

**Contractor Name**

Wisconsin Physician Service

**Contractor Number**

00951, 00952, 00953, 00954

05101, 05201, 05301, 05401, 05102, 05202, 05392, 05302, 05402

**Contractor Type**

Carrier

MAC A

MAC B

**LCD Database ID Number**

Wisconsin

Illinois

Michigan

Minnesota

Iowa

Kansas

Missouri

Nebraska

**LCD Version Number****LCD Title**

Transthoracic Echocardiography (TTE)

**Contractor's Determination Number**

CV-026

**AMA CPT/ ADA CDT Copyright Statement**

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**CMS National Coverage Policy**

CMS Publication 100-4, Medicare Claims Processing Manual, Chapter 12, section 30.4, allows physician/practitioner billing contrast material for use in echocardiography. Manual System, Medicare Claim Processing Manual (Pub. 100-4, Chapter 9, § 100; Chapter 12, §30.4

CMS Publication 100-3, Medicare National Coverage Determination Manual, Chapter 1, Part 1: 20.15 Electrocardiographic Services.

CMS Publication 100-4, Medicare Claims Processing Manual, Transmittal No. 795, Change Request #4208, dated 12/30/2005, redefines type of bill (TOB) 14X for non-patient laboratory specimens-CR 3835 Manualization, including Critical Access Hospitals

CMS Publication 100-4, Medicare Claims Processing Manual, Transmittal No. 820, Change Request #4210, dated 02/01/2006, sites of service revenue codes for Rural Health Clinics (RHCs) and Federally Qualified Health Centers (FQHCs)

CMS Publication 100-4, Medicare Claims Processing Manual, Transmittal No. 1417, Change Request #5912, dated 01/18/2008, Update of the Hospital Outpatient Prospective Payment System (OPPS)

Title XVIII of the Social Security Act; section 1862(a)(7). This section excludes routine physical examinations.

Title XVIII of the Social Security Act, section 1862(a)(1)(A). This section allows coverage and payment for only those services that are considered medically reasonable and necessary.

Title XVIII of the Social Security Act, section 1833(e). This section prohibits Medicare payment for any claim which lacks the necessary information to process the claim.

**Primary Geographic Jurisdiction**

Wisconsin  
Illinois  
Michigan  
Minnesota  
Iowa  
Kansas  
Missouri  
Nebraska

**Oversight Region**

Region I  
Region V

**CMS Consortium**

Midwest  
Northwest

**Original Determination Effective Date**

Wisconsin  
Illinois  
Michigan  
Minnesota  
Iowa  
Kansas  
Missouri  
Nebraska

**Revision Effective Date**

NA

**Indications and Limitations of Coverage and/or Medical Necessity**

Transthoracic echocardiography (TTE) affords unique insight into cardiac structure and function. Two-dimensional imaging (2D) defines the configuration and changing dimensions of the chambers; dynamic cyclic variation in myocardial thickness; and the associated valvular motions

throughout the cardiac cycle. Superimposition of Doppler velocity recordings (with volumetric flow calculations) provides an integrated picture of cardiac structure, function, and adaptation to both normal and abnormal physiology.

The proximal great vessels and the pericardium can also be directly visualized.

The plethora of structural and functional information provided by TTE is unique among diagnostic testing modalities. The rapid and noninvasive acquisition of this information has contributed to exponential application; and to potential over-utilization. This policy addresses the medical necessity and reasonable application of TTE. Transesophageal echocardiography (TEE) is the subject of a separate policy statement.

1. Ventricular Function and Cardiomyopathies

Changes in myocardial thickness (hypertrophy and thinning) in derived parameters of contractility, and in chamber volume and morphology can be quantitated and charted over time by TTE. Cardiac responses to volume perturbations, chronic pressure excess and therapeutic interventions can be monitored. Recognition of the relative contributions of myocardial and valvular functional perturbations to clinical presentation is facilitated. TTE aids the recognition of myopathies and their classification into hypertrophic, dilated and restrictive types. Absent clinically documented, discrete (abrupt change in signs and symptoms) episodes of deterioration, it is not generally medically necessary to augment clinical assessments with TTE measurements at more frequent than annual examinations. Although TTE is used in the assessment of ventricular diastolic function, reproducible pathognomonic findings are not well established. In individuals with signs and/or symptoms suggestive of ventricular dysfunction, the demonstration by TTE of normal systolic function and/or ventricular hypertrophy may suggest the presence of diastolic functional abnormalities

2. Hypertensive Cardiovascular Disease

Left ventricular hypertrophy (LVH) correlates with prognosis in hypertensive cardiovascular disease. Certain antihypertensive medications have been reported to stabilize and possibly contribute to the regression of left ventricular hypertrophy and the insidiously progressive development of left ventricular dysfunction and dilatation. In young individuals and in individuals with borderline hypertension, the decision to commit to long-term antihypertensive therapy may be determined by the presence of left ventricular hypertrophy. TTE may assist in the decision to treat through analysis and the formulation of a treatment program. Baseline TTE and periodic serial assessment (no more frequently than annually) would be medically appropriate. More frequent assessment should have explicit contemporaneous medical necessity documentation.

3. Acute Myocardial Infarction and Coronary Insufficiency

TTE can detect ischemic and infarcted myocardium. Regional motion, systolic thickening perturbations and mural thinning can be quantitated and global functional adaptation assessed. The relative contributions of right ventricular ischemia and/or infarction can be evaluated. Complications of acute infarction (mural thrombi, papillary muscle dysfunction and rupture, septal defects, true or false aneurysm and myocardial rupture) can be diagnosed and their contribution to the overall clinical status placed in perspective. Following an initial TTE in the setting of acute infarction, repetition frequency will typically be dictated by the acute clinical course. Absent clinical deterioration or unclear examination findings, repeat assessment typically includes an evaluation at discharge. Convalescent evaluation, at approximately six (6) months and annually thereafter,

generally provides adequate supplemental data to a thoughtful clinical evaluation. The medical record should document the medical necessity of more frequent TTE assessment.

4. Exposure to Cardiotoxic Agents (chemotherapeutic and external)  
Measures of myocardial contractility, thinning and dilation are important in the titration of therapeutic agents with known myocardial toxicity. Baseline assessment, bimonthly during and at six (6) months following therapy is generally considered medically appropriate. Following accidental exposure to known myocardial toxic agents, absent abrupt change in clinical signs and/or symptoms, typically annual assessment would be considered medically necessary.
5. Cardiac Transplant and Rejection Monitoring  
TTE is an integral part of the cardiac donor selection and donor-recipient matching process. Evaluations focus on analysis of ventricular function and valvular integrity. TTE is also incorporated into the management of allograft recipients. Myocardial thickness, refractile properties, contractile patterns and indices, restrictive hemodynamics, and the late development of pericardial fluid may alert to a rejection episode. None of these findings has achieved diagnostic sensitivity or specificity. Typically, TTE is performed weekly for the first four-to-eight (4-8) weeks following transplant, with decremental frequency over time. Absent acute rejection episodes, approximately two (2) TTE examinations are typically performed yearly in chronic transplant recipients. TTE of cardiac allografts is most appropriately serially performed at transplant centers by examiners with expertise in the management of cardiac allograft recipients. Use in excess of the generally accepted frequency will require appropriate medical necessity documentation.
6. Native Valvular Heart Disease  
Detection of mitral stenosis was among the first practical clinical applications of TTE. TTE is well established as a technique of primary choice for the evaluation of valvular pathology and its effect upon global myocardial function. The relative severity of multivalve pathologies can be quantified. Visualization of the valve and valvular apparatus facilitates therapeutic decisions when competing therapeutic options exist, especially interventions for mitral stenosis. Absent acute intervention, or a discrete change in otherwise stable clinical signs and symptoms, TTE in chronic valvular disease is used to document course over time. Generally, it is not medically necessary to repeat these examinations more frequently than bi-annually.
7. Prosthetic Heart Valves (Mechanical and Bio-prostheses)  
TTE assessment soon after prosthetic valve implant is important in establishing a baseline structural and hemodynamic profile unique to the individual and the prosthesis. Size, position, underlying ventricular function and concomitant valve pathologies all impact his unique profile. Reassessment following convalescence (3-6 months) is appropriate. Thereafter, absent discretely defined clinical events or obvious change in physical examination findings, annual stability assessment is considered medically reasonable and appropriate. When TTE is technically inadequate, Transesophageal Echocardiography (TEE) may be the preferred method of evaluation. (See CV-007 for Part B providers)
8. Acute Endocarditis  
TTE can provide diagnostic information; larger vegetation may be directly visualized, valvular anatomy and ventricular function directly assessed. The complications or sequelae of acute infective endocarditis can be detected and monitored over time.

Acutely, examination frequency is dictated by the individual clinical course. When the acute process has been stabilized, the frequency of serial TTE evaluation will be dictated by the residual pathophysiology and discrete clinical events; analogous to the serial assessment of chronic valvular dysfunction and/or normally functioning prosthetic valves. (vide supra) When TTE does not document the endocarditis, TEE may define the vegetative masses more completely. (See policy CV-007 for Part B providers)

9. Pericardial Disease

Detection and quantitation of the amount of pericardial effusion were among the first and remain important applications of TTE. Pericardial fluid accumulations of as little as twenty (20) milliliters have been reliably diagnosed by TTE. Cardiac motion and blood flow patterns demonstrated by TTE characterize the hemodynamic consequences of pericardial fluid accumulation. A collage of TTE findings has been found to be a reliable index of cardiac tamponade. TTE can be a valuable adjunct during the removal of pericardial fluid and creation of pericardial windows by balloon techniques. Acutely, clinical status will dictate examination frequency. Absent acute pathophysiology, serial assessment of chronic stable pericardial effusion by TTE is not usually medically necessary. TTE is less reliable in the detection of chronic pericardial constriction.

10. Aortic Pathology

TTE can provide valuable information when acute or chronic aortic pathology is present. However, the posterior window of TEE, coupled with the more posterior position of the thoracic aorta has rendered TEE a more determinative study. Noninvasive TTE remains the study of choice for following chronic aortic pathology when images suitable for serial quantitation can be obtained. Repetition frequency should be guided by the pathophysiologic milieu. In some individuals, such as those with Marfan's disease or atherosclerotic aneurysms, a focused limited follow-up exam (93308) to serially measure aortic diameters and arch diameters may be appropriate.

11. Congenital Heart Disease

In children and small adults TTE provides accurate anatomic definition of most congenital heart diseases. Coupled with Doppler hemodynamic measurements, TTE usually provides accurate diagnosis and noninvasive serial assessment. A technically adequate TTE can obviate the need for preoperative catheterization in select individuals.

12. Suspected Cardiac Thrombi and Embolic Sources

TTE is sensitive in the detection of ventricular thrombi and potentially embolic material. Limited visualization of atrial interstices and the more peripheral and superior portions of the atria render TTE less sensitive than TEE in the detection of atrial thrombus and potentially embolic material. In individuals with cardiac pathology associated with a high incidence of thromboemboli (valvular heart disease, arrhythmias – especially atrial fibrillation, cardiomyopathies and ventricular dysfunction) TTE usually provides adequate supplemental therapeutic decisional data. It merits emphasis that a negative examination (TTE or TEE) does not exclude a cardiac embolus and the finding of thrombus or vegetation does not establish a cardiac embolic source. Absent the definition of, and serial assessment for regression of, potentially embolic material, repeat examinations are not generally medically required to direct clinical decisions.

13. Cardiac Tumors and Masses

Infiltrative and ventricular tumors and masses can be visualized, their extent quantitated and their hemodynamic consequences assessed by TTE. Right atrial space-occupying

masses are usually well visualized by TTE. TEE provides a more detailed view of the left atrium and is more sensitive in quantifying mass characteristics (solid, cystic, etc.) extensions and attachments. These acute pathologies are not generally followed serially, except in patients with a familial history of multiple myxoma, involving the ventricles.

14. Critically Ill and Trauma Patients

There is a role for echocardiography in the management of critically ill patients and trauma victims. The diagnosis of suspect aortic or central pulmonary pathology, cardiac contusion, or a pericardial effusion may be confirmed. Perturbations of volume status may be more completely defined and management strategies modified. The frequency of these typically acute studies will be dictated by the exigencies of the clinic milieu.

15. Arrhythmia and Palpitation

TTE is useful in defining cardiac function in which arrhythmias occur, and may be useful in the management of cardiac arrhythmias. Some arrhythmias are frequently associated with underlying organic heart disease and may predispose the patient to hemodynamic deterioration. Atrial fibrillation and atrial flutter are examples of arrhythmias in which TTE may be appropriate to assess the underlying disorder. Palpitations without evidence of arrhythmia, or minor arrhythmia without evidence of heart disease would not be considered medically necessary indications for TTE.

16. Syncope

Determination of the etiology of a syncopal episode can be a difficult clinical problem. The origin may be cardiac, neurological, or due to other causes. Syncope due to cardiac origin is most commonly related to vasodepressor reflexes, bradyarrhythmias or tachyarrhythmias. Syncope is less commonly caused by cardiac structural defects. Patients with structurally normal heart generally have a much more benign prognosis than those with underlying coronary artery disease or cardiomyopathic disease.

17. Pulmonary Heart Disease

Pulmonary heart disease may result from acute changes in pulmonary circulation (e.g., pulmonary embolus) or chronic changes produced by chronic hypoxia causing significant right ventricular dysfunction and hypertrophy. TTE may assess right ventricular size, performance and quantify the severity of pulmonary hypertension using Doppler examination of valvular flow signals. Indications include unexplained pulmonary hypertension and pulmonary emboli with suspected emboli in the right atrium or ventricle.

18. Preoperative Diagnostic Tests

Tests performed to determine a patient's perioperative risk and optimize perioperative care may be covered. Preoperative diagnostic tests are payable if they are medically necessary and meet any other applicable requirements.

19. Brand Names of Contrast Agents

The following is a list of currently registered trade names for the contrast agents addressed in this LCD:

Q9955 Perflexanelipid micropheres (Imagent®)

Q9956 Octafluoropropane (Optison®)

Q9957 Perflutren Lipid Micropheres (Definity®)

**Coverage Topic**

Hospital Services, Outpatient Services

**Revenue Codes**

0480 – Cardiology, General classification

0483 – Cardiology, Echocardiology

**Bill Type Codes:**

**Contractors may specify Bill Types to help providers identify those Bill Types typically used to report this service. Absence of a Bill Type does not guarantee that the policy does not apply to that Bill Type. Complete absence of all Bill Types indicates that coverage is not influenced by Bill Type and the policy should be assumed to apply equally to all claims.**

12x	Hospital-inpatient or health visits (Part B only)
13x	Hospital – outpatient (HHA-A also) (under OPPS 13 x must be used for ASC claims submitted for OPPS payment; effective 07/2000)
21x	SNF – inpatient, Part A
71x	Clinic – rural health
73x	Clinic – independent provider based FQHC (effective 10/1991)
85x	Secial facility or ASC surgery – rural primary care hospital (effective 10/1994)

**Revenue Codes:**

**Contractors may specify Revenue Codes to help providers identify those Revenue Codes typically used to report this service. In most instances Revenue Codes are purely advisory; unless specified in the policy services reported under other Revenue Codes are equally subject to this coverage determination. Complete absence of all Revenue Codes indicates that coverage is not influenced by Revenue Code and the policy should be assumed to apply equally to all Revenue Codes.**

*For dates of service on or after July 1, 2006, the following revenue codes should be used when billing for RHC or FQHC services, other than those services subject to the Medicare outpatient mental health treatment limitation or for the FQHC supplement payment...: 0521, 0522, 0524, 0525, 0527 and 0528. (See CMS Publication 100-04, Medicare Claims Processing Manual, Chapter 9, Section 100.)*

Revenue codes 096X, 097X and 098X are to be used only by Critical Access Hospitals (CAHs) choosing the optional payment method (also called Option 2 or Method 2) and only for services performed by physicians or practitioners who have reassigned their billing rights. When a CAH has selected the optional payment method, physicians or other practitioners providing professional services at the CAH may elect to bill their carrier or assign their billing rights to the CAH. When professional services are reassigned to the CAH, the CAH must bill the FI using revenue codes 096X, 097X or 098X

0480	Cardiology, general classification
0843	Cardiology – echocardiology
0521	Free standing clinic –rural health clinic
0522	Free standing clinic – rural health home
0524	Visit by RHC/FQHC practitioner to a member in a covered Part A stay at the SNF
0525	Visit by RHC/FQHC practitioner to a member in a SNF (not in a covered Part A stay) or NF or ICF MR or other residential facility

0527	RHC/FQHC Visiting Nurse Service(s) to a member's home in a home health shortage area
0528	Visit by RHC/FQHC practitioner to other non RHC/FHQC site (e.g. scene of accident)
0960	Professional fees – general classification
0969	Professional fees – other
0972	Professional fees – radiology diagnostic
0982	Professional fees –outpatient services
0983	Professional fees - clinic

### **CPT/HCPCS Codes**

93303, 93304, 93307, 93308, 93320, 93321, 93325, 93350

93303 Transthoracic echocardiography for congenital cardiac anomalies, complete

93304 Follow-up or limited study

93307 Echocardiography, transthoracic, real-time with image documentation (2D) with or without M-mode recording; complete

93308 follow-up or limited study

93320 Doppler echocardiography, pulsed wave and/or continuous wave with spectral display (list separately in addition to codes for echocardiographic imaging); complete

93321 follow-up or limited study (list separately in addition to codes for echocardiographic imaging)

93325 Doppler echocardiography color flow velocity mapping (list separately in addition to codes for echocardiography)

93350 Echocardiography, transthoracic, real-time with image documentation (2D), with or without M-mode recording, during rest and cardiovascular stress test using treadmill, bicycle exercise and pharmacological induced stress with interpretation and report

### **Does the CPT 30% Rule Apply**

No

### **ICD-9 Codes that Support Medical Necessity**

*Note: ICD-9 codes must be coded to the highest level of specificity.*

#### Infectious and Parasitic Disease

074.1, 074.20-074.23, 086.0, 088.81, 093.0, 093.1, 093.20-093.24, 093.81-093.89, 098.83-098.85, 112.81, 115.03, 115.04, 115.13, 115.14, 130.3, 135

#### Neoplasms

164.1, 164.8, 198.89, 212.7, 238.8, 238.9, 239.8

#### Disorders o Metabolism

075.0, 276.0-276.4, 276.50-276.52, 276.6-276.9, 277.30, 277.39

#### Disorders of the Eye, Retina, Visual Disturbances

362.30-362.37, 368.00,

#### Rheumatic Heart Disease

391.0-391.2, 091.8, 391.9, 392.0, 393, 394.0-394.2, 394.9, 395.0-395.2, 395.9, 396.0-396.3, 396.8, 396.9, 397.0, 397.1, 397.9, 398.0, 398.90, 398.91, 398.99

#### Hypertension

401.0, 401.1, 401.9, 402.00, 402.01, 402.10, 402.11, 402.90, 402.91, 403.00, 403.01, 403.10, 403.11, 403.90, 403.91, 404.00-404.03, 404.10-404.13, 404.90-404.93, 405.01, 405.09, 405.11, 405.19, 405.91, 405.99

Ischemic Heart Disease Acute, Chronic

410.00-410.02, 410.10-410.12, 410.20-410.22, 410.30-410.32, 410.40-410.42, 410.50-410.52, 410.60-410.62, 410.7-410.72, 410.80-410.82, 410.90-410.92, 411.0, 411.1, 411.81-412, 413.0-413.9, 414.00-414.07, 414.10-414.9

Pulmonary Heart Disease

415.0, 415.11, 415.19, 416.0-416.9, 417.0-417.9

Endocarditis, Myocarditis, Dysrhythmias, Ill Defined Complications

420.0, 420.90-420.99, 421.0-421.9, 422.0, 422.90-422.99, 423.0-423.9, 424.0-424.3, 424.90-424.99, 425.0-425.9, 426.0, 426.11-426.4, 426.50-426.7, 427.0-427.2, 427.31, 427.32, 427.41, 427.42-427.69, 427.81-427.9, 428.0, 428.1, 428.20-428.23, 428.30-428.33, 428.40-428.43, 428.9, 429.0-429.6, 429.71, 429.79, 429.81-429.89, 429.9

Cerebrovascular Disease, Disease of Arteries and Veins

431, 434.00, 434.01, 434.10, 434.11, 434.90, 434.91, 435.0, 435.1-436, 440.20-440.29, 441.00-441.03, 441.1-441.7, 441.9, 444.21, 444.22, 444.81, 446.1, 446.7, 458.0, 458.9

Respiratory, Intestinal and Kidney Disorders

518.4, 518.5, 518.7, 518.81-518.84, 557.0, 593.81

Abortion Complicated by Cardiovascular Conditions

634.60-634.62, 635.60-62, 636.60-636.62, 637.60-637.62, 638.6, 673.20-673.24, 674.82, 674.84

Systemic Lupus. Sclerosis

710.0, 710.1

Congenital Anomalies of the Heart and Vessels

745.0, 745.10-745.19, 745.2-745.5, 745.60-745.9, 746.00-746.09, 746.1-746.7, 746.81-746.85, 746.87, 746.9, 747.0, 747.10, 747.11, 747.21-747.3, 747.40-747.49, 759.3, 759.82

Symptoms, Injuries, Complications

780.02, 780.2, \*780.60-780.65, 782.5, 785.0-785.3, 785.50-785.59, 786.05, 786.09, \*786.50-786.52, 786.59, 790.7, 794.31, 807.4, 861.00-861.03, 861.10-861.13, 901.0, 901.2, 901.40-901.42, 922.1, 958.0, 958.1, 958.4, 959.11-959.19, 960.7, 962.0, 963.1, 965.09, 972.0, 972.1, 980.3, 986, 990, 994.0, 994.8, 995.1, 996.01-996.04, 996.61, 996.71, 996.83, 997.1, 998.0, 998.51, 998.59, 999.31, 999.39, 999.4

Personal History of Heart, Great Vessel Surgery, Transplant and Follow-Up

V42.1, V42.2, V43.3, V58.69, V59.8

**Q9955, Q9956, Q9957, A9700** (Supply of injectable contrast material for use in echocardiography as described in CPT code section)..

794.39 Non-specified abnormal results of function studies, cardiovascular, other

796.4 Other abnormal clinical findings

**Diagnoses that Support Medical Necessity**

Diagnoses listed above.

**ICD-9 Codes that DO NOT Support Medical Necessity**

Any ICD-9 code not listed above.

**Diagnoses that DO NOT Support Medical Necessity**

Diagnoses not listed above.

**Documentation Requirements**

1. The patients medical records must be legible, contain the relevant history, physical findings conforming to the criteria stated in the “indications and Limitations of Coverage” section of this policy, and must be made available to the Contractor on request.

**Utilization Guidelines**

Outlined in Indications and Limitations section.

**Sources of Information and Basis for Decision**

American Society of Echocardiography “Contrast Echocardiography: Current and Future Applications. J Am Soc Echocardiography 2000; No. 13:331-342

Douglas et al. 2008 ACCF/ASE/ACEP/ASNC/SCAI/SCCT/SCMR Appropriateness Criteria for Transthoracic and Transesophageal Echocardiography. J Am Coll Cardiol, 2008; 51:1127-1147, doi:10.1016/j.jacc.2007.12.005

Cheitlin et al. 2003 ACC/AHA/ASE Guideline Update for the Clinical Application of Echocardiography. J Am Coll Cardiol, 2003; Vol. 42: 954-970

Other Contractor Policies

WPS Legacy LCD

**Start Date of Comment Period**

**End Date of Comment Period**

**Start Date of Notice Period**

**Revision History Number/Explanation**

**Reason for Change**

NA

**Last Reviewed On Date**

NA

**Related Documents**

This LCD has no Related Documents

**LCD Attachments**

[Billing and Coding Guidelines for CV-026 \(Transthoracic Echocardiography\).](#)