Evolent Clinical Guideline 7291 for Enhanced External Counter Pulsation

Guideline Number: Evolent_CG_7291	Applicable Codes	
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TABLE OF CONTENTS

STATEMENT **2**
GENERAL INFORMATION 2
PURPOSE 2
SPECIAL NOTE 2
CLINICAL REASONING 2
INDICATIONS **3**
CONTRAINDICATIONS **3**
CODING AND STANDARDS **4**
CODES 4
APPLICABLE LINES OF BUSINESS 8
BACKGROUND **8**
DEFINITIONS 8
New York Heart Association Grading Scale for Heart Failure *8*
Canadian Cardiovascular Society Grading Scale for Angina *9*
AUC SCORE 9
ACRONYMS/ABBREVIATIONS 9
SUMMARY OF EVIDENCE **10**
ANALYSIS OF EVIDENCE **11**
POLICY HISTORY **12**
LEGAL AND COMPLIANCE **12**
GUIDELINE APPROVAL 12
Committee *12*
DISCLAIMER 12
REFERENCES **14**

STATEMENT

General Information

- *It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.*
- *Where a specific clinical indication is not directly addressed in this guideline, medical necessity determination will be made based on widely accepted standard of care criteria. These criteria are supported by evidence-based or peer-reviewed sources such as medical literature, societal guidelines, and state/national recommendations.*
- *The guideline criteria in the following sections were developed utilizing evidence-based and peer-reviewed resources from medical publications and societal organization guidelines as well as from widely accepted standard of care, best practice recommendations.*

Purpose

Indications for determining medical necessity for Enhanced External Counterpulsation (EECP).

Special Note

- To review a request for medical necessity, the following items must be submitted for review:
  - Progress note that prompted request, including list of current medications
  - Records from last EECP treatment (if applicable)
  - Most recent echocardiogram, stress test
  - Most recent cardiac catheterization report

Clinical Reasoning

All criteria are substantiated by the latest evidence-based medical literature. To enhance transparency and reference, Appropriate Use (AUC) scores, when available, are diligently listed alongside the criteria.

This guideline first defaults to AUC scores established by published, evidence-based guidance endorsed by professional medical organizations. In the absence of those scores, we adhere to a standardized practice of assigning an AUC score of 6. This score is determined by considering variables that ensure the delivery of patient-centered care in line with current guidelines, with a focus on achieving benefits that outweigh associated risks. This approach aims to maintain a robust foundation for decision-making and underscores our commitment to upholding the highest standards of care. [1–5]

INDICATIONS ~~FOR ENHANCED EXTERNAL COUNTER PULSATION~~

An initial treatment course of 35 one-hour sessions, given five days per week, will be considered for:

- Patients with chronic coronary disease, refractory angina pectoris, or with Class III or IV angina symptoms per New York Heart Association (NYHA) or Canadian Cardiovascular Society (CCS), **AND** on maximally tolerated guideline-directed medical therapy (GDMT) [6,7]
- Patients who are not amenable for revascularization, either percutaneously (percutaneous coronary intervention (PCI)) **OR** surgically (coronary artery bypass graft (CABG)) due to **ANY of the following** [8]:
  - Inoperative condition or high risk of operative complications or post-op**erative** failure
  - Recurrent angina pectoris despite multiple revascularization procedures
  - Unsuitable coronary anatomy
  - Additional co-morbid states ~~which~~ **that** could create excessive risk

Repeat courses of EECP will be considered on a case-by-case basis for patients with refractory angina pectoris (RAP) if ~~all~~ **ALL** the following criteria are met [8]**:**

- Patient meets medical necessity criteria for EECP ~~**AND**~~
- Prior EECP has resulted in a sustained improvement in symptoms, with a significant (> 25%) reduction in frequency of angina symptoms **OR improvement by one or more angina classes (NYHA or CCS), AND**~~with~~
  - ~~Improvement by one or more angina classes (NYHA or CCS) **AND**~~
  - Three or more months has elapsed from the prior EECP treatment

CONTRAINDICATIONS ~~OF ENHANCED EXTERNAL COUNTER PULSATION~~ (6–8)

- Decompensated heart failure
- Severe aortic regurgitation
- Severe peripheral artery disease
- Recent myocardial infarction within the last 3 months
- Recent surgical intervention within the last 6 weeks
- Recent cardiac catheterization (1-2 weeks) or arterial femoral puncture
- Unstable angina pectoris
- Severe hypertension > 180/110 mmHg

- Heart rate of < 35 or > 125 beats per minute
- Arrhythmias that interfere with EECP triggering
- Severe venous disease (thrombophlebitis, deep vein thrombosis, or pulmonary embolism)
- Severe chronic obstructive pulmonary disease (COPD)
- Severe lower extremity vaso-occlusive disease
- Coagulopathy with international normalized ratio of prothrombin time > 2.0
- Presence of a documented aortic aneurysm requiring surgical repair
- Pregnancy

CODING AND STANDARDS

Codes

Code	Description
G0166	External counterpulsation, per treatment session
I20.0	Unstable angina
I20.1	Angina pectoris with documented spasm
I20.2	Refractory angina pectoris
I20.8	Other forms of angina pectoris
I20.81	Angina pectoris with coronary microvascular dysfunction
I20.89	Other forms of angina pectoris
I20.9	Angina pectoris, unspecified
I25.10	Atherosclerotic heart disease of native coronary artery without angina pectoris
I25.110	Atherosclerotic heart disease of native coronary artery with unstable angina pectoris
I25.111	Atherosclerotic heart disease of native coronary artery with angina pectoris with documented spasm

Code	Description
I25.112	Atherosclerotic heart disease of native coronary artery with refractory angina pectoris
I25.118	Atherosclerotic heart disease of native coronary artery with other forms of angina pectoris
I25.119	Atherosclerotic heart disease of native coronary artery with unspecified angina pectoris
I25.6	Silent myocardial ischemia
I25.700	Atherosclerosis of coronary artery bypass graft(s), unspecified, with unstable angina pectoris
I25.701	Atherosclerosis of coronary artery bypass graft(s), unspecified, with angina pectoris with documented spasm
I25.702	Atherosclerosis of coronary artery bypass graft(s), unspecified, with refractory angina pectoris
I25.708	Atherosclerosis of coronary artery bypass graft(s), unspecified, with other forms of angina pectoris
I25.709	Atherosclerosis of coronary artery bypass graft(s), unspecified, with unspecified angina pectoris
I25.710	Atherosclerosis of autologous vein coronary artery bypass graft(s) with unstable angina pectoris
I25.711	Atherosclerosis of autologous vein coronary artery bypass graft(s) with angina pectoris with documented spasm
I25.712	Atherosclerosis of autologous vein coronary artery bypass graft(s) with refractory angina pectoris
I25.718	Atherosclerosis of autologous vein coronary artery bypass graft(s) with other forms of angina pectoris
I25.719	Atherosclerosis of autologous vein coronary artery bypass graft(s) with unspecified angina pectoris
I25.720	Atherosclerosis of autologous artery coronary artery bypass graft(s) with unstable angina pectoris
I25.721	Atherosclerosis of autologous artery coronary artery bypass graft(s) with angina pectoris with documented spasm

Code	Description
I25.722	Atherosclerosis of autologous artery coronary artery bypass graft(s) with refractory angina pectoris
I25.728	Atherosclerosis of autologous artery coronary artery bypass graft(s) with other forms of angina pectoris
I25.729	Atherosclerosis of autologous artery coronary artery bypass graft(s) with unspecified angina pectoris
I25.730	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unstable angina pectoris
I25.731	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with angina pectoris with documented spasm
I25.732	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with refractory angina pectoris
I25.738	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with other forms of angina pectoris
I25.739	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unspecified angina pectoris
I25.750	Atherosclerosis of native coronary artery of transplanted heart with unstable angina
I25.751	Atherosclerosis of native coronary artery of transplanted heart with angina pectoris with documented spasm
I25.752	Atherosclerosis of native coronary artery of transplanted heart with refractory angina pectoris
I25.758	Atherosclerosis of native coronary artery of transplanted heart with other forms of angina pectoris
I25.759	Atherosclerosis of native coronary artery of transplanted heart with unspecified angina pectoris
I25.760	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unstable angina
I25.761	Atherosclerosis of bypass graft of coronary artery of transplanted heart with angina pectoris with documented spasm

Code	Description
I25.762	Atherosclerosis of bypass graft of coronary artery of transplanted heart with refractory angina pectoris
I25.768	Atherosclerosis of bypass graft of coronary artery of transplanted heart with other forms of angina pectoris
I25.769	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unspecified angina pectoris
I25.790	Atherosclerosis of other coronary artery bypass graft(s) with unstable angina pectoris
I25.791	Atherosclerosis of other coronary artery bypass graft(s) with angina pectoris with documented spasm
I25.792	Atherosclerosis of other coronary artery bypass graft(s) with refractory angina pectoris
I25.798	Atherosclerosis of other coronary artery bypass graft(s) with other forms of angina pectoris
I25.799	Atherosclerosis of other coronary artery bypass graft(s) with unspecified angina pectoris
I25.810	Atherosclerosis of coronary artery bypass graft(s) without angina pectoris
I25.811	Atherosclerosis of native coronary artery of transplanted heart without angina pectoris
I25.812	Atherosclerosis of bypass graft of coronary artery of transplanted heart without angina pectoris
I25.82	Chronic total occlusion of coronary artery
I25.85	Chronic coronary microvascular dysfunction
I25.89	Other forms of chronic ischemic heart disease
I25.9	Chronic ischemic heart disease, unspecified

~~G0166, I20.0, I20.1, I20.2, I20.8, I20.81, I20.89, I20.9, I25.10, I25.110, I25.111, I25.112, I25.118, I25.119, I25.6, I25.700, I25.701, I25.702, I25.708, I25.709, I25.710, I25.711, I25.712, I25.718, I25.719, I25.720, I25.721, I25.722, I25.728, I25.729, I25.730, I25.731, I25.732, I25.738, I25.739, I25.750, I25.751, I25.752, I25.758, I25.759, I25.760, I25.761, I25.762, I25.768, I25.769,~~

~~I25.790, I25.791, I25.792, I25.798, I25.799, I25.810, I25.811, I25.812, I25.82, I25.85, I25.89, I25.~~

Applicable Lines of Business

☒	CHIP (Children's Health Insurance Program)
☒	Commercial
☒	Exchange/Marketplace
☒	Medicaid
☒	Medicare Advantage

BACKGROUND

Definitions

Enhanced External Counterpulsation is a nonsurgical outpatient treatment of angina pectoris and coronary artery disease (CAD) refractory to medical and/or surgical therapy. This therapy increases blood flow to the heart by compressing blood vessels in the lower extremities. The patient is placed on a treatment table where their lower trunk and lower extremities are wrapped in a series of three compressive air cuffs which inflate and deflate in synchronization with the patient's cardiac cycle.

Although EECP devices are cleared by the Food and Drug Administration (FDA) for use in treating a variety of cardiac conditions, including stable or unstable angina pectoris, acute myocardial infarction, and cardiogenic shock, the use of this device to treat cardiac conditions other than stable angina pectoris is not covered, since only that use has developed sufficient evidence to demonstrate its medical effectiveness. Non-coverage of hydraulic versions of these types of devices remains in force.

New York Heart Association Grading Scale for Heart Failure [(9)]

- Class I: No limitation of physical activity. Ordinary physical activity does not cause undue

fatigue, palpitation, or shortness of breath.

- Class II: Slight limitation of physical activity. Comfortable at rest. Ordinary physical activity results in fatigue, palpitation, shortness of breath, or chest pain.
- Class III: Marked limitation of physical activity. Comfortable at rest. Less than ordinary activity causes fatigue, palpitation, shortness of breath, or chest pain.
- Class IV: Symptoms of heart failure at rest. Any physical activity causes further discomfort.

Canadian Cardiovascular Society Grading Scale for Angina *(10)*

- Class I: Ordinary physical activity does not cause angina, such as walking or climbing stairs. Angina occurs with strenuous, rapid, or prolonged exertion **at work or recreation.**
- Class II: Slight limitation of ordinary activity. Angina occurs ~~only~~ **when**~~during vigorous physical activity, such as~~ walking or climbing stairs rapidly, walking uphill, walking or stair climbing after meals**, or** in cold, **or in** wind, or under emotional stress, or only during the few hours after awakening. Walking more than two blocks on the level and climbing more than one flight of ordinary stairs at a normal pace and in normal conditions.
- Class III: Marked limitation of ordinary physical activity. ~~It is induced by~~**Angina occurs when** walking one or two ~~level~~ blocks **on the level** and climbing one flight of stairs in normal conditions and at a normal pace.
- Class IV: Inability to carry on any physical activity without discomfort. Anginal syndrome may be present at rest.

AUC Score

A reasonable diagnostic or therapeutic procedure can be defined as that for which the expected clinical benefits outweigh the associated risks, enhancing patient care and health outcomes in a cost-effective manner. (3)

- Appropriate Care - Median Score 7-9
- May be Appropriate Care - Median Score 4-6
- Rarely Appropriate Care - Median Score 1-3

Acronyms/Abbreviations

AATS: American Association for Thoracic Surgery

ACCF: American College of Cardiology Foundation

ACP: American College of Physicians

AHA: American Heart Association

AUC: Appropriate use criteria

CABG: Coronary artery bypass graft

CAD: Coronary artery disease

CCS: Canadian Cardiovascular Society

EECP: Enhanced External Counter Pulsation

FDA: Food and Drug Administration

GDMT: Guideline-Directed Medical Therapy

NYHA: New York Heart Association

PCI: Percutaneous coronary intervention

PCNA: Preventive Cardiovascular Nurses Association

RAP: Refractory angina pectoris

SCAI: Society for Cardiovascular Angiography and Interventions

SIHD: Stable ischemic heart disease

STS: Society of Thoracic Surgeons

SUMMARY OF EVIDENCE

Enhanced external counterpulsation: A unique treatment for the "No-Option" refractory angina patient [8]

Study design: Involved a literature review to evaluate the safety and efficacy of EECP in patients with RAP.

Target population: Patients with symptomatic coronary artery disease (CAD) who have not responded to standard revascularization procedures and aggressive pharmacotherapy. These patients typically have advanced CAD with recurrent angina pectoris not amenable to revascularization due to unsuitable coronary anatomy, multiple previous revascularization attempts, age, additional comorbid conditions, or patient preference.

Key factors: The review involved a sweeping search and analysis of existing published literature on EECP. The review found that EECP consistently reduces angina pectoris, extends time to exercise-induced ischemia, decreases dependency on nitroglycerine for frequent chest pain, increases maximum workload, and improves the quality of life in patients with symptomatic stable angina. EECP was also found to be well-tolerated by the vast majority of patients, with relatively few adverse events reported. The study suggests that EECP is a safe and likely the best available method of treatment for patients presenting with symptomatic CAD not amenable to further revascularization.

2012~~4~~ ACC~~F~~/AHA/~~ACP/~~AATS/PCNA/SCAI/STS ~~Focused Update of the~~ Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease [6]

Study design: ~~A comprehensive review of late-breaking clinical trials and other selected data presented at major scientific meetings and published through October 2013.~~ **A targeted review of randomized controlled trials, observational cohort studies, patient registries, and**

meta-analyses evaluating EECP for the treatment of refractory angina in patients with stable ischemic heart disease (SIHD). The evidence base includes one moderate-sized randomized, sham-controlled trial (MUST-EECP) and multiple nonrandomized studies and registries incorporated into the 2012 ACCF/AHA guideline evidence review.

Target population: ~~Adult patients with stable known or suspected ischemic heart disease, including those with new-onset chest pain or stable pain syndromes. The guidelines also apply to patients with ischemic equivalents, such as dyspnea or arm pain with exertion, and those who have become asymptomatic with appropriate therapy.~~**Adult patients with SIHD who have chronic or refractory angina despite GDMT, particularly those who are not candidates for further coronary revascularization or who have persistent symptoms following PCI or CABG. The population generally includes patients with CCS class III–IV angina and documented CAD, while excluding individuals with decompensated heart failure, severe peripheral arterial disease, or significant valvular disease.**

Key factors: ~~The guidelines emphasize the use of coronary angiography for patients with presumed SIHD who have unacceptable ischemic symptoms despite guideline-directed medical therapy (GDMT) and are candidates for revascularization. Noninvasive stress testing is recommended as the initial study for most patients with suspected SIHD. The guidelines recommend GDMT for all patients with SIHD. Additional therapies, such as chelation therapy and enhanced external counterpulsation (EECP), are discussed for specific patient populations. The guidelines also address the use of coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI) for revascularization in patients with multivessel coronary artery disease (CAD) and diabetes mellitus. The guidelines include recommendations for the management of SIHD in special subgroups, such as women, older adults, and persons with chronic kidney disease. The importance of a Heart Team approach for decision-making in patients with complex multivessel CAD and diabetes mellitus is emphasized.~~ **EECP is presented as a noninvasive adjunctive therapy aimed at symptomatic relief rather than improvement in survival or prevention of myocardial infarction. The guideline emphasizes that EECP may be considered for select patients with refractory angina after optimization of GDMT and careful assessment of revascularization options. Evidence demonstrates improvement in angina frequency, CCS angina class, exercise-induced ischemia, and quality of life measures, but does not establish benefit for hard cardiovascular outcomes. Shared decision-making is emphasized, balancing symptom burden, treatment intensity, patient preferences, and the absence of demonstrated mortality benefit.**

ANALYSIS OF EVIDENCE

Analysis [6,8]

Both articles support the use of EECP as a safe and effective treatment for patients with RAP. They share conclusions on the benefits of EECP in reducing angina, improving exercise tolerance ~~, decreasing nitroglycerine dependency,~~ and enhancing quality of life.

Shared Conclusions:

Both articles highlight the benefits of EECP in improving symptoms and quality of life for patients with RAP:

- Both articles agree that EECP consistently reduces angina pectoris.
- EECP extends the time to exercise-induced ischemia and increases maximum workload.
- ~~EECP decreases dependency on nitroglycerine for frequent chest pain.~~
- Both articles emphasize that EECP improves the quality of life in patients with symptomatic stable angina.

POLICY HISTORY

Date	Summary
April 2026	• **Clarified indications for repeat courses of EECP** • **Expanded contraindications to include COPD and coagulopathy** • **Updated Summary of Evidence and Analysis of Evidence to reflect adjusted references**
July 2025	• No substantial clinical content changes • Added in general information statement regarding guideline criteria development by reputable sources, standard of care, and best practices • Applicable Line of Business adjusted – Medicare checked • Added in ICD-10 codes applicable to the guideline • Added a Summary of Evidence and Analysis of Evidence
~~November 2024~~	• ~~This guideline replaces UM Cardio 1117 Enhanced External Counter Pulsation (EECP)~~

LEGAL AND COMPLIANCE

Guideline Approval

Committee

Reviewed / Approved by Evolent Specialty Services Clinical Guideline Review Committee

Disclaimer

Evolent Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment, and medical advice. Evolent uses Clinical Guidelines in accordance with its contractual obligations to provide utilization

management. Coverage for services varies for individual members according to the terms of their health care coverage or government program. Individual members' health care coverage may not utilize some Evolent Clinical Guidelines. Evolent clinical guidelines contain guidance that requires prior authorization and service limitations. A list of procedure codes, services or drugs may not be all inclusive and does not imply that a service or drug is a covered or non-covered service or drug. Evolent reserves the right to review and update this Clinical Guideline in its sole discretion. Notice of any changes shall be provided as required by applicable provider agreements and laws or regulations. Members should contact their Plan customer service representative for specific coverage information.

Evolent Clinical Guidelines are comprehensive and inclusive of various procedural applications for each service type. Our guidelines may be used to supplement Medicare criteria when such criteria is not fully established. When Medicare criteria is determined to not be fully established, we only reference the relevant portion of the corresponding Evolent Clinical Guideline that is applicable to the specific service or item requested in order to determine medical necessity.

REFERENCES

1. Bonow RO, Douglas PS, Buxton AE, et al. ACCF/AHA Methodology for the Development of Quality Measures for Cardiovascular Technology. *J Am Coll Cardiol*. 2011;58(14):1517-1538. doi:10.1016/j.jacc.2011.07.007
2. Fitch Kathryn, Bernstein SJ, Aguilar MD, et al. *The RAND/UCLA Appropriateness Method User's Manual*. RAND.; 2001. Accessed October 8, 2024. https://www.rand.org/pubs/monograph_reports/MR1269.html
3. Hendel RC, Lindsay BD, Allen JM, et al. ACC Appropriate Use Criteria Methodology: 2018 Update. *J Am Coll Cardiol*. 2018;71(8):935-948. doi:10.1016/j.jacc.2018.01.007
4. Hendel RC, Patel MR, Allen JM, et al. Appropriate Use of Cardiovascular Technology: 2013 ACCF appropriate use criteria methodology update. *J Am Coll Cardiol*. 2013;61(12):1305-1317. doi:10.1016/j.jacc.2013.01.025
5. Patel MR, Spertus JA, Brindis RG, et al. ACCF Proposed Method for Evaluating the Appropriateness of Cardiovascular Imaging. *J Am Coll Cardiol*. 2005;46(8):1606-1613. doi:10.1016/j.jacc.2005.08.030
6. Fihn SD, Gardin JM, Abrams J, et al. 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease. *Circulation*. 2012;126(25):e354-471. doi:10.1161/CIR.0b013e318277d6a0
7. Virani SS, Newby LK, Arnold S V., et al. 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients With Chronic Coronary Disease. *J Am Coll Cardiol*. 2023;82(9):833-955. doi:10.1016/j.jacc.2023.04.003
8. Caceres J, Atal P, Arora R, Yee D. Enhanced external counterpulsation: A unique treatment for the "No-Option" refractory angina patient. *J Clin Pharm Ther*. 2021;46(2):295-303. doi:10.1111/jcpt.13330
9. American Heart Association. Classes and Stages of Heart Failure. American Heart Association. May 21, 2025. Accessed November 3, 2025. https://www.heart.org/en/health-topics/heart-failure/what-is-heart-failure/classes-of-heart-failure
10. Campeau L. Letter: Grading of angina pectoris. *Circulation*. 1976;54(3):522-523. Accessed November 4, 2024. http://www.ncbi.nlm.nih.gov/pubmed/947585