 year and afterward every 2-3 years; **OR**
        - Every 3-12 months in patients with significant residual shunt, valvular or ventricular dysfunction, arrhythmias and/or pulmonary hypertension; **OR**

- The patient has complex congenital heart repair (not ASD/VSD) and **ANY** of the following:
  - Worsening symptoms; **OR**
  - Change on exam suggestive of repair failure; **OR**
  - Surveillance (with no worsening of symptoms) every 3 to 12 months, especially if shunting, left ventricular (LV) dysfunction, or pulmonary hypertension persists; **OR**
- The patient requires re-evaluation for asymptomatic valvular heart disease with normal left ventricular (LV) function, including **ANY** of the following:
  - Aortic or mitral regurgitation with **ANY** of the following frequency limitations:
    - The patient has mild disease: no more than one echo every 3-5 years; **OR**
    - The patient has moderate disease: no more than one echo every 1-2 years; **OR**
    - The patient has severe disease: no more than one echo every 6 months to 1 year; **OR**
  - Aortic stenosis with **ANY** of the following frequency limitations:
    - The patient has mild disease (maximum aortic velocity or V_{max} is equal to 2.0-2.9 m/s): no more than one echo every 3-5 years; **OR**
    - The patient has moderate disease (V_{max} is equal to 3.0-3.9 m/s): no more than one echo every 1-2 years; **OR**
    - The patient has severe disease (V_{max} is greater than or equal to 4 m/s): no more than one echo every 6 months to 1 year; **OR**
  - Mitral stenosis with **ANY** of the following frequency limitations:
    - The patient has mild disease (mitral valve or MV area is greater than 1.5 cm^2): no more than one echo every 3-5 years; **OR**
    - The patient has moderate disease (MV area is 1.0 to 1.5 cm^2): no more than one echo every 1-2 years; **OR**
    - The patient has severe disease (MV area is less than 1 cm^2): no more than one echo every 1 year; **OR**
- In patients with either systolic or diastolic heart failure (HF) who have **ANY** of the following[11]:
  - A significant clinical change; **OR**
  - Patients who have received guideline-directed medical therapy (GDMT) and are being considered for invasive procedures or device therapy; **OR**

    - Evaluation of treatment changes (e.g., following cardiac resynchronization therapy [CRT]); **OR**
- The patient has newly diagnosed left bundle branch block (LBBB); **OR**
- The patient has frequent ventricular premature complexes (VPCs) without other evidence of heart disease; **OR**
- The patient has nonsustained ventricular tachycardia (VT); **OR**
- The patient has sustained VT, ventricular fibrillation (VF), or cardiac arrest; **OR**
- The patient has a new onset of atrial fibrillation or atrial flutter; **OR**
- The patient has **ANY** of the following:
    - The patient has any form or degree of conduction disease and clinical evidence of valvular, pericardial, or primary myocardial disease; **OR**
    - The patient has atrioventricular (AV) block with suspicion of reduced ventricular function at an initial or follow-up evaluation; **OR**
    - The patient has AV block with abnormal findings (including chest X-ray, ECG, or physical exam) suggesting structural heart disease; **OR**
    - The patient has AV block and a history of congenital heart disease; **OR**
    - The patient has any form of conduction disease and an additional sign or symptom, including chest pain, shortness of breath, palpitations, TIA, stroke, or peripheral embolic event; **OR**
- In patients with mechanical or bioprosthetic valves with either symptoms or physical exam findings indicative of prosthetic valve dysfunction[12]; **OR**
- The patient requires surveillance for transcatheter aortic valve replacement (TAVR) or transcatheter edge-to-edge repair (TEER) at 6 weeks to 3 months post-implantation and annually[11]; **OR**
- The patient requires surveillance for **ANY** of the following:
    - In patients with a bioprosthetic[12] and mechanical valve, initial TTE at 6 weeks to 3 months post-implantation[5]; **OR**
    - In patients with mechanical valves, surveillance TTE every 5 years is reasonable[5]; **OR**
    - In patients with a bioprosthetic surgical valve[12], TTE at 5 and 10 years and then annually after implantation is reasonable, even in the absence of a change in clinical status[12]; **OR**
    - After valve replacement, female patient planning pregnancy and no TTE within the past year[12]; **OR**
    - Surveillance of known thoracic aortic dilation every 6- 12 months depending on the rate of enlargement and

underlying conditions (e.g., bicuspid aortic valve [BAV], Turner's syndrome, Ehlers-Danlos, etc.)[21-22,24]; **OR**

- Cardiac function monitoring during or at the completion of cardiotoxic chemotherapy, as indicated by **ANY** of the following[13-15]:
    - Anthracycline drug use [Daunorubicin (Cerubidine), Doxorubicin (Adriamycin), Epirubicin (Ellence), Idarubicin (Idamycin), Mitoxantrone (Novantrone), Valrubicin (Valstar)] and **ANY** of the following:
        - Every 3 months during therapy; **OR**
        - Six and twelve months post-therapy; **OR**
        - For patients getting very high-dose treatment (e.g., equivalent dose of doxorubicin 250 mg/m^2 and every additional 50-100 mg/m^2 during therapy); **OR**
    - HER2-targeted therapy [trastuzumab (Herceptin and others), Pertuzumab (Perjeta), and margetuximab (Margenza)] at **ANY** of the following intervals:
        - Every 3 months during therapy; **OR**
        - Every 6 months up to 2 years post therapy; **OR**
    - Other cardiotoxic treatments including tyrosine kinase inhibitors, proteasome inhibitors, BRAF (v-raf murine sarcoma viral oncogene homolog B1) inhibitors, MEK (mitogen-activated extracellular signal-regulated kinase) inhibitors, immune checkpoint inhibitors, antimetabolites, 5-FU (5 fluorouracil), Bevacizumab (Avastin), Clofarabine (Clolar), Cyclophosphamide (Cytoxan), Imatinib (Gleevec), Ifosfamide (Ifex), Mitomycin (Mutamycin), Sorafenib (Nexavar), Sunitinib (Sutent), Paclitaxel (Taxol), Docetaxel (Taxotere), Capecitabine (Xeloda) at **ANY** of the following intervals:
        - Periodically (but no more than every 3 months) in high risk patients, including **ANY** of the following:
            - High risk female patient greater than or equal to 50 years old; **OR**
            - Presence of traditional cardiovascular risk factors: Hypertension, smoking, obesity, dyslipidemia, insulin resistance; **OR**
            - Past medical history with **ANY** of the following:

        - Reduced or low-normal LVEF (50% to 54%) pre-treatment; **OR**
        - Presence of pre-existing cardiovascular disease (e.g., CAD, PAD, cardiomyopathy, severe valvular heart disease, heart failure, or diabetes); **OR**
        - Chronic kidney disease stage 2 (eGFR less than 78 ml/min/1.73 m2); **OR**
        - Abnormal Biomarkers including **ANY** of the following:
            - Elevated baseline troponin and/or NT-proBNP; **OR**
            - Elevated cardiac troponin or NT-proBNP during cancer therapy; **OR**
    - 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

- ➔ **TTE** is not considered appropriate if **ANY** of the following is **TRUE**:
    - Routine echocardiogram in a patient without known cardiovascular disease with no clinical changes; **OR**
    - Routine echocardiogram for known, asymptomatic valvular heart disease more frequently than listed above; **OR**
    - Routine echocardiogram in a known heart failure patient without any significant clinical changes, treatment changes that may affect cardiac function, or plans for invasive procedures/device therapy; **OR**
    - Repeat TTE for hypertensive heart disease and no symptoms and prior TTE less than a year ago.[16]

Site of Service Criteria

Outpatient.

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
93303	Complete transthoracic echocardiography for congenital cardiac anomalies
93304	Follow-up transthoracic echocardiography for congenital cardiac anomalies
93306	Real time transthoracic echocardiography with 2-dimensional (2D) image documentation, M-mode recording with spectral Doppler echocardiography, and color flow Doppler echocardiography
93307	Complete real time transthoracic echocardiography with 2-dimensional (2D) image documentation
93308	Follow-up real time transthoracic echocardiography with 2-dimensional (2D) image documentation
C8921	Transthoracic echocardiography with contrast, or without contrast followed by with contrast, for congenital cardiac anomalies; complete
C8922	Transthoracic echocardiography with contrast, or without contrast followed by with contrast, for congenital cardiac anomalies; follow-up or limited study
C8923	Transthoracic echocardiography with contrast, or without contrast followed by with contrast, real-time with image documentation (2d), includes m-mode recording, when performed, complete, without spectral or color doppler echocardiography
C8924	Transthoracic echocardiography with contrast, or without contrast followed by with contrast, real-time with image documentation (2d), includes m-mode recording, when performed, follow-up or limited study
C8929	Transthoracic echocardiography with contrast, or without contrast followed by with contrast, real-time with image

	documentation (2d), includes m-mode recording, when performed, complete, with spectral doppler echocardiography, and with color flow doppler echocardiography

Medical Evidence

Doherty and colleagues (2017) developed a multi-society appropriate use criteria document for multimodality imaging in valvular heart disease. TTE is considered the examination of choice (appropriate) for initial evaluation of asymptomatic patients with any of the following: unexplained murmur, history of rheumatic heart disease, first-degree family history of a bicuspid aortic valve, etc. In the examination of patients with clinical signs and/or symptoms, TTE may be appropriate for arrhythmias and presyncope as well as assessment of volume status in a critically ill patient and established cause of respiratory failure. It was found to be appropriate in other instances such as syncope, hemodynamic instability, heart failure, endocarditis with positive blood cultures, and respiratory failure. TTE was rated as appropriate for evaluation of valvular mass, stage A valvular heart disease (VHD), mild or moderate VHD, some forms of severe VHD, and valve replacement or repair evaluations. In pre-transcatheter aortic valve replacement (TAVR) evaluation, TTE is deemed appropriate only for assessment and number of valve cusps and degree of calcification and appropriate during intra and post-procedural evaluations. In mitral valve repair, TTE is deemed appropriate to determine patient eligibility, post procedurally and may be appropriate for certain intraprocedural evaluation situations.[5]

In the 2011 appropriate use criteria for echocardiography document (American College of Cardiology, American Society of Echocardiography, American Heart Association, et al.) Douglas et al. address the appropriate use of TTE, transesophageal echocardiography (TEE), and stress echocardiography. The application of the 2007 appropriate use criteria was stated to have been evaluated in academic medical centers, Veterans Affairs hospitals, and community settings. It was found that only 11-16% of TTE applications were unclassified, meaning that most TTEs ordered were captured by acceptable use criteria (AUC) indications (87-91%). It was found that the most commonly reported appropriate indications for TTE included initial evaluation of symptoms potentially caused by suspected cardiac etiology.[6]

In a 2011 study, McDermott and colleagues concluded that TTE was a sufficiently sensitive screening test for native valve infective endocarditis for patients with normal heart valves. Additionally, in those patients with abnormal heart valves, a transesophageal echocardiogram (TEE) did not increase the diagnostic yield in 12 out of 15 patients evaluated. TEEs were reviewed (N=2218), with 87 having a preceding TTE. Infectious endocarditis was defined as high-grade continuous bacteremia with heart valve

vegetation. Patients with pacemakers, defibrillators, and prosthetic heart valves were excluded.[10]

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Clinical Guideline Revision History/Information

Original Date: October 24, 2024		
Review History		
Version 1.1	3/19/2025	Updated policy per CMS revisions for 10/03/2024 ● Updated Effective date ● Updated Links and Bookmarks