ND

Medical Policies

Print

Policy Number:	M-5031		
Policy Name:	Myocardial Strain Imaging		
Policy Type:	Medical	**Policy Subtype:**	Diagnostic Medical
Effective Date:	09-15-2025	**End Date:**	11-02-2025

Description

Myocardial Strain Imaging

Myocardial strain refers to the deformation (shortening, lengthening, or thickening) of the myocardium through the cardiac cycle. Myocardial strain can be measured by tissue Doppler imaging or, more recently, speckle-tracking echocardiography. Speckle-tracking echocardiography uses imaging software to assess the movement of specific markers in the myocardium that are detected in standard echocardiograms.

Policy Application

All claims submitted for this policy will be processed according to the policy effective date and associated revision effective dates in effect on the date of service.

Criteria

Coverage is subject to the specific terms of the member's benefit plan.

Myocardial strain imaging in individuals who have exposure to medications or radiation that could result in cardiotoxicity is investigational:

Myocardial strain imaging is investigational.

Procedure Codes

93356

Summary of Evidence

For individuals who have exposure to medications or radiation that could result in cardiotoxicity who receive myocardial strain imaging, the evidence includes systematic reviews of observational studies and a randomized controlled trial (RCT). Relevant outcomes include symptoms, morbid events, quality of life, treatment-related mortality, and treatment-related morbidity. A systematic review of 13 studies with 384 individuals treated for cancer suggests that myocardial strain imaging with tissue Doppler imaging or speckle-tracking echocardiography may be able to identify changes in myocardial deformation that precede changes in left ventricle ejection fraction. Although myocardial strain imaging may detect sub-clinical myocardial changes, the value of these changes in predicting clinical outcomes or guiding therapy is uncertain. In the Strain Surveillance of Chemotherapy for Improving Cardiovascular Outcomes (SUCCOUR) trial, left ventricle surveillance with global longitudinal strain was associated with an increased use of cardioprotective therapy and a lower incidence of cancer-therapy-related cardiac dysfunction as compared to left ventricular ejection fraction surveillance. However, no difference in the primary endpoint of final left ventricular ejection fraction at one (1)-year follow-up was observed between the groups and interpretation of findings was limited by important design and relevance limitations. Additional studies are indicated to better define the threshold for cardioprotective therapy and assess whether a global longitudinal strain-guided approach to cardioprotective therapy reduces the long-term risk of heart failure and improves clinical outcomes. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Professional Statements and Societal Positions Guidelines

American College of Cardiology et al.

The ACC, American Association for Thoracic Surgery, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Hearth Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and the Society of Thoracic Surgeons (2019) published appropriate use criteria for multimodality imaging in the assessment of cardiac structure and function in nonvalvular heart disease (see Table 2).

Using a modified Delphi approach, the panel rated indications as “appropriate”, “may be appropriate”, and “not appropriate” The specific studies that formed the basis of the ACC guidelines are not cited, however, they note that they used ACC/American Heart Association clinical practice guidelines whenever possible.

Of 81 indications considered for strain rate imaging, the panel rated only 4 as “appropriate” (Table 2). Three of the four concerned evaluation (initial or follow-up) in individuals prior to and following exposure to potentially cardiotoxic agents. The other indication was follow-up testing to clarify initial diagnostic testing for individuals with suspected hypertrophic cardiomyopathy. The guidelines did not separate out imaging with speckle tracking and tissue Doppler, and did not make recommendations related to the comparative effectiveness of these imaging modalities.

The panel rated 14 other indications “may be appropriate” (Table 2). According to the panel, interventions in this category should be performed depending on individual clinical individual circumstances and individual and provider preferences, including shared decision making.

Summary of ACC Appropriate Use Criteria for Myocardial Strain Imaging

Clinical Scenario and Indication	Rating
Initial evaluation in an asymptomatic individual:	
- Initial evaluation prior to exposure to medications/radiation that could result in cardiotoxicity/heart failure	Appropriate
- Initial cardiac evaluation of a known systemic, congenital, or acquired disease that could be associated with structural heart disease	May be appropriate
- Screening evaluation for structure and function in first-degree relatives of an individual with an inherited cardiomyopathy	May be appropriate
- Preparticipation assessment of an asymptomatic athlete with one (1) or more of the following: abnormal examination, abnormal ECG, or definite (or high suspicion for) family history of inheritable heart disease)	May be appropriate
Initial evaluation of a individual with clinical signs and/or symptoms of heart disease:	
- Initial evaluation when symptoms or signs suggest heart disease	May be appropriate
- Arrythmias or conduction disorders • Newly diagnosed LBBB • Nonsustained VT	May be appropriate
- Palpitations/Presyncope/Syncope • Clinical symptoms or signs consistent with a cardiac diagnosis known to cause presyncope/syncope (including but not limited to hypertrophic cardiomyopathy and heart failure)	May be appropriate
- Respiratory failure/exertional shortness of breath • Exertional shortness of breath/dyspnea or hypoxemia of uncertain etiology	May be appropriate
- Heart failure/cardiomyopathy • Initial evaluation of known or suspected heart failure (systolic or diastolic) based on symptoms, signs, or abnormal test results to assess systolic or diastolic function and to assess for possible etiology (CAD, valvular disease) • Suspected inherited or acquired cardiomyopathy (e.g., restrictive, infiltrative, dilated, hypertrophic)	May be appropriate
- Device therapy	May be appropriate

• Known implanted pacing/ICD/CRT device with symptoms possibly due to suboptimal device settings	
- Cardiac Transplantation • Monitoring for rejection or coronary arteriopathy in a cardiac transplant recipient	May be appropriate
- Other • Suspected pericardial diseases	May be appropriate
Sequential or follow-up testing to clarify initial diagnostic testing:	
- Evaluation of suspected hypertrophic cardiomyopathy	Appropriate
- Re-evaluation (1 year) in an individual previously or currently undergoing therapy with potentially cardiotoxic agents	Appropriate
- Periodic reevaluation in an individual undergoing therapy with cardiotoxic agents and worsening symptoms	Appropriate
- Pulmonary hypertension in the absence of severe valvular disease	May be appropriate
- Comprehensive further evaluation of undefined cardiomyopathy	May be appropriate
- Evaluation of suspected cardiac amyloidosis	May be appropriate
Sequential or follow-up testing: New or Worsening Symptoms or to Guide Therapy	
Re-evaluation of known structural heart disease with change in clinical status or cardiac examination or to guide therapy	May be appropriate
Re-evaluation of known cardiomyopathy with a change in clinical status or cardiac examination or to guide therapy	May be appropriate
Re-evaluation of known HF (systolic or diastolic) with a change in clinical status or cardiac examination without a clear precipitating change in medication or diet	May be appropriate
Re-evaluation for CRT device optimization in an individual with worsening HF	May be appropriate

Source: Adapted from Doherty et al 2019

American Society of Clinical Oncology

The American Society of Clinical Oncology (2017) noted that measurement of strain has been demonstrated to have some diagnostic and prognostic use in individuals with cancer receiving cardiotoxic therapies but that there have been no studies demonstrating that early intervention based on changes in strain alone can result in changes in risk and improved outcomes. The American Society of Clinical Oncology also notes that screening for asymptomatic cardiac dysfunction using advanced imaging could lead to added distress in cancer survivors.

Diagnosis Codes

Not Applicable

CURRENT CODING

CPT:

93356	MYOCRD STRAIN IMG SPECKLE TRCK ASSMT MYOCRD MECH	Commercial
93356	MYOCRD STRAIN IMG SPECKLE TRCK ASSMT MYOCRD MECH	Medicaid Expansion

References

1. Smiseth OA, Torp H, Opdahl A, et al. Myocardial strain imaging: how useful is it in clinical decision making?. Eur Heart J. Apr 14 2016; 37(15): 1196-207. PMID 26508168
2. 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: A Report of the American College of Cardiology Appropriate Use Criteria Task Force, American Association for Thoracic Surgery, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and the Society of Thoracic Surgeons. J Am Soc Echocardiogr. May 2019; 32(5): 553-579. PMID 30744922
3. Trivedi SJ, Altman M, Stanton T, et al. Echocardiographic Strain in Clinical Practice. Heart Lung Circ. Sep 2019; 28(9): 1320-1330. PMID 31064715
4. Yingchoncharoen T, Agarwal S, Popovic ZB, et al. Normal ranges of left ventricular strain: a meta-analysis. J Am Soc Echocardiogr. Feb 2013; 26(2): 185-91. PMID 23218891
5. Thavendiranathan P, Poulin F, Lim KD, et al. Use of myocardial strain imaging by echocardiography for the early detection of cardiotoxicity in patients during and after cancer chemotherapy: a systematic review. J Am Coll Cardiol. Jul 01 2014; 63(25 Pt A): 2751-68. PMID 24703918
6. Thavendiranathan P, Negishi T, Somerset E, et al. Strain-Guided Management of Potentially Cardiotoxic Cancer Therapy. J Am Coll Cardiol. Feb 02 2021; 77(4): 392-401. PMID 33220426
7. Hendel RC, Lindsay BD, Allen JM, et al. ACC Appropriate Use Criteria Methodology: 2018 Update: A Report of the American College of Cardiology Appropriate Use Criteria Task Force. J Am Coll Cardiol. Feb 27 2018;

71(8): 935-948. PMID 29471942
8. Armenian SH, Lacchetti C, Lenihan D. Prevention and Monitoring of Cardiac Dysfunction in Survivors of Adult Cancers: American Society of Clinical Oncology Clinical Practice Guideline Summary. J Oncol Pract. Apr 2017; 13(4): 270-275. PMID 27922796

ND Committee Review

Internal Medical Policy Committee 3-16-2020 Created new policy for ND for new code.

- CPT 0399T Previously addressed under Experimental and Investigational Services policy

Internal Medical Policy Committee 3-17-2021 Revision policy,

- *Added* a statement to Criteria

Internal Medical Policy Committee 3-23-2022 Annual Review, no changes in criteria

Internal Medical Policy Committee 3-23-2023 - Revision - *Effective May 01, 2023*

- *Added* Summary of Evidence

Internal Medical Policy Committee 5-14-2024 Annual Review, no changes in criteria

- *Added* Policy Application

Disclaimer

Current medical policy is to be used in determining a Member's contract benefits on the date that services are rendered. Contract language, including definitions and specific inclusions/exclusions, as well as state and federal law, must be considered in determining eligibility for coverage. Members must consult their applicable benefit plans or contact a Member Services representative for specific coverage information. Likewise, medical policy, which addresses the issue(s) in any specific case, should be considered before utilizing medical opinion in adjudication. Medical technology is constantly evolving, and the Company reserves the right to review and update medical policy periodically.