

MARYLAND MEDICARE PART A

Policy No: 99-05-R1

Topic: **Cardiac Catheterization**

Beginning Effective Date

August 27, 1999.

Ending Effective Date

Not applicable at this time.

Description

- Cardiac catheterization is a technique in which a flexible catheter is passed along veins or arteries into the heart and associated vessels for the measurement of physiological data and imaging of the heart and great vessels.
- This technique is utilized when there is a need to confirm the presence of a clinically suspected condition, define its anatomical and physiological severity, and determine the presence of associated conditions.
- This need most commonly arises when clinical assessment suggests that the patient may benefit from an interventional procedure (i.e., coronary angioplasty, balloon valvuloplasty) or heart surgery.

Policy Type

Local Medical Review Policy

Indications and Limitations of Coverage and/or Medical Necessity Left Heart Catheterization

A left heart catheterization may be considered medically necessary for patients with any of the following conditions:

- There is evidence of high risk on non-invasive testing:
 - § The exercise ECG testing documents an abnormal ST segment

depression (magnitude equal to or greater than 1.5 mm depression, persistent post-exercise changes, depression in multiple leads),

§ There is an abnormal systolic blood pressure response during progressive exercise, with sustained decrease of greater than 10 mmHg or flat blood pressure (less than or equal to 130 mmHg) associated with ECG evidence of ischemia,

§ There are other potentially important determinants such as exercise induced ST segment elevation in leads other than aVR or exercise induced ventricular tachycardia,

§ Thallium scintigraphy documents an abnormal thallium distribution in the anterior wall or more than one vascular region at rest or with exercise, or an abnormal distribution (ischemia) associated with increased lung uptake produced by exercise in the absence of severely depressed left ventricular function at rest,

§ Radionuclide ventriculography documents a fall in ventricular ejection fraction of greater than or equal to 10 percent during exercise, or left ventricular ejection fraction of less than 50 percent at exercise or rest when suspected to be due to coronary artery disease; or,

§ The stress echocardiography shows contraction abnormalities in the anterior wall or more than one vascular region at rest or with exercise.

- There is successful resuscitation from cardiac arrest that occurred without obvious precipitating cause, when a reasonable suspicion of coronary artery disease exists,
- There is the presence of two or more major risk factors and a positive exercise test in patients without known coronary heart disease,
- There is the presence of prior myocardial infarction with normal left ventricular function at rest, and evidence of ischemia by non-invasive testing,
- There is evidence of ischemia by non-invasive testing after coronary bypass surgery or percutaneous transluminal angioplasty,
- Evaluation before high-risk non-cardiac surgery in patients who have

evidence of ischemia by non-invasive testing,

- Evaluation of patients after cardiac transplantation,
- Angina pectoris that has proven inadequately responsive to medical treatment, percutaneous transluminal angioplasty, thrombolytic therapy or coronary bypass surgery,

Note: “Inadequately responsive” is taken to mean that patient and physician agree that angina significantly interferes with a patient’s occupation or ability to perform his/her usual activities.

- Unstable angina pectoris which is defined as:
 - § Increased severity and frequency of chronic angina pectoris within the past two months, despite medical management, including onset of angina at rest,
 - § New onset (within two months) of angina pectoris which is severe or increases despite medical treatment; or,
 - § Acute coronary insufficiency, with pain at rest usually of greater than or equal to 15 minutes duration, associated with ST-T wave changes, within the preceding two weeks.
- Prinzmetal’s or variant angina pectoris (pain experienced at rest),
- Any angina pectoris in association with any of the following:
 - § Evidence of high risk as manifested by exercise ECG testing in addition to failure to complete Stage II of Bruce protocol or equivalent workload (less than or equal to 6.5 METS with other protocols) due to ischemic cardiac symptoms,
 - § Exercise heart rate at onset of limiting ischemia symptoms of less than 120/minutes (without beta blockers),
 - § Evidence of high risk as manifested by radionuclide exercise testing (thallium scintigraphy or radionuclide ventriculography); or,
 - § Stress echocardiography showing contraction abnormalities in the anterior wall or more than one vascular region at rest or with exercise.
- The coexistence of a history of myocardial infarction, a history of hypertension and ST segment depression on the baseline ECG,
- In disease affecting the aorta when knowledge of the presence or

extent of coronary artery involvement is necessary for management (for example, the presence of aortic aneurysm or ascending aortic dissection), arteritis or homozygous type II hypercholesterolemia in which coronary artery involvement is suspected,

- The presence of left ventricular failure without obvious cause and adequate left ventricular systolic function,
- When patients with hypertrophic cardiomyopathy have angina pectoris uncontrolled by medical therapy, or are to undergo surgery for outflow obstruction,
- The presence of dilated cardiomyopathy,
- Recent blunt trauma to the chest and evidence of acute myocardial infarction in patients who have no evidence of preexisting coronary artery disease,
- When patients are to undergo other cardiac surgical procedures, such as pericardiectomy or removal of chronic pulmonary emboli,
- Intolerance to medical therapy because of uncontrollable side effects; or,
- Episodic pulmonary edema or symptoms of ventricular failure without obvious cause.

§ Any angina pectoris associated with a series of progressively more abnormal exercise ECG or other non-invasive stress tests; or,
 § Any angina pectoris in a patient that cannot be risk stratified by other means as a result of an inability to exercise because of an amputation, arthritis, limb deformity, or severe peripheral vascular disease.

A left heart catheterization may be considered medically necessary for **atypical chest pain of uncertain etiology** with **any** of the following situations/conditions:

Note: Atypical chest pain is defined as single or recurrent episodes of chest pain suggestive, but not typical, of the pain of myocardial ischemia. This discomfort may have some features of ischemic pain together with features of non-cardiac pain. Chest pain that has no features of cardiac pain, as well as typical chest pain of myocardial ischemia or angina as

determined by a careful medical history, is excluded from definition.

- Atypical chest pain when ECG or radionuclide stress test indicates that high risk coronary disease may be present;
- When there are associated symptoms or signs of abnormal left ventricular function or failure;
- Atypical chest pain when non-invasive studies are questionable or cannot be adequately performed; or,
- When non-invasive tests are negative but symptoms are severe and management requires that significant coronary artery disease be excluded.

A left heart catheterization may be considered medically necessary **after a myocardial infarction (greater than 10 days and up to eight weeks)** with **any** of the following situations/conditions:

- Angina pectoris occurring at rest or with minimal activity,
- In selected patients, heart failure during the evolving phase, or left ventricular ejection fraction 45 percent, primarily when associated with some manifestation of recurrent myocardial ischemia or with significant ventricular arrhythmias,
- Evidence of myocardial ischemia on laboratory testing, exercise or pharmacologic induced ischemia (with or without exercise induced angina pectoris), manifested by greater than or equal to 1 mm of ischemic ST segment depression or exercise induced reversible thallium perfusion defect or defects, or exercise induced reduction in the ejection fraction or wall motion abnormalities on radionuclide ventriculographic studies; or,
- Mild angina pectoris.

A left heart catheterization may be considered medically necessary for **valvular heart disease** with **any** of the following situations/conditions:

- When valve surgery is being considered in a patient with chest discomfort or ECG changes, or both, suggesting coronary artery disease,
- When valve surgery is being considered in female patients who are postmenopausal,
- When aortic or mitral valve surgery is being considered,

- When one or more major risk factors for coronary artery disease are present; such as heavy smoking history, diabetes mellitus, hypertension, hyperlipidemia, strong family history of premature coronary artery disease; or,
- In the presence of infective endocarditis when there is evidence of coronary embolism.

Right Heart Catheterization

Right heart catheterization is not routinely part of a left heart catheterization coronary angiography, but is an associated procedure in a significant number of patients. A right heart catheterization may be considered medically necessary for patients with **any** of the following situations/conditions:

- Patients with known history of congestive heart failure;
- Patients with cardiomyopathy documented by non-invasive work-up;
- Patients with known or suspected valvular heart disease;
- Patients with known or suspected intracardiac shunt (i.e., shortness of breath), suspected to have cardiac origin; or,
- Patients in whom pulmonary artery disease is known or suspected (i.e., pulmonary hypertension, status post pulmonary emboli).

Note: It is expected that the medical necessity of the right heart catheterization and the physician's evaluation of a particular patient should be documented on the patient record prior to the procedure being performed.

Combined Heart Catheterization Indications

Combined heart catheterization (right and left) can be useful in providing cardiac output and hemodynamics that may be important therapeutic directives.

Medicare expects the specific indications for the individual right and left heart catheterizations to be met prior to performing the combined heart catheterization.

HCPCS Section/Benefit Category

Medicine

Type(s) of Bill

11X, 13X, 14X, 18X, 21X, 28X, 71X, 83X, 85X

Revenue Code(s)

480, 481

HCPCS Codes

- 93501© Right heart catheterization
- 93510© Left heart catheterization, retrograde, from the brachial artery, axillary artery, or femoral artery; percutaneous
- 93511© by cutdown
- 93514© Left heart catheterization by ventricular puncture
- 93524© Combined transseptal and retrograde left heart catheterization
- 93526© Combined right heart catheterization and retrograde left heart catheterization
- 93527© Combined right heart catheterization and transseptal left heart catheterization through intact septum (with or without retrograde left heart catheterization)
- 93528© Combined right heart catheterization with left ventricular puncture (with or without retrograde left heart catheterization)
- 93529© Combined right heart catheterization and left heart catheterization through existing septal opening (with or without retrograde left heart catheterization)
- 93530© Right heart catheterization, for congenital cardiac anomalies
- 93531© Combined right heart catheterization and retrograde left heart catheterization, for congenital cardiac anomalies
- 93532© Combined right heart catheterization and transseptal left heart catheterization through intact septum with or without retrograde left heart catheterization, for congenital cardiac anomalies

- 93533© Combined right heart catheterization and transseptal left heart catheterization through existing septal opening, with or without retrograde left heart catheterization for congenital cardiac anomalies
- 93539© Injection procedure during cardiac catheterization; for selective opacification of arterial conduits (e.g., internal mammary), whether native or used for bypass
- 93540© for selective opacification of aortocoronary venous bypass grafts, one or more coronary arteries
- 93541© for pulmonary angiography
- 93542© for selective right ventricular or right atrial angiography
- 93543© for selective left ventricular or left atrial angiography
- 93544© for aortography
- 93545© for selective coronary angiography (injection of radiopaque material may be by hand)
- 93555© Imaging supervision, interpretation and report for injection procedure(s) during cardiac catheterization; ventricular and/or atrial angiography
- 93556© pulmonary angiography, aortography, and/or selective coronary angiography including venous bypass grafts and arterial conduits (whether native or used in bypass)

ICD-9-CM Codes That Support Medical Necessity

Medicare is establishing the following limited coverage for codes 93501, 93526, 93527, 93528, 93529, 93530, 93531, 93532, 93533, 93541, and 93542.

Covered for:

- 394.0-394.2 Diseases of mitral valve*
- 395.0-395.2 Diseases of aortic valve*
- 396.0-396.3 Diseases of mitral and aortic valves*
- 396.8
- 398.0 Rheumatic myocarditis

- 398.90-398.91 Other and unspecified rheumatic heart diseases
 398.99
 415.11 Iatrogenic pulmonary embolism and infarction
 415.19
 416.0 Primary pulmonary hypertension
 416.8 Other chronic pulmonary heart diseases
 423.2 Constrictive pericarditis
 423.9 Unspecified disease of pericardium. Note: Use this diagnosis code to report cardiac tamponade.
 424.0-424.3 Valve disorders
 425.0-425.5 Cardiomyopathy
 425.7-425.9
 428.0-428.1 Heart failure
 428.9 Heart failure unspecified
 429.71 Acquired cardiac septal defect
 745.4 Ventricular septal defect
 745.5 Ostium secundum type atrial septal defect
 746.6 Congenital mitral insufficiency
 V1250 Unspecified circulatory disease

Medicare is establishing the following limited coverage for codes 93510-93511, 93514, 93524, 93539, 93540, 93544, and 93545.

Covered for:

- 394.0-394.2
 395.0-395.2 Diseases of aortic valve
 396.0-396.3
 396.8
 401.1 Benign essential hypertension
 402.10-402.11 Benign hypertensive heart disease
 402.90-402.91 Unspecified hypertensive heart disease
 410.00-410.02 Acute myocardial infarction of anterolateral wall
 410.10-410.12 Acute myocardial infarction of other anterior wall
 410.20-410.22 Acute myocardial infarction of inferolateral wall

410.30-410.32 Acute myocardial infarction of inferoposterior wall
 410.40-410.42 Acute myocardial infarction of other inferior wall
 410.50-410.52 Acute myocardial infarction of other lateral wall
 410.60-410.62 Acute myocardial infarction, true posterior wall
 410.70-410.72 Acute myocardial infarction, subendocardial
 410.80-410.82 Acute myocardial infarction of other specified sites
 410.90-410.92 Acute myocardial infarction of unspecified site
 411.0 Postmyocardial infarction syndrome
 411.1 Intermediate coronary syndrome
 411.81 Acute coronary occlusion without myocardial infarction
 411.89
 412 Old myocardial infarction
 413.0-413.1 Angina pectoris
 413.9 Other and unspecified angina pectoris
 414.00-414.05 Coronary atherosclerosis
 414.8-414.9
 424.0-424.1 Mitral valve and aortic valve disorders
 745.5 Ostium secundum type atrial septal defect
 V1250 Personal history of unspecified circulatory disease
 V1251 Personal history of venous thrombosis and embolism
 V421 Organ or tissue replaced by transplant, heart
 V422 Organ or tissue replaced by transplant, heart valve
 V432 Organ or tissue replaced by other means, heart
 V433 Organ or tissue replaced by other means, heart valve
 V4581 Other postsurgical status, aortocoronary bypass
 V4582 Other postsurgical status, percutaneous transluminal coronary
 angioplasty

Medicare is establishing expanded coverage for procedure code 93543.

Covered for:

394.0-394.2 Diseases of mitral valve
 395.0-395.2 Diseases of aortic valve
 396.0-396.3 Diseases of mitral and aortic valves

396.8 Multiple involvement of mitral and aortic valves
398.0 Rheumatic myocarditis
398.90-398.91 Other and unspecified rheumatic heart diseases
398.99
401.1 Benign essential hypertension
402.10-402.11 Benign hypertensive heart disease with or without congestive heart failure
402.90-402.91 Unspecified hypertensive heart disease with or without congestive heart failure
410.00-410.02 Acute myocardial infarction of anterolateral wall
410.00-410.12 Acute myocardial infarction of anterior wall
410.20-410.22 Acute myocardial infarction of inferolateral wall
410.30-410.32 Acute myocardial infarction of inferoposterior wall
410.40-410.42 Acute myocardial infarction of inferior wall
410.50-410.52 Acute myocardial infarction of lateral wall
410.60-410.62 Acute myocardial infarction of true posterior wall
410.70-410.72 Acute myocardial infarction, subendocardial
410.80-410.82 Acute myocardial infarction, other unspecified sites
410.90-410.92 Acute myocardial infarction, unspecified site
411.0 Post myocardial infarction syndrome
411.1 Intermediate coronary syndrome
411.81 Acute coronary occlusion without myocardial infarction
411.89
412 Old myocardial infarction
413.0-413.1 Angina pectoris
413.9 Other and unspecified angina pectoris
414.00-414.05 Coronary atherosclerosis
414.8-414.9
415.11 Iatrogenic pulmonary embolism and infarction
415.19
416.0 Primary pulmonary hypertension
416.8 Other chronic pulmonary heart diseases
424.0-424.3 Valve disorders

425.0-425.5	Cardiomyopathy
425.7-425.9	
428.0-428.1	Heart failure
428.9	
429.71	Acquired cardiac septal defect
745.7-745.5	Ventricular septal defect
746.6	Congenital mitral insufficiency
V12.50	Unspecified circulatory disease
V12.51	Personal history of venous thrombosis and embolism
V42.1	Organ or tissue replaced by transplant, heart
V42.2	Organ or tissue replaced by transplant, heart valve
V43.2	Organ or tissue replaced by transplant, other means, heart
V43.3	Organ or tissue replaced by transplant, other means, heart valve
V45.81	Other post surgical status, aortocoronary bypass
V45.82	Other post surgical status, percutaneous transluminal coronary angioplasty

Medicare is establishing the following limited coverage for codes 93555 and 93556.

Covered for:

394.0-394.2	Diseases of mitral valve
395.0-395.2	Diseases of aortic valve
396.8	
398.0	Rheumatic myocarditis
398.90-398.91	Other and unspecified rheumatic heart diseases
398.99	
401.1	Benign essential hypertension
402.10-402.11	Benign hypertensive heart disease
402.90-402.91	Unspecified hypertensive heart disease
410.00-410.02	Acute myocardial infarction of anterolateral wall
410.10-410.12	Acute myocardial infarction of other anterior wall

410.20-410.22 Acute myocardial infarction of inferolateral wall
410.30-410.32 Acute myocardial infarction of inferoposterior wall
410.40-410.42 Acute myocardial infarction of other inferior wall
410.50-410.52 Acute myocardial infarction of other lateral wall
410.60-410.62 Acute myocardial infarction, true posterior wall
410.70-410.72 Acute myocardial infarction, subendocardial
410.80-410.82 Acute myocardial infarction of other specified sites
410.90-410.92 Acute myocardial infarction of unspecified site
411.0 Postmyocardial infarction syndrome
411.1 Intermediate coronary syndrome*
411.81 Acute coronary occlusion without myocardial infarction
411.89
412 Old myocardial infarction
413.0-413.1 Angina pectoris
413.9 Other and unspecified angina pectoris
414.00-414.05 Coronary atherosclerosis
414.8-414.9
415.11 Iatrogenic pulmonary embolism and infarction
415.19
416.0 Primary pulmonary hypertension
416.8 Other chronic pulmonary heart diseases
423.2 Constrictive pericarditis*
423.9 Unspecified disease of pericardium*
424.0-424.3 Valve disorders
425.0-425.5 Cardiomyopathy
425.7-425.9
428.0-428.1 Heart failure
428.9 Heart failure, unspecified
429.71 Acquired cardiac septal defect
745.4 Ventricular septal defect
745.5 Ostium secundum type atrial septal defect
V1250 Personal history of unspecified circulatory disease
V1251 Personal history of venous thrombosis and embolism

V421	Organ or tissue replaced by transplant, heart
V422	Organ or tissue replaced by transplant, heart valve
V432	Organ or tissue replaced by other means, heart
V433	Organ or tissue replaced by other means, heart valve
V4581	Other postsurgical status, aortocoronary bypass
V4582	Other postsurgical status, percutaneous transluminal coronary angioplasty

Non-covered ICD-9-CM Code(s)

All diagnoses not listed in the “ICD-9-CM Codes That support Medical Necessity” section of this policy.

HCFA National Policy

- Establishment of national policy supercedes all previous contractor policy statements, including Local Medical Policy coverage guidelines.
- 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 to be medically reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member.
- Title XVIII of the Social Security Act, section 1862 (a) (7). This section excludes routine physical examinations.

Reasons for Denial

- The service does not follow the guidelines of this policy,
- The service is for screening purposes,
- The service is not medically necessary, and;
- The medical record does not verify that the service described by the HCPCS code was provided.

Source of Information

TrailBlazer Medicare B Newsletters:

No. 020, October 3, 1997

No. 021, November 30, 1997

No. 029, November 30, 1998

No. 030, February 10, 1999

No. 033, June 15, 1999

Coding Guidelines

- For each procedure performed, an appropriate HCPCS code should appear on the claim with the revenue code.
- Coverage criteria must be met for these services to be reimbursed by Medicare.
- Diagnosis(es) must be present on any claim submitted, and must be coded to the highest level of specificity.
- The diagnosis code(s) must be representative of the patient's condition.
- If an injection procedure is performed during a cardiac catheterization, the facility should bill the cardiac catheterization code, one or more of the injection codes, and the corresponding Supervision and Interpretation code. Each injection code has only one corresponding Supervision and Interpretation code. Multiple injection procedures may be performed during a cardiac catheterization. When this occurs, hospitals should bill all of the applicable injection codes, but report each of the applicable Supervision and Interpretation codes (93555 and/or 93556) only once on a bill. Both codes, 93555 and 93556 may be reported on the same bill as long as each code is reported only once, regardless of the number of injection procedures performed.

Documentation Requirements

Documentation supporting the medical necessity should be legible, maintained in the patient's medical record, and available to Medicare upon request.

Other Comments

This policy does not reflect the sole opinion of the intermediary, carrier, or Intermediary/Carrier Medical Director. Although the final decision rests with the intermediary/carrier, this policy was developed in cooperation with the Carrier

Advisory Committee (CAC), which includes representatives from the appropriate specialties.

Start Date of Comment Period

March 26, 1999

Start Date of Notice Period

July 28, 1999

Revision Date

- 11/17/2000-Limited coverage expanded to maintain consistency in policies between the intermediary and the carrier. See 11/17/2000 Provider Bulletin for specific changes.

Revision Number

- 99-5-R1 (11/17/2000)

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