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### Pacemaker 1, 2 [One]
#### A. Sinus Node Dysfunction [One]
1. Failure to achieve 80 percent of the predicted maximum heart rate at peak exercise (chronotropic incompetence) associated with symptoms
2. Syncope, near syncope, congestive heart failure or shortness of breath that is only associated with a heart rate less than 60 beats per minute AND [One]
   a. Current medication management that slows the heart rate which cannot be decreased or discontinued
   b. No current medication management that slows the heart
3. Syncope, near syncope, congestive heart failure or shortness of breath and a documented heart rate less than or equal to 40 beats per minute or sinus pauses over three seconds AND [One]
   a. Current medication management that slows the heart rate which cannot be decreased or discontinued
   b. No current medication management that slows the heart
4. Either of the following were identified on electrophysiology testing
   a. Corrected sinus node recovery time over 525 milliseconds
   b. Prolonged sinoatrial conduction time
B. Acquired Atrioventricular Block (after all reversible causes have been excluded, including whether current medication management that slows the heart rate can be decreased or discontinued) [One]
   1. First Degree Atrioventricular Block [One]
      a. Symptoms similar to pacemaker syndrome or hemodynamic compromise
      b. Intra- or infra-His bundle block is demonstrated on electrophysiologic study
      c. Documentation of myotonic dystrophy, Erb dystrophy, or peroneal muscular atrophy
   2. Second Degree Atrioventricular Block – Type I [One]
      a. Syncope or near syncope, congestive heart failure, or shortness of breath
      b. Atrioventricular block is exercise induced AND ischemia has been excluded
      c. Intra- or infra-His bundle block is demonstrated on electrophysiologic study
      d. Documentation of myotonic dystrophy, Erb dystrophy, or peroneal muscular atrophy
   3. Second Degree – Type II/Advanced Second Degree/Third Degree Atrioventricular Block

C. Bifascicular Block/Left Bundle Branch Block [One]
   1. Advanced second degree or intermittent/chronic third degree atrioventricular block
   2. Alternating bundle-branch block
   3. Documentation of any of the following on electrophysiologic study [One]
      a. HV interval 100 milliseconds or more
      b. Non-physiologic pacing-induced infra-His bundle block
   4. Syncope
   5. Documentation of myotonic dystrophy, Erb dystrophy, or peroneal muscular atrophy with fascicular block

D. Acute Myocardial Infarction [One]
   1. Persistent second or third degree atrioventricular block
   2. Transient second or third degree atrioventricular block with an associated bundle branch block

E. Hypersensitive Carotid Sinus/Neurocardiogenic Syncope
   1. Documented history of syncope or presyncope [One]
      a. Ventricular asystole over three seconds after carotid sinus stimulation
      b. Bradycardia associated with neurocardiac syncope was documented by electrocardiographic monitoring or tilt-table testing

F. Prior Heart Transplantation [One]
   1. Persistent symptomatic bradycardia
   2. Persistent bradycardia limiting rehabilitation or hospital discharge
   3. Syncope

G. Tachycardia Prevention/Termination [One]
   1. Recurrent supraventricular tachycardia (SVT)
      a. Terminated by pacing on electrophysiologic study AND
      b. Not controlled by medications or catheter ablation
   2. Pause dependent ventricular tachycardia in the absence of non-essential rate slowing medications
3. Symptomatic drug-refractory recurrent atrial fibrillation in association with sinus bradycardia AND
   a. Any criterion under section A (Sinus Node Dysfunction) is met

H. Congenital Heart Disease [One]
   1. Third or advanced second degree heart block
   2. Sinus node dysfunction [One]
      a. Documented symptoms associated with age inappropriate bradycardia
      b. Recurrent intra-atrial tachycardia
      c. Heart rate less than 40 beats per minute
      d. Ventricular pauses over three seconds
      e. Impaired hemodynamics due to sinus bradycardia
      f. Impaired hemodynamics due to loss of atrioventricular synchrony

I. Hypertrophic Obstructive Cardiomyopathy
   1. Left ventricular outflow tract gradient of greater than 30 mmHg at rest or greater than 50 mmHg with provocation AND
   2. Continued symptoms refractory to medical therapy

II. Cardiac Resynchronization Therapy (CRT): Biventricular Pacemaker with or without an Implantable Cardioverter-Defibrillator

   Documentation of a left ventricular ejection fraction less than or equal to 35 percent after guideline directed medical therapy for congestive heart failure (GDMT) has been administered for 40 days following a myocardial infarction or 90 days if there is no history of a recent myocardial infarction plus ONE of the following:

   A. Ventricular pacing is required for another indication AND
      1. There will be atrioventricular node ablation OR
      2. There is an anticipated requirement for 40 percent ventricular pacing or greater

   B. Non-left bundle branch morphology QRS duration 150 milliseconds or more AND Class II, III, or ambulatory class IV congestive heart failure symptoms AND EITHER
      1. Atrial fibrillation is not the predominant rhythm OR
      2. Atrial fibrillation is the predominant rhythm and rate control will result in near 100 percent pacing

   C. Non-left bundle branch morphology, QRS duration 120-149 milliseconds AND Class III or ambulatory class IV congestive heart failure symptoms

   D. Left bundle branch morphology, QRS duration 150 milliseconds or more Class I congestive heart failure symptoms, ischemic cardiomyopathy, and left ventricular ejection fraction 30 percent or less

   E. Left bundle branch morphology, QRS duration 120 milliseconds or more Class II, III, or ambulatory class IV congestive heart failure symptoms AND EITHER
      1. Atrial fibrillation is not the predominant rhythm OR
      2. Atrial fibrillation is the predominant rhythm and rate control will result in near 100 percent pacing
III.  **Automatic Implantable Cardioverter-Defibrillator (ICD)^2 [One]**

A.  Known cardiac arrest likely or definitely due to ventricular tachycardia or fibrillation
   1.  Reversible causes such as electrolyte imbalance and coronary artery disease amenable to revascularization have been excluded

B.  Ventricular tachycardia or ventricular fibrillation documented on electrophysiologic study
   1.  Reversible causes such as electrolyte imbalance and coronary artery disease amenable to revascularization have been excluded

C.  Syncope [One]
   1.  Ventricular fibrillation or sustained ventricular tachycardia^3 was induced on electrophysiologic testing
   2.  Ventricular fibrillation or sustained ventricular tachycardia^3 was documented on electrocardiography
   3.  Left ventricular dysfunction
   4.  Primary electrical disease [One]
      a.  Long QT syndrome with syncope while on B-blocker therapy [One]
         i.  Syncope while on B-blockers
         ii.  Ventricular tachycardia or fibrillation while on B-blockers
         iii.  Family history of sudden cardiac death
         iv.  Type 3 long QT syndrome genotype
         v.  QTc interval > 500 milliseconds
      b.  Brugada syndrome
      c.  Catecholamine induced ventricular tachycardia with syncope while on B-blocker therapy

D.  Prior myocardial infarction and known coronary artery disease [One]
   1.  An indication for a pacemaker during the 40 day lockout period is present and ejection fraction 35 percent or less
   2.  Myocardial infarction 40 or more days ago [One]
      a.  **Medicare Only** – no coronary artery bypass surgery or percutaneous coronary intervention has been performed in the last 90 days [And b, c or d]
      b.  Ventricular fibrillation or sustained ventricular tachycardia^3 was induced on electrophysiologic testing
      c.  Left ventricular ejection fraction 31-35 percent
         i.  Class II or III congestive heart failure despite maximal medical therapy
      d.  Left ventricular ejection fraction 30 percent or less
         i.  Class I, II, or III congestive heart failure despite maximal medical therapy

E.  Dilated cardiomyopathy with no known coronary disease
   1.  Left ventricular ejection fraction 35 percent or less
      a.  Class I, II, or III congestive heart failure is present after maximal medical therapy

F.  Structural heart disease [One]
   1.  Congenital heart disease [One]
a. Syncope with left ventricular dysfunction
b. Ventricular fibrillation or sustained ventricular tachycardia documented on electrocardiography or induced on electrophysiologic study

2. Hypertrophic obstructive cardiomyopathy and ANY of the following
   a. Prior cardiac arrest
   b. Ventricular tachycardia or ventricular fibrillation on electrocardiography
   c. Family history of sudden cardiac death
   d. Left ventricular thickness of three centimeters or greater
   e. Hypotensive blood pressure response to exercise testing

3. Arrhythmogenic right ventricular dysplasia

4. Documented cardiac sarcoid, giant cell myocarditis, Chagas disease or non-compaction

5. Outpatient awaiting cardiac transplantation

G. Primary electrical disease [One]
   1. Long QT syndrome and ONE of the following
      a. Syncope while on B-blockers
      b. Ventricular tachycardia or fibrillation while on B-blockers
      c. Family history of sudden cardiac death
      d. Type 3 long QT syndrome genotype
      e. QTc interval > 500 milliseconds
   2. Brugada syndrome and ANY of the following
      a. Syncope
      b. Ventricular tachycardia on electrophysiologic study
      c. Family history of sudden cardiac death
   3. Catecholamine induced ventricular tachycardia and ANY of the following
      a. Syncope while on B-blockers
      b. Ventricular tachycardia while on B-blockers

Footnotes:
1 For approved pacemakers, a dual chamber pacemaker (DDD) is appropriate unless there is chronic atrial fibrillation or frequent supraventricular tachycardia. A DDD upgrade from a single chamber device is appropriate if pacemaker syndrome is present.
2 Please refer to health plan specific policy to determine prior authorization requirements.
3 Sustained ventricular tachycardia is defined as lasting 30 or more seconds at a rate of 100 beats/minute or greater.
4 GDMT should include an adequate trial of pharmacologic agents (oral loop diuretics, beta-blockers, ACE inhibitors or angiotensin receptor blockers, vasodilators, and behavioral modification (dietary guidelines regarding salt and fluid intake) for 90 days.
5 New York Heart Association classification for congestive heart failure.

<table>
<thead>
<tr>
<th>Class</th>
<th>Patient Symptoms</th>
</tr>
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<tbody>
<tr>
<td>Class I (Mild)</td>
<td>No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, or dyspnea (shortness of breath).</td>
</tr>
<tr>
<td>Class II (Mild)</td>
<td>Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitation, or dyspnea.</td>
</tr>
<tr>
<td>Class III (Moderate)</td>
<td>Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, palpitation, or dyspnea.</td>
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<tr>
<td>Class IV (Severe)</td>
<td>Unable to carry out any physical activity without discomfort. Symptoms of cardiac insufficiency at rest. If any physical activity is undertaken, discomfort is increased.</td>
</tr>
</tbody>
</table>
References:


2. NCD National Coverage Determination for AICD or ICD (CV-104).


4. Gabriel Gregoratos, MD, FACC, FAHA, Chair; Jonathan Abrams, MD, FACC, FAHA; Andrew E. Epstein, MD, FACC, FAHA; Roger A. Freedman, MD, FACC; David L. Hayes, MD, FACC, FAHA; Mark A. Hlatky, MD, FACC, FAHA; Richard E. Kerber, MD, FACC, FAHA; Gerald V. Naccarelli, MD, FACC, FAHA; Mark H. Schoenfeld, MD, FACC, FAHA; Michael J. Silka, MD, FACC; Stephen L. Winters, MD, FACC. ACC/AHA/NASPE 2008 Guideline Update for Implantation of Cardiac Pacemakers and Antiarrhythmia Devices: Summary Article. Circulation. 2002;106:2145–2161. Cardiac Pacemakers and Antiarrhythmia Devices: Summary Article


7. Local Coverage Determination (LCD) for Biventricular Pacing/Cardiac Resynchronization Therapy (L32811), First Coast Service Options, Inc., Florida. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=12&CntrctrType=1%7c9&KeyWord=33206&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=33206&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&

8. Local Coverage Determination (LCD) for Biventricular Pacing/Cardiac Resynchronization Therapy (L32811), First Coast Service Options, Inc., Florida. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=12&CntrctrType=1%7c9&KeyWord=33230&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=33230&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&

POSTED: 01/01/2015
If the requested echocardiogram is for follow-up on a previously abnormal echo then CPT codes 93304, 93308, or 93321 can be used for limited studies.

I. Ventricular Function, Cardiomyopathies, and Heart Failure [One]
   A. Dyspnea or shortness of breath [One]
      1. New or worsening dyspnea or shortness of breath
      2. Unchanged dyspnea or shortness of breath with no prior echocardiogram for this diagnosis
   B. Congestive heart failure [One]
      1. No prior echocardiogram was performed for this indication
      2. Worsening clinical status
      3. Changed clinical examination
      4. Changed medical therapy
      5. Medicare: annual assessment
   C. Hypertrophic cardiomyopathy, cardiac sarcoidosis, cardiac amyloidosis [One]
      1. No prior echocardiogram was performed for this diagnosis
      2. Worsening clinical status
      3. Changed therapy
      4. Medicare: annual assessment
   D. Planned septal ablation
E. Planned right ventricular biopsy
F. Cardiomyopathy screening
   1. Parent or sibling with an inherited cardiomyopathy AND no prior echocardiogram performed for this indication

II. Hypertensive Heart Disease [One]
A. No prior echocardiogram was performed for this indication
B. Medicare: annual assessment

III. Acute Myocardial Infarction and Coronary Insufficiency [One]
A. Recent myocardial infarction documented by abnormal cardiac enzymes or new Q waves on an electrocardiogram with evidence of any of the following
   1. Mural thrombus
   2. Papillary muscle dysfunction
   3. Atrial/ventricular septal defect
   4. Cardiac aneurysm or rupture
   5. Heart failure
   6. Required to guide a change in therapy
B. Chest pain
   1. Evaluation of suspected pericarditis documented by a cardiac rub or diffuse ST elevation if no prior echocardiogram has been performed for this indication

IV. Monitoring Therapy with Cardiotoxic Agents [One]
A. No prior MUGA or echocardiogram was performed for this indication
B. No further treatment courses are planned AND the last course was completed six or more months ago
C. Further treatment courses are planned AND the last MUGA or echo was two or more months ago

V. Cardiac Transplant and Rejection Monitoring [One]
A. No prior echocardiogram has been performed for this indication
B. Evidence of transplant rejection
C. Cardiac transplantation occurred in the last two months
D. No echocardiogram has been performed in the last six months
E. Potential cardiac transplant donor

VI. Native or Prosthetic Valvular Heart Disease/Acute Endocarditis [One]
A. Heart click or murmur without a prior echocardiogram for this indication
B. Evaluation of aortic or mitral regurgitation [One]
   1. No prior echocardiogram has been performed for this indication
   2. Documentation of ANY of the following
      a. Worsening clinical status
      b. Changed clinical examination
      c. Changed medical therapy
   3. Moderate or severe regurgitation on a prior echocardiogram performed one year ago or more
C. Mitral stenosis, aortic stenosis, aortic sclerosis, bicuspid aortic valve, pulmonic stenosis [One]
   1. No prior echocardiogram has been performed for this indication
   2. Documentation of ANY of the following
      a. Worsening clinical status
      b. Changed clinical examination
      c. Changed medical therapy
   3. Mild stenosis on an a prior echocardiogram performed three or more years ago
   4. Moderate or severe stenosis on a prior echocardiogram performed one year ago or more

D. Evaluation of a prosthetic heart valve [One]
   1. No echocardiogram has been performed since valve surgery
   2. Documentation of ANY of the following
      a. Worsening clinical status
      b. Changed clinical examination
      c. Changed medical therapy
   3. The last echocardiogram was performed three or more years ago
   4. Medicare: annual assessment of prosthetic valve

E. Evaluation of endocarditis [One]
   1. Endocarditis is a new diagnosis documented by a new murmur or positive blood cultures
   2. Documentation of ANY of the following
      a. Worsening clinical status
      b. Changed clinical examination
      c. Changed medical therapy

VII. Pericardial Disease [One]
A. Pericarditis [One]
   1. Documentation of a cardiac rub or diffuse ST elevation on the electrocardiogram AND
   2. No prior echocardiogram has been performed for this diagnosis

B. Constrictive pericarditis or pericardial effusion [One]
   1. No prior echocardiogram has been performed for these indications
   2. Re-evaluation is required to guide future therapy
   3. Pericardiocentesis is planned

VIII. Abnormalities of the Great Vessels
A. Ascending aortic dissection or aneurysm, or Marfan syndrome, Ehlers-Danlos syndrome, or
   Loeys-Dietz syndrome. [One]
   1. No prior echocardiogram has been performed for this indication
   2. Documentation of ANY of the following
      a. Worsening clinical status
      b. Changed clinical examination
      c. Changed medical therapy
   3. The last echocardiogram was performed one year ago or more

IX. Congenital Heart Disease [One]
A. No prior echocardiogram has been performed for this diagnosis
B. Congenital heart disease documented on a prior echocardiogram [One]
   1. Documentation of ANY of the following
a. Worsening clinical status
b. Changed clinical examination
c. Changed medical therapy
2. The last cardiac imaging procedure was performed one year ago or more

X. Suspected Cardiac Thrombus or Cardiogenic Embolism
A. Documented cerebrovascular aneurysm, transient ischemic attach or peripheral vascular event
   1. No prior echocardiogram has been performed for this indication AND no transesophageal echocardiogram is planned

XI. Cardiac Tumors and Masses
A. Suspected cardiac tumor, mass or atrial myxoma [One]
   1. No prior echocardiogram has been performed for this indication
   2. A mass, tumor or atrial myxoma was documented on a prior echocardiogram [And One]
      a. The last cardiac imaging was performed one year ago or more
      b. New cardiac symptoms are present

XII. Arrhythmias and Palpitations
A. Multifocal ventricular premature contractions, ventricular couplets, atrial fibrillation, supraventricular tachycardia, or ventricular tachycardia [One]
   1. No prior echocardiogram was performed for this indication and the arrhythmia was documented on an electrocardiogram, Holter monitor, or event monitor
   2. Medicare: annual assessment for structural heart disease

XIII. Syncope and Presyncope [One]
A. No prior echocardiogram was performed for this indication
B. Congestive heart failure, aortic stenosis, or hypertrophic cardiomyopathy was documented on a prior echocardiogram

XIV. Pulmonary Evaluation [One]
A. Pulmonary hypertension [One]
   1. No prior echocardiogram was performed for this indication
   2. A prior echo echocardiogram documented pulmonary hypertension [One]
      a. Documented change in clinical status or cardiac examination
      b. An echocardiogram is required to guide therapy
      c. The last echocardiogram was one year ago or more
B. Pulmonary embolism
   1. A pulmonary embolism has been documented AND
   2. Thrombolysis or thrombectomy has been performed and right ventricular function or pulmonary artery pressure is being evaluated
C. Hypoxemia
   1. Non-cardiac causes for hypoxemia have been excluded

XV. Contrast Echocardiography
A. A non-contrast echocardiogram has been performed AND
B. Two or more contiguous left ventricular segments were not seen and this information is essential to management

XVI. Abnormal Cardiac Testing or Findings
A. Elevated troponin, cardiomegaly on chest x-ray, or left ventricular hypertrophy on the electrocardiogram AND
B. No prior echo cardiogram has been performed for this indication

XVII. Implantable Devices
A. Pacemaker and internal cardiac defibrillator [One]
   1. No device is implanted [One]
      a. Assess ejection fraction after percutaneous coronary intervention
      b. Assess ejection fraction after coronary artery bypass surgery
      c. Assess ejection fraction after optimal medical therapy
   2. A device is implanted [One]
      a. Assess symptoms due to a complication of device insertion
      b. Assess symptoms due to suboptimal device settings
B. Ventricular assist device
   1. No device is implanted
      a. Determine candidacy for a ventricular assist device
   2. A device is implanted [One]
      a. Initial optimization of device settings
      b. Assess symptoms due to suboptimal device settings

References:

Medicare LCD References:


11. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28655), Wisconsin Physicians Service Insurance Corporation, Iowa. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicypType=Final&xs=17&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CpHcpcsCode=93303&kq=true&bc=IAAAAAAAA%3d%3d&

12. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Kansas. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicypType=Final&xs=21&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CpHcpcsCode=93303&kq=true&bc=IAAAAAAAA%3d%3d&

13. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31848), CGS Administrators, LLC, Kentucky. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicypType=Final&xs=22&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CpHcpcsCode=93303&kq=true&bc=IAAAAAAAA%3d%3d&


21. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Missouri. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicypType=Final&xs=29&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CpHcpcsCode=93303&kq=true&bc=IAAAAAAAA%3d%3d&
22. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Nebraska. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=36&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.


24. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L27536), Novitas Solutions, Inc., New Jersey. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=38&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.

25. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31794), Palmetto GBA, North Carolina. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=39&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.


27. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31794), Palmetto GBA, North Carolina. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=43&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.

28. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31848), CGS Administrators, LLC, Ohio. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=45&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.

29. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L32675), Novitas Solutions, Inc., Oklahoma. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=47&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.


31. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L27360), National Government Services, Inc., Rhode Island. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=49&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.

32. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31794), Palmetto GBA, South Carolina. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=50&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.

33. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L32675), Novitas Solutions, Inc., Texas. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=51&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.

34. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L27360), National Government Services, Inc., Vermont. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=53&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.

35. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31794), Palmetto GBA, Virginia. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=55&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.

36. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31794), Palmetto GBA, West Virginia. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=58&CntrctrType=1%7c9&KeyWord=93303&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93303&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&.
I. Evaluation Prior to Non-cardiac Surgery [One]
   A. With current cardiac symptoms [One]
      1. Prior documentation of coronary artery disease – see section II
      2. No prior documentation of coronary artery disease – see section V
   B. Without current cardiac symptoms
      1. Intermediate or high risk non-cardiac surgery [One]
         a. Inability to reach four mets on treadmill exercise stress testing
         b. If able to reach four mets on treadmill exercise stress testing, one of the following must be documented
            i. Creatinine 2.0 or greater
            ii. Diabetes
            iii. Congestive heart failure
            iv. Known coronary artery disease

II. Evaluation of Known Coronary Artery Disease or Equivalent [One]
   A. Recent Hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina [One]
      1. No cardiac catheterization, imaging stress test or cardiac CT angiogram during or since the hospitalization
      2. Recurrent chest pain or shortness of breath since discharge
      3. Percutaneous coronary intervention or coronary artery bypass surgery during the hospitalization [One]
         a. No nuclear or echo stress test was performed since the revascularization
b. A nuclear or echo stress test was performed, but new chest pain or shortness of breath has developed since that study

B. No recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina [One]
   1. New chest pain or shortness of breath
   2. No new chest pain or shortness of breath [One]
      a. Coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and no imaging stress test has been performed after the revascularization
      b. No Coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and documentation of a prior abnormal imaging stress test, cardiac catheterization, cardiac CT angiogram, percutaneous coronary intervention or bypass surgery, carotid stenosis or stroke, peripheral artery disease, aortic aneurysm, diabetes, or coronary calcification on CT scan [One]
         i. No cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed in the past
         ii. Cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed two or more years ago
      c. Prior documentation of congenital coronary arterial anomalies by cardiac catheterization or cardiac CT angiography and no imaging stress test has been performed since those studies

III. Evaluation of Newly Diagnosed Congestive Heart Failure
    A. No heart catheterization, imaging stress test or cardiac CT angiogram was performed since the diagnosis of congestive heart failure

IV. Evaluation of Newly Diagnosed Cardiomyopathy
    A. The ejection fraction is less than 50 percent and no heart catheterization, imaging stress test or cardiac CT angiogram was performed since the new diagnosis of cardiomyopathy

V. Evaluation of Suspected Coronary Artery Disease Symptoms [One]
    A. Evaluation of documented ventricular tachycardia
    B. Evaluation of chest pain equivalent [One]
       1. Pre-test probability assessment – high risk
       2. Pre-test probability assessment – low or intermediate risk [One]
          a. Requirement for pharmacologic test due to the inability to perform an exercise stress test
          b. Electrocardiogram demonstrates Wolff- Parkinson-White syndrome, complete left bundle branch block, ventricular paced rhythm, or one mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
          c. Currently taking digoxin/Lanoxin
          d. Routine exercise stress test documents ANY
             i. One mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
             ii. Ventricular tachycardia, multifocal premature ventricular contractions or triplets
             iii. Heart block
iv. Drop in systolic blood pressure of 10 mmHg or more  
v. Inability to attain 85 percent of the maximum predicted heart rate  
vi. Chest pain  

C. Evaluation of syncope [One]  
   1. Diabetes  
   2. ATP* risk calculation 10 percent or more and no imaging stress test has been performed in the last two years  

D. Evaluation of valvular heart disease [One]  
   1. Moderate mitral stenosis  
   2. Moderate mitral insufficiency  
   3. Equivocal aortic stenosis  

VI. Asymptomatic Screening for Coronary Artery Disease (Non-Medicare cases only) [One]  

A. Assessment based on coronary risk factors [One]  
   1. Diabetes and no imaging stress test in the last 2 years  
   2. ATP* III risk calculation 20 percent or more and no imaging stress test in the last two years  

B. Assessment based on uninterpretable electrocardiogram (Wolff- Parkinson-White syndrome, complete left bundle branch block, ventricular paced rhythm, or one mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point) [One]  
   1. New electrocardiographic finding  
   2. Chronic electrocardiographic finding  
      a. No imaging stress test has been performed in two years  

C. Assessment based on abnormal calcium score [One]  
   1. Calcium score 100-400 [One]  
      a. Diabetes and no imaging stress test in the last two years  
      b. ATP* risk calculation 20 percent or more and no imaging stress test in the last two years  
   2. Calcium score over 400  
      a. No imaging stress test in the last two years  

D. Assessment based on elevated troponin  
   1. The elevated troponin documented less than four weeks ago and no imaging stress test, cardiac CT angiogram or catheterization has been performed within the last four weeks.  

E. Assessment based on abnormal routine exercise stress test (see V.2.D for definition)  

* An online ATP risk calculator is available at the following link:  

http://cvdrisk.nhlbi.nih.gov/calculator.asp
Rule 1: Determination of pretest probability for coronary disease based on chest pain

<table>
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<tr>
<th>Pre-Test Probability of CAD by Age, Gender, and Symptoms</th>
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<tr>
<td><strong>Age- Years</strong></td>
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<tr>
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**High**: Greater than 90% pre-test probability

**Intermediate**: Between 10% and 90% pre-test probability

**Low**: Between 5% and 10% pre-test probability

**Very Low**: Less than 5% pre-test probability

**Typical angina (definite)**: 1) Substernal chest pain or discomfort that is 2) provoked by exertion or emotional stress and 3) relieved by rest and/or nitroglycerin.

**Atypical angina (probable)**: Chest pain or discomfort that lacks one of the characteristics of definite or typical angina.

**Non-anginal chest pain**: Chest pain or discomfort that meets one or none of the typical angina characteristics.

References:

Medicare LCD References:


10. Local Coverage Determination (LCD) for Cardiovascular Stress Testing, Including Exercise and/or Pharmacological Stress and Stress Echocardiography (L33515), Noridian Healthcare Solutions, Inc., California. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=8&CntnrType=1%7c9&KeyWord=93350&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=IAAAAAAAAAA%3d3%3d.

11. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L32675), Novitas Solutions, Inc., Colorado. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=9&CntnrType=1%7c9&KeyWord=93350&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=IAAAAAAAAAA%3d3%3d.


16. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Indiana. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=20&CntnrType=1%7c9&KeyWord=93350&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=IAAAAAAAAAA%3d3%3d.

17. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Iowa. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=17&CntnrType=1%7c9&KeyWord=93350&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=IAAAAAAAAAA%3d3%3d.

18. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Kansas. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=21&CntnrType=1%7c9&KeyWord=93350&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=IAAAAAAAAAA%3d3%3d.

19. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31848), CGS Administrators, LLC, Kentucky. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=22&CntnrType=1%7c9&KeyWord=93350&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=IAAAAAAAAAA%3d3%3d.


23. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Michigan.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=27&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&


25. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L32675), Novitas Solutions, Inc., Mississippi.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=31&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&

26. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Missouri.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=29&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&

27. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L28565), Wisconsin Physicians Service Insurance Corporation, Nebraska.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=36&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&

28. Local Coverage Determination (LCD) for Cardiovascular Stress Testing, Including Exercise and/or Pharmacological Stress and Stress Echocardiography (L33515), Noridian Healthcare Solutions, LLC, Nevada.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=40&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&

29. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L27360), National Government Services, Inc., New Hampshire.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=37&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&

30. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L32675), Novitas Solutions, Inc., New Mexico.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=39&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&


32. Local Coverage Determination (LCD) for Stress Echocardiography (L31777), Palmetto GBA, North Carolina.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=34&CntrctrType=1%7c9&KeyWord=Stress+Echocardiography&KeyWordLookUp=Title&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&

33. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L31848), CGS Administrators, LLC, Ohio.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=42&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&

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36. Local Coverage Determination (LCD) for Stress Echocardiography (L31777), Palmetto GBA, South Carolina.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=48&CntrctrType=1%7c9&KeyWord=Stress+Echocardiography&KeyWordLookUp=Title&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&

37. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L32675), Novitas Solutions, Inc., Texas.  http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&is=51&CntrctrType=1%7c9&KeyWord=93350&KeyW ordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=93350&kq=true&bc=AAAAAAAAAAAA%3d%3d&
38. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L27360), National Government Services, Inc., Vermont. [URL]

39. Local Coverage Determination (LCD) for Stress Echocardiography (L31771), Palmetto GBA, Virginia. [URL]

40. Local Coverage Determination (LCD) for Stress Echocardiography (L31771), Palmetto GBA, West Virginia. [URL]

41. Local Coverage Determination (LCD) for Transthoracic Echocardiography (TTE) (L27360), National Government Services, Inc., Wisconsin. [URL]
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<td><strong>CATHETER PLACEMENT IN CORONARY ARTERY(S) FOR CORONARY ANGIOGRAPHY, INCLUDING INTRAPROCEDURAL INJECTION(S) FOR CORONARY ANGIOGRAPHY, IMAGING SUPERVISION AND INTERPRETATION; WITH CATHETER PLACEMENT(S) IN BYPASS GRAFT(S) (INTERNAL MAMMARY, FREE ARTERIAL, VENOUS GRAFTS) INCLUDING INTRAPROCEDURAL INJECTION(S) FOR BYPASS GRAFT ANGIOGRAPHY AND RIGHT HEART CATHETERIZATION</strong></td>
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<tr>
<td>93458</td>
<td><strong>CATHETER PLACEMENT IN CORONARY ARTERY(S) FOR CORONARY ANGIOGRAPHY, INCLUDING INTRAPROCEDURAL INJECTION(S) FOR CORONARY ANGIOGRAPHY, IMAGING SUPERVISION AND INTERPRETATION; WITH LEFT HEART CATHETERIZATION INCLUDING INTRAPROCEDURAL INJECTION(S) FOR LEFT VENTRICULOGRAPHY, WHEN PERFORMED</strong></td>
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</table>
93459 **CATHETER PLACEMENT IN CORONARY ARTERY(S) FOR CORONARY ANGIOGRAPHY, INCLUDING INTRAPROCEDURAL INJECTION(S) FOR CORONARY ANGIOGRAPHY, IMAGING SUPERVISION AND INTERPRETATION; WITH LEFT HEART CATHETERIZATION INCLUDING INTRAPROCEDURAL INJECTION(S) FOR LEFT VENTRICULOGRAPHY, WHEN PERFORMED, CATHETER PLACEMENT(S) IN BYPASS GRAFT(S) (INTERNAL MAMMARY, FREE ARTERIAL, VENOUS GRAFTS) WITH BYPASS GRAFT ANGIOGRAPHY**

93460 **CATHETER PLACEMENT IN CORONARY ARTERY(S) FOR CORONARY ANGIOGRAPHY, INCLUDING INTRAPROCEDURAL INJECTION(S) FOR CORONARY ANGIOGRAPHY, IMAGING SUPERVISION AND INTERPRETATION; WITH RIGHT AND LEFT HEART CATHETERIZATION INCLUDING INTRAPROCEDURAL INJECTION(S) FOR LEFT VENTRICULOGRAPHY, WHEN PERFORMED**

93461 **CATHETER PLACEMENT IN CORONARY ARTERY(S) FOR CORONARY ANGIOGRAPHY, INCLUDING INTRAPROCEDURAL INJECTION(S) FOR CORONARY ANGIOGRAPHY, IMAGING SUPERVISION AND INTERPRETATION; WITH RIGHT AND LEFT HEART CATHETERIZATION INCLUDING INTRAPROCEDURAL INJECTION(S) FOR LEFT VENTRICULOGRAPHY, WHEN PERFORMED, CATHETER PLACEMENT(S) IN BYPASS GRAFT(S) (INTERNAL MAMMARY, FREE ARTERIAL, VENOUS GRAFTS) WITH BYPASS GRAFT ANGIOGRAPHY**

I. **Evaluation of Acute Coronary Syndrome [One]**
   A. ST elevation or non-ST elevation myocardial infarction
   B. Acute chest pain suspicious for unstable angina [One]
      1. Routine or imaging stress test performed prior to the catheterization demonstrated ischemia
      2. New wall motion abnormalities or resting cardiac perfusion defects
      3. High risk pre-test probability assessment

II. **Evaluation of Known Coronary Artery Disease [One]**
   A. New or worsening symptoms
      1. High risk pre-test probability assessment
   B. Abnormal imaging stress test in the last 3 months [One]
      1. Reversible ischemia
      2. Transient ischemic dilation
      3. Fixed perfusion defect involving > 5% of the myocardium
      4. New wall motion abnormality
5. Equivocal or uninterpretable images

C. Abnormal routine stress test
   1. Treadmill stress test demonstrated chest pain, one mm or more ST-J segment depression with horizontal or downsloping ST segments 80 msec after the J point, ventricular tachycardia or multifocal premature ventricular contractions, heart block or a 10 mmHg or more drop in systolic blood pressure

D. Prior abnormal cardiac CT angiogram and new symptoms [One]
   1. Non-obstructive coronary artery disease or uninterpretable and high risk pre-test clinical assessment
   2. Coronary stenosis 50 percent or more

E. Prior abnormal cardiac catheterization and new symptoms
   1. Catheterization documented coronary artery disease and new chest pain or dyspnea on exertion is documented

F. Staged coronary intervention without new or recurrent symptoms [One]
   1. Initial procedure was performed for acute coronary syndrome
   2. Significant left ventricular dysfunction
   3. Renal insufficiency
   4. Complex or prolonged initial procedure

G. Recurrent symptoms after revascularization
   1. Recurrent symptoms identical to those present prior to coronary artery bypass grafting or percutaneous coronary intervention

III. Evaluation of Newly Diagnosed Congestive Heart Failure [One]
   A. No cardiac catheterization, coronary CT angiogram, or imaging stress test has been performed since the onset of congestive heart failure
   B. Cardiac CT angiography demonstrated coronary artery disease
   C. An imaging stress test within the last three months demonstrated reversible ischemia

IV. Evaluation of Cardiomyopathy [One]
   A. No cardiac catheterization, coronary CT angiogram, or imaging stress test has been performed since the onset of congestive heart failure
   B. Change in clinical status or physical examination, or repeat coronary angiography is needed to guide therapy

V. Evaluation of Suspected Coronary Artery Disease [One]
   A. New or worsening cardiac symptoms and no prior cardiac testing
      1. High risk symptoms on the pre-test probability assessment
   B. Abnormal imaging stress test in the last 3 months [One]
      1. Reversible ischemia
      2. Transient ischemic dilatation
      3. Fixed perfusion defect involving > 5% of the myocardium
      4. New wall motion abnormality
      5. Equivocal or uninterpretable study
   C. Abnormal routine stress test documents ANY
      1. One mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
2. Ventricular tachycardia, multifocal premature ventricular contractions or triplets
3. Heart block
4. Drop in systolic blood pressure of 10 mmHg or more
5. Chest pain

VI. **Evaluation Prior to Non-Cardiac Surgery**
   A. Anticipated solid organ transplantation
   B. Unable to exercise to 4 METS or more [And Either]
      1. Intermediate-risk surgery with 3 or more of the following risk factors
         a. Coronary artery disease
         b. Congestive heart failure
         c. Cerebrovascular disease
         d. Insulin requiring diabetes
         e. Creatinine > 2.0
      2. High risk surgery with at least one of the following risk factors
         a. Coronary artery disease
         b. Congestive heart failure
         c. Cerebrovascular disease
         d. Insulin requiring diabetes
         e. Creatinine > 2.0

VII. **Evaluation of Congenital Heart Disease**
   A. Documented congenital heart disease

VIII. **Other Cardiovascular Indications [One]**
   A. Cardiac arrest/ventricular tachycardia
   B. Prior cardiac transplantation
   C. Aortic dissection
   D. Pre-operative evaluation for cardiac valve surgery
   E. Constrictive pericarditis or pericardial tamponade
   F. Atrial septal defect or patent foramen ovale closure
   G. Suspected ventricular aneurysm
   H. Intracardiac shunt
Rule 1: Determination of pretest probability for coronary disease based on chest pain

The following assessment is used to determine the pre-test probability of coronary artery disease based on a description of the character of chest pain, member age and sex. This assessment will define the chest pain as typical angina, atypical angina, and non-anginal chest pain.

<table>
<thead>
<tr>
<th>Age- Years</th>
<th>Gender</th>
<th>Typical/Definite Angina Pectoris</th>
<th>Atypical/Probable Angina Pectoris</th>
<th>Non-anginal Chest Pain</th>
<th>Asymptomatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-39</td>
<td>Men</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
<td>Very low</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>Intermediate</td>
<td>Very low</td>
<td>Very low</td>
<td>Very low</td>
</tr>
<tr>
<td>40-49</td>
<td>Men</td>
<td>High</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>Intermediate</td>
<td>Low</td>
<td>Very low</td>
<td>Very low</td>
</tr>
<tr>
<td>50-59</td>
<td>Men</td>
<td>High</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>Intermediate</td>
<td>Low</td>
<td>Very low</td>
<td>Very low</td>
</tr>
<tr>
<td>≥60</td>
<td>Men</td>
<td>High</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>High</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
</tr>
</tbody>
</table>

**High:** Greater than 90% pre-test probability

**Intermediate:** Between 10% and 90% pre-test probability

**Low:** Between 5% and 10% pre-test probability

**Very Low:** Less than 5% pre-test probability

**Typical angina (definite):** 1) Substernal chest pain or discomfort that is 2) provoked by exertion or emotional stress and 3) relieved by rest and/or nitroglycerin.

**Atypical angina (probable):** Chest pain or discomfort that lacks one of the characteristics of definite or typical angina.

**Non-anginal chest pain:** Chest pain or discomfort that meets one or none of the typical angina characteristics.

References:


Medicare LCD References:

4. Local Coverage Determination (LCD) for Cardiac Catheterization and Coronary Angiography (L26880), National Government Services, Inc., Connecticut. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&ss=9&CntrctrType=1%7c9&KeyWord=93452&KeyWordSearchType=Exact&CptHcpcsCode=93452&kq=true&bc=IAAAAAAAAAAAA%3d%3d&

5. Local Coverage Determination (LCD) for Cardiac Catheterization and Coronary Angiography (L26880), National Government Services, Inc., Illinois. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&ss=19&CntrctrType=1%7c9&KeyWord=93452&KeyWordSearchType=Exact&CptHcpcsCode=93452&kq=true&bc=IAAAAAAAAAAAA%3d%3d&
21. Local Coverage Determination (LCD) for Cardiac Catheterization and Coronary Angiography (L26880), National Government Services, Inc., Wisconsin. [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=57&CntrctrType=1%7c9&KeyWord=93452&KeyWordLookUp=Doc&KeyWordType=Exact&CptHcpcsCode=93452&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&PolicyType=Final&s=57&CntrctrType=1%7c9&KeyWord=93452&KeyWordLookUp=Doc&KeyWordType=Exact&CptHcpcsCode=93452&kq=true&bc=IAAAAAAAAAAAAA%3d%3d&).