HEALTHHELP®
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2025 Positron Emission Tomography (PET) Heart

Cardiology/Diagnostic Imaging

PET-Heart-HH

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Positron Emission Tomography (PET) Heart

PET Heart Related National Coverage Determination (NCD)/ Local Coverage Determination (LCD)

Please refer to https://www.cms.gov/medicare-coverage-database/search.aspx if applicable to the individual's health plan membership.

Type/ID Number	Title
NCD 220.6.1	PET for Perfusion of the Heart
NCD 220.6.8	FDG PET for Myocardial Viability
LCD 33457	Cardiac Radionuclide Imaging
LCD 35083	Cardiology Non-Emergent Outpatient Stress Testing
LCD 38396	Cardiology Non-Emergent Outpatient Stress Testing
LCD 39521	Positron Emission Tomography (PET) Scan for Inflammation and Infection

Clinical Judgment

These medical policies are designed to provide clinical guidance and do not supplant a provider's independent professional judgment. Physicians retain full and independent authority to determine appropriate care based on each patient's individual clinical circumstances. Although services may be subject to documentation requirements, medical necessity review, or coverage limitations, nothing in this policy is intended to restrict or interfere with a physician's independent medical judgment.

Preamble: Pediatric Diagnostic Imaging

HealthHelp's clinical guidelines for the Diagnostic Imaging program, are intended to apply to both adults and pediatrics (21 years of age or younger), unless otherwise specified within the criteria.

PET Heart Guideline

Positron emission tomography (PET) of the heart is considered medically appropriate when the documentation demonstrates **ANY** of the following: (*__NOTE:__ *For pretest probability see* ***Pretest Probability of Coronary Artery Disease (CAD) in Symptomatic Patients*** *in the* ***Definitions*** *section*)

1. Acute coronary syndrome **WITHOUT** prior coronary evaluation **AND** stress echocardiogram (SE) or myocardial perfusion imaging (MPI) is non-diagnostic or indeterminate.
   References: [14] [6]

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2. Angina or chest pain is persistent and stable, ischemia **AND** non-obstructive coronary artery disease (CAD) are suspected **AND** SE or MPI is non-diagnostic or indeterminate, for microvascular dysfunction diagnosis. (*__NOTE__: ***NO*** *MPI diversion required*)
References: [14] [15]

3. Anomalous coronary arteries or muscle bridging of coronary arteries for assessment of hemodynamic significance, **AND** SE or MPI is non-diagnostic or indeterminate.
References: [14] [17] [13]

4. Aortitis is suspected or known (eg, abdominal pain, fever, malaise) for diagnosis or surveillance. (*__NOTE:__ *If PET/magnetic resonance [MR] study is requested, there is* ***NO*** *specific current procedural terminology [CPT] code and a health plan review will be required.*)
References: [14] [10]

5. Cardiomyopathy is suspected (eg, dyspnea, fatigue, palpitations), ischemia is ruled-out, prior imaging is non-diagnostic or indeterminate and **EITHER** of the following:
    a. Inflammatory cardiomyopathy
    b. Restrictive cardiomyopathy or infiltrative disease is suspected.

    References: [14] [11]

6. Cardiac sarcoidosis and **EITHER** of the following:
    a. Suspected sarcoidosis and **EITHER** of the following:
        i. Cardiac sarcoidosis is highly probable on cardiac magnetic resonance (CMR) and PET will identify inflammation for possible use of immunosuppressive therapy.
        ii. Clinical suspicion is high (eg, bradycardia or tachycardia arrhythmias) and CMR is non-diagnostic or indeterminate.
    b. Known sarcoidosis, based on prior testing, with **EITHER** of the following:
        i. Evaluation and therapy response monitoring when CMR has **NOT** been performed and echocardiogram (ECHO) or electrocardiogram (ECG) shows suspected cardiac involvement.
        ii. Immunosuppressive therapy for initial and follow-up therapy monitoring; typically 4 times over 2 years

    References: [14] [12]

7. Chest (anterior or left), following radiation therapy; image at 5 years post radiation initiation and every 5 years thereafter
References: [14] [9]

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8. Class 1C antiarrhythmic drugs (propafenone [Rythmol SR] or flecainide [Tambocor]), when SE or MPI is non-diagnostic or indeterminate and **EITHER** of the following:
    a. Intermediate and high global risk patients; image annually
    b. Prior to drug initiation

    References: [14]

9. Coronary agatston calcium (CAC) score is abnormal, **NO** prior MPI in the prior 12 months and SE or MPI is non-diagnostic or indeterminate and **EITHER** of the following:
    a. Asymptomatic and **EITHER** of the following:
        i. Calcium score is more than 100 agatston and high global CAD risk.
        ii. Calcium score is more than 400 agatston and **NO** previous evaluation.
    b. Symptomatic (eg, chest pain, tightness, dyspnea) and prior calcium score is 100 agatston or more.

    References: [14]

10. Coronary artery disease (CAD) is suspected (eg, chest pain, dyspnea, fatigue) when SE or MPI is non-diagnostic or indeterminate and **ANY** of the following: (*__NOTE__: *Use Diamond Forrester table found in the **Definitions** section)*
    a. Asymptomatic and **ANY** of the following:
        i. ECG demonstrates myocardial ischemia with ischemic ST segment or T wave abnormality.
        ii. Left bundle branch block (LBBB) is complete and **NO** previous evaluation.
        iii. Q waves are pathological and **NO** previous evaluation.
    b. Obstructive CAD is suspected when CAD evaluation, within the last 2 years, is non-diagnostic or indeterminate and **ANY** of the following:
        i. Coronary computed tomography angiography (CCTA) or single photon emission computed tomography (SPECT) is borderline (eg, 40% to 70% lesions), non-diagnostic or indeterminate.
        ii. Coronary stenosis is demonstrated on prior coronary angiography **AND** etiology is unknown.
        iii. Exercise stress ECG indicates intermediate Duke treadmill score (-10 to +4).
        iv. Exercise stress test is non-diagnostic or indeterminate and achieving target heart rate is **NOT** physically possible.

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v. Prior stress imaging (within the past 2 years) indicates an intermediate evaluation.

vi. Symptoms indicate an intermediate or high pretest probability, while stress ECG indicates a low-risk Duke treadmill score of 5 or more.

c. Symptomatic (eg, chest pain, tightness, dyspnea) and **ANY** of the following:

i. High pretest probability (*__NOTE__: *SE diversion is **NOT** required*.)

ii. Low or intermediate pretest probability, with exercise intolerance (*__NOTE__: *SE diversion is **NOT** required*.)

iii. Symptoms are new or worsening, PET heart performed at least 1 year ago is negative **AND** meets one of the criteria above (10.c.i or 10.c.ii).

References: [14] [3] [4] [16] [1]

11. CAD is known, based on prior cardiac testing, when SE or MPI is non-diagnostic or indeterminate and **EITHER** of the following:

a. Asymptomatic or stable symptoms when fractional flow reserve (FFR) is 0.80 or less, stenosis of a major vessel (greater than or equal to 50% left main coronary artery or greater than or equal to 70% left anterior descending [LAD], left circumflex artery [LCX] or right coronary artery [RCA]) or ischemia (on stress test) **AND NO** coronary revascularization within the past 2 years, for follow-up.

b. Coronary aneurysms in Kawasaki's disease or due to atherosclerosis

References: [14] [3]

12. Endocarditis, infective (eg, fungemia, intracardiac device, prosthetic heart valve, staph bacteremia), is suspected with moderate to high probability when transthoracic echocardiogram (TTE) and transesophageal echocardiogram (TEE) are non-diagnostic or indeterminate.
References: [14] [5]

13. Heart failure, systolic or diastolic, is newly diagnosed and **ALL** of the following:

a. Cardiac ischemia is suspected (eg, prior events, risk factors)

b. SE or MPI is non-diagnostic or indeterminate.

c. **NO** invasive coronary angiography is immediately planned

d. **NO** stress test completed in last 12 months

References: [14] [7] [18]

14. Left ventricular ejection fraction (LVEF) is 50% or less, to assess myocardial viability to assist with coronary revascularization decision making **AND** SE or MPI is non-diagnostic

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or indeterminate. (*__NOTE:__ *Diversion from PET is __NOT__ required when LVEF is less than or equal to 40%*)
References: [14] [6]

15. Peri-procedural planning to guide invasive procedure and post-operative follow-up care when SE or MPI is non-diagnostic or indeterminate and **ANY** of the following:
    a. Organ or stem cell transplantation planning **AND** prior stress evaluation, computed tomography angiography (CTA) or heart catheterization (within the last year) is non-diagnostic or indeterminate.
    b. Post-cardiac transplant, for follow-up, when invasive coronary arteriography is **NOT** planned, and **EITHER** of the following: (*__NOTE__: *SE diversion is __NOT__ required*.)
        i. Annually for 1st 5 years.
        ii. Annually after the 1st 5 years when transplant coronary vasculopathy is documented.
    c. Post-coronary revascularization (percutaneous coronary intervention [PCI] or coronary artery bypass graft [CABG]) and **ANY** of the following:
        i. High occupational risk (eg, public safety, airline or boat pilots, bus, train or tractor trailer drivers)
        ii. Silent ischemia or prior left main stent history is known and asymptomatic; follow-up stress imaging is appropriate at least 2 years post CABG or PCI.
        iii. Symptoms (eg, chest pain, dyspnea, palpitations) are new, recurrent or worsening, for treatment planning.
    d. Surgery is non-cardiac, elective, and **ALL** of the following:
        i. Condition includes **ANY** of the following:
            A. History of ischemic heart disease, cerebrovascular disease or heart failure
            B. Insulin treatment pre-operatively
            C. Pre-operative serum creatinine is greater than 2.0 mg/dL.
        ii. Poor functional capacity (metabolic equivalents [METs] less than 4).
        iii. Surgery is intermediate (carotid endarterectomy, head and neck surgery, intraperitoneal and intrathoracic surgery, orthopedic surgery, prostate surgery) or high (aortic and other major vascular surgery, peripheral vascular surgery, anticipated prolonged surgical procedures associated with large fluid shifts and/or blood loss) risk.

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iv. **NO** stress imaging within the past year

References: [14] [2]

16. Ventricular arrhythmias when SE or MPI are non-diagnostic or indeterminate and **ANY** of the following:

    a. Premature ventricular contractions (PVC) are frequent (at least 30 per hour on remote monitoring) when exercise ECG **CANNOT** be performed.

    b. Ventricular tachycardia (VT) is non-sustained (multiple episodes of VT of at least 3 beats at more than 100 beats per minute [BPM]) when exercise ECG **CANNOT** be performed.

    c. VT is sustained (more than 100 BPM), ventricular fibrillation (VF) **OR** exercise induced VT, when invasive coronary arteriography is **NOT** immediately planned.

References: [14] [8] [1]

PET Heart Procedure Codes

Table 1. PET Heart with CT Attenuation Procedure Codes

Code	Description
78429	Myocardial imaging, positron emission tomography (PET), metabolic evaluation study (including ventricular wall motion[s] and/or ejection fraction[s], when performed), single study; with concurrently acquired computed tomography transmission scan
78430	Myocardial imaging, positron emission tomography (PET), perfusion study (including ventricular wall motion[s] and/or ejection fraction[s], when performed); single study, at rest or stress (exercise or pharmacologic), with concurrently acquired computed tomography transmission scan
78431	Myocardial imaging, positron emission tomography (PET), perfusion study (including ventricular wall motion[s] and/or ejection fraction[s], when performed); multiple studies, at rest and stress (exercise or pharmacologic), with concurrently acquired computed tomography transmission scan
78432	Myocardial imaging, positron emission tomography (PET), combined perfusion with metabolic evaluation study (including ventricular wall motion[s] and/or ejection fraction[s], when performed), dual radiotracer (eg, myocardial viability);
78433	Myocardial imaging, positron emission tomography (PET), combined perfusion with metabolic evaluation study (including ventricular wall motion[s] and/or ejection fraction[s], when performed), dual radiotracer (eg, myocardial viability); with concurrently acquired computed tomography transmission scan
78459	Myocardial imaging, positron emission tomography (PET), metabolic evaluation study (including ventricular wall motion[s] and/or ejection fraction[s], when performed}, single study;
78491	Myocardial imaging, positron emission tomography (PET), perfusion study (including ventricular wall motion[s] and/or ejection fraction[s], when performed); single study, at rest or stress (exercise or pharmacologic)
78492	Myocardial imaging, positron emission tomography (PET), perfusion study (including ventricular wall motion[s] and/or ejection fraction[s], when performed); multiple studies at rest or and stress (exercise or pharmacologic)

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PET Heart Summary of Changes

PET Heart had the following version changes from 2024 to 2025:

Table 1. 2025 Positron Emission Tomography (PET) Heart Summary of Changes

Date	Type of Change	Summary
04/28/2025	Annual	• Added the following to keep in line with current evidence: ▪ "**NO** prior MPI in the prior 12 months" parameter to "Coronary agatston calcium (CAC) score is abnormal" ▪ "Calcium score is more than 100 agatston and high global CAD risk" to "Coronary agatston calcium (CAC) score is abnormal" under "Asymptomatic" ▪ Criteria under "Heart failure" for clarity • Citations update per the evidence
08/04/2025	Mid-Cycle	• Added examples throughout for clarity • Added parameters (underlined below) for clarity to the following: ▪ "CAD is known, based on prior cardiac testing" ▪ "Known sarcoidosis, based on prior testing" under "Cardiac sarcoidosis" • Removed "or is expected to be" after SE or MPI is" throughout, as it is ambiguous and difficult to define

PET Heart Definitions

Acute coronary syndrome (ACS) is a sudden, severe event in which the obstruction of a coronary artery interferes with blood flow to the heart muscle. It encompasses acute ischemic heart disease (eg, angina, myocardial infarction). ACS is diagnosed on the basis of rapidly accelerating symptoms of myocardial ischemia, with objective evidence of acute ischemia from an electrocardiogram and/or elevated circulating markers of myocardial injury.
Aneurysm refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.
Angina is a type of chest pain caused by reduced blood flow to the heart.
Anomaly is something different, abnormal, peculiar or not easily classified.
Aortitis is inflammation of the aorta.
Arrhythmia is an irregular or abnormal heart rhythm. Arrhythmia refers to any change from the normal sequence of electrical impulses of the heart, causing abnormal heart rhythms. The electrical impulses may happen too fast, too slowly or erratically – causing the heart to beat too fast, too slowly or erratically.
Atherosclerosis is plaque (fatty deposit) build-up in the arteries. The deposits are made up of cholesterol, fatty substances, cellular waste products, calcium and fibrin (a clotting material in the blood). As plaque builds up, the wall of the blood vessel thickens. This narrows the channel within

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the artery reducing blood flow and lessening the amount of oxygen and other nutrients reaching the body.

Bradycardia is a heart rate that is too slow. What is considered too slow can depends on age and physical condition. In general, for adults, a resting heart rate of fewer than 60 beats per minute (BPM) qualifies as bradycardia. Causes for bradycardia may include: problems with the sinoatrial (SA) node, sometimes called the heart's natural pacemaker, problems in the conduction pathways of the heart that do not allow electrical impulses to pass properly from the atria to the ventricles, metabolic problems (eg, hypothyroidism), damage to the heart from heart disease or heart attack, and certain heart medications that can cause the side effect of bradycardia.

CAD pre-test probability by age, gender and symptoms

Table 1. Pretest probability of CAD by age, gender and symptoms [a.]

Age (years)	Gender	Typical/ Definite Angina Pectoris	Atypical/Probable Angina Pectoris	Non-Anginal Chest Pain	Asymptomatic
≤39	Men	Intermediate	Intermediate	Low	Very Low
	Women	Intermediate	Very Low	Very Low	Very Low
40-49	Men	High	Intermediate	Intermediate	Low
	Women	Intermediate	Low	Very Low	Very Low
50-59	Men	High	Intermediate	Intermediate	Low
	Women	Intermediate	Intermediate	Low	Very Low
≥60	Men	High	Intermediate	Intermediate	Low
	Women	High	Intermediate	Intermediate	Low

[a.] Patel, M.R., Bailey, S.R., et al (2012). ACCF/SCAI/AATS/AHA/ASE/ASNC/HFSA/HRS/SCCM/SCCT/ SCMR/STS 2012 Appropriate Use Criteria for Diagnostic Catheterization. Journal of Thoracic and Cardiovascular Surgery, 144 (1), 39-71.

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

Cardiac allograft vasculopathy is an increase of 0.5 mm or more in maximal intimal thickness within the first year after heart transplant. It can lead to death or serious heart disease.

Cardiac catheterization is a procedure in which a thin, flexible tube (catheter) is guided through a blood vessel to the heart. It is used to diagnose or treat certain heart conditions, such as clogged arteries or irregular heartbeats. Cardiac catheterization gathers important information about the heart muscle, heart valves and blood vessels in the heart to develop a treatment plan.

Cardiac infiltrative disease (infiltrative cardiomyopathy) is characterized by the deposition of abnormal substances that cause the ventricular walls to become progressively rigid, thereby impeding ventricular filling. Infiltrative cardiomyopathies can have extracellular or intracellular

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infiltration. When infiltration is intracellular, it's more accurately called a myocardial storage disorder.

Cardiac Magnetic Resonance (CMR), also known as cardiac MRI, is a non-invasive medical imaging technology that uses magnetic resonance imaging (MRI) techniques to produce detailed images of the beating heart.

Cardiac PET scan is a noninvasive nuclear imaging test. It uses radioactive tracers (radionuclides) to produce pictures of the heart. Cardiac PET scans are used to diagnose coronary artery disease (CAD) and damage due to a heart attack. PET scans can show healthy and damaged heart muscle. PET scans can be used to help find out if a percutaneous coronary intervention (PCI) such as angioplasty and stenting, coronary artery bypass surgery (CABG) or another procedure will be useful.

Cardiomyopathy is a disease of the heart muscle characterized by structural and functional abnormalities in the absence of significant coronary artery disease, hypertension, valvular disease or congenital heart disease.

Cardiotoxicity is heart damage that arises from certain cancer treatments or drugs.

Cerebrovascular disease refers to a group of conditions that affect the blood vessels supplying the brain and spinal cord, leading to ischemic or hemorrhagic injury.

Class 1C antiarrhythmic drugs (AADs) are effective first-line agents for atrial fibrillation (AF) treatment. These agents commonly are avoided in patients with known coronary artery disease (CAD), due to known increased risk in the postmyocardial infarction population.

Coronary angiogram, also known as angiography, is a procedure to evaluate the heart's blood vessels. It's a type of cardiac catheterization, a group of procedures that use narrow tubes called catheters inserted into blood vessels to diagnose or treat heart conditions.

Coronary artery bypass graft (CABG) is a surgical procedure performed to shunt blood around a narrowing or blockage in the coronary artery of the heart. This procedure involves attaching one end of a segment of blood vessel (eg, a vein of the leg) that was removed from another part of the body into the aorta, and the other end of the segment into the coronary artery beyond the obstructed area, to increase blood flow.

Coronary artery disease (CAD) is caused by plaque buildup in the walls of the arteries that supply blood to the heart (called coronary arteries) and other parts of the body.

Coronary Agatston Calcium (CAC) Score is calculated based on the extent of coronary calcification detected by an unenhanced low-dose CT scan (routinely done when a patient has a cardiac CT). It provides risk stratification for a major adverse cardiac event (MACE).
Grading of coronary artery disease (based on total calcium score):

- No evidence of CAD is a calcium score of 0
- Minimal is a calcium score of 1 to 11
- Mild is a calcium score of more than 11 to 100

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- Moderate is a calcium score of more than 100 to 400
- Severe is a calcium score more than 400

Assessment of cardiovascular risk:

- Asymptomatic adults with intermediate cardiovascular risk are considered class IIa
- Asymptomatic adults with low-to-intermediate cardiovascular risk are considered class IIb
- Asymptomatic adults that are low cardiovascular risk are considered class III
- Asymptomatic adults with diabetes mellitus and are 40 years of age or older are considered class IIa

Coronary computed tomography angiography (CCTA) is a non-invasive test that uses a computed tomography (CT) scanner to obtain a 3-dimensional image of the heart, including blood vessels that supply blood to the heart muscle (coronary arteries). During the CCTA, contrast dye is injected into the vein so that the coronary arteries can be seen. CCTA provides images to identify a narrowing or blockage of the coronary arteries caused by plaque and allows for accurate visualization of the 3-dimensional heart structure (to include the valves of the heart).
Creatinine is a waste product that comes from the digestion of protein in food and the normal breakdown of muscle tissue. It is removed from the blood through the kidneys.
Diamond Forrester Pretest Probability of Obstructive Coronary Artery Disease (CAD) Table
The table provides a method to estimate the probability of obstructive coronary artery disease (CAD). Additional coronary risk factors may increase the pretest probability.

Table 2. Diamond Forrester Table

Age (Years)	Sex	Typical Angina	Atypical Angina	Non-Anginal Chest Pain
39 years or less	Male	Intermediate	Intermediate	Low
	Female	Intermediate	Very low	Very low
40 to 49 years	Male	High	Intermediate	Intermediate
	Female	Intermediate	Low	Very low
50 to 59 years	Male	High	Intermediate	Intermediate
	Female	Intermediate	Intermediate	Low
60 years or older	Male	High	Intermediate	Intermediate
	Female	High	Intermediate	Intermediate

- **Low**: 5% to 10% pretest probability of CAD
- **Intermediate**: 10% to 90% pretest probability of CAD
- **High**: More than 90% pretest probability of CAD

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The Duke treadmill score (DTS) is a weighted index combining treadmill exercise time using standard Bruce protocol, maximum net ST segment deviation (depression or elevation), and exercise-induced angina. It was developed to provide prognostic information for the evaluation of suspected coronary heart disease.

- Duke Treadmill scores (typically range from -25 to +15) and associate risk:
  - Low risk is a score of +5 or more.
  - Moderate risk is a score of -10 to +4
  - High risk is a score of -11 or less

Echocardiogram (ECHO) is a test that uses high frequency sound waves (ultrasound) to make pictures of the heart. The test is also called echocardiography or diagnostic cardiac ultrasound. An ECHO uses sound waves to create pictures of the heart's chambers, valves, walls and the blood vessels (aorta, arteries, veins). A probe called a transducer is passed over the chest. The probe produces sound waves that bounce off the heart and "ECHO" back to the probe. These waves are changed into pictures viewed on a video monitor.

Echocardiography stress imaging is a test that uses ultrasound imaging to show how well the heart muscle is working to pump blood to the body.

Ejection fraction (EF) is the ratio of the volume of blood the heart empties during systole, to the volume of blood in the heart at the end of diastole. It is expressed as a percentage usually between 50 and 80 percent.

Electrocardiogram (ECG or EKG) is a test that measures and records the electrical activity of the heart. The ECG electrical activity is divided into the P wave, PR interval, QRS complex, QT interval, ST segment, T wave and U wave. An ECG is useful in establishing many cardiac diagnoses.

Endocarditis is inflammation of the inside lining of the heart chambers and heart valves (endocardium). It is caused by a bacterial or rarely, a fungal infection.

Exercise electrocardiogram (ECG) test is a test to check how well the heart handles work, and checks for reduced blood flow in the arteries that supply the heart.

Fungemia refers to the presence of fungi, including yeasts, in the bloodstream, and it's a serious condition, especially in immunocompromised individuals.

Fractional flow reserve (FFR) is a ratio of the maximal myocardial blood flow in the presence of a stenosis to the theoretical normal maximal flow in the same distribution. FFR is calculated by using the distal coronary pressure of the stenosis divided by the aortic pressure during maximal hyperemia (increased amount of blood in vessel).

Global Risk of Cardiovascular Disease is a measure of the absolute risk of a coronary heart disease (CHD)-related event over 10 years. The event can be "hard" (eg, myocardial infarction [MI], sudden cardiac death) or "soft" (eg, chest pain). The risk estimate is based on major

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risk factors and is calculated using an empiric equation. Examples of a risk calculator is the Framingham Risk calculator.
The risk levels are:

- Low risk if less than 10%
- Moderate risk is between 10% to 20%
- High risk is the 10 year absolute risk of more than 20%

Heart failure (HF) (also known as **congestive heart failure [CHF]**) is a condition that develops when the heart is unable to pump enough blood for the body's needs. HF occurs when the heart cannot fill with enough blood or is too weak to pump properly. Decompensated heart failure is sudden worsening (exacerbation) of heart failure symptoms (eg, difficulty breathing, lower extremity edema, fatigue) to where the heart can no longer continue to compensate for its full function.
Immunosuppression is the deliberate reduction or inhibition of the immune system's ability to respond to antigens, typically achieved through medications or therapies, to prevent organ rejection or treat autoimmune diseases, but it increases the risk of infections and malignancies.
Indeterminate findings are inconclusive or insufficient for treatment planning.
Inflammation is redness, swelling, pain, and/or a feeling of heat in an area of the body is response to an injury, disease, or irritation of the tissues.
Invasive coronary angiography (ICA) is part of a heart (cardiac) catheterization and uses contrast material and X-rays for imaging of the arteries of the heart. It can define the presence and severity of a luminal obstruction of an epicardial coronary artery, including its location, length, diameter, and coronary blood flow.
Ischemia is a deficient supply of blood to a body part (such as the heart or brain) due to obstruction of the inflow of arterial blood.
Ischemic heart disease are heart problems caused by narrowed heart arteries.
Kawasaki disease is typically diagnosed in young children, but older children and adults can also develop this condition. Kawasaki disease is of unknown origin, is not considered contagious, and normally begins with a fever that lasts at least five days. The classic symptoms may include a rash, red eyes, lips or mouth, swollen lymph nodes or red hands and feet. The disease can affect the coronary arteries which carry oxygen-rich blood to the heart, which can lead to serious heart problems.
Left bundle branch block (LBBB) is a delay or obstruction along the electrical pathway to the heart's left ventricle, which can be caused by underlying heart problems. There are often no symptoms involved, however, symptomatic persons can experience syncope or pre-syncope, fatigue and shortness of breath.
Left main segment is the artery that supplies blood to the left side of the heart muscle (the left ventricle and left atrium).

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Magnetic resonance imaging (MRI) is a non-invasive diagnostic technique that produces computerized images of internal body tissues and is based on nuclear magnetic resonance of atoms within the body induced by the application of radio waves.
Metabolic equivalents (METs) measures oxygen consumption; 1 MET = 3.5 mL/kg/min of oxygen consumption.
Muscle bridging is a usually harmless condition in which one or more of the coronary arteries goes through the heart muscle instead of lying on its surface.
Myocardial perfusion imaging (MPI) uses an intravenously administered radio-pharmaceutical to depict the distribution of blood flow in the myocardium. Perfusion imaging identifies areas of relatively reduced myocardial blood flow associated with ischemia or scar. The relative distribution of perfusion can be assessed at rest, during cardiovascular stress or both. This test is often called a nuclear stress test.
Myocardial viability refers to heart muscle cells that are alive after injury, according to cellular, metabolic and contractile functions.
Non-diagnostic is a result that does not lead to a confirmed diagnosis.
Obstructive coronary artery disease (CAD) is the gradual narrowing or closing of arteries that supply the heart with blood usually caused by a build-up of plaque (atherosclerosis).
Pediatric approximate ages are defined by the US Department of Health (USDH), the Food and Drug Administration (FDA), and the American Academy of Pediatrics (AAP) as the following:

1. Infancy, between birth and 2 years of age
2. Childhood, from 2 to 12 years of age
3. Adolescence, from 12 to 21 years of age, further defined by the AAP into:
    a. Early (ages 11–14 years)
    b. Middle (ages 15–17 years),
    c. Late (ages 18–21 years)
    d. Older ages may be appropriate for children with special healthcare needs.

Percutaneous coronary intervention (PCI) is a non-surgical procedure that uses a catheter (a thin flexible tube) to place a small structure called a stent to open up blood vessels in the heart that have been narrowed by plaque buildup, a condition known as atherosclerosis.
Poor functional capacity is a restriction in an individual's capacity to perform activities of daily living (ADLs) related to his or her participation in self-care and independent activities of daily living (eg, shopping, work, school).
Positron emission tomography (PET) scan is a procedure in which a small amount of radioactive glucose (sugar) is injected into a vein, and a scanner is used to make detailed, computerized pictures of areas inside the body where the glucose is taken up. It is a medical imaging test that shows the metabolic or biochemical function of organs and tissues.

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Premature ventricular contractions (PVC) are extra heartbeats that begin in one of the heart's two lower pumping chambers (ventricles), which disrupt the regular heart rhythm, sometimes causing a sensation of a fluttering or a skipped beat in the chest.
Restrictive cardiomyopathy (RCM) is a condition where the chambers of the heart become stiff over time. Though the heart is able to squeeze well, it's not able to relax between beats normally. This makes it harder for the heart to fill with blood. The blood backs up in the circulatory system.
Revascularization is a surgical procedure for the provision of a new, additional or augmented blood supply to a body part or organ.
Sarcoidosis is a chronic disease of unknown cause, that is characterized by the formation of nodules, especially in the lymph nodes, lungs, bones and skin.
Stenosis refers to the abnormal narrowing of a bodily passage or vessel, which can occur in various anatomical locations and lead to different clinical implications depending on the site affected.
Stress Echocardiogram (echo) is a test used to assess the heart's function and structures. A stress echocardiogram (stress echo) is a test done to assess how well the heart works under stress. The "stress" can be triggered by either exercise on a treadmill, bicycle or pharmacologic (dobutamine). Exercise stress test combines echocardiography with exercise to evaluate the heart's function at rest and with exertion. A dobutamine stress echocardiogram (DSE) may be used if you can't exercise. Dobutamine is put in a vein and causes the heart to beat faster and it mimics the effects of exercise on the heart.
Stress-rest imaging is a type of stress test that uses PET or SPECT imaging of a heart before and after exercise, to determine the effect of physical stress on the flow of blood through the coronary arteries and the heart muscle.
Surveillance is ongoing systematic collection and analysis of data and the provision of information which leads to action being taken to prevent and control a disease.
Sustained is something that is ongoing or continuous.
Tachycardia is an accelerated heart rate of more than 100 beats per minute in adults.
Transesophageal echocardiogram (TEE) is a test done by inserting a probe with a transducer down the esophagus, which provides a clearer image of the heart because the sound waves do not have to pass through skin, muscle or bone tissue.
Transthoracic echocardiogram (TTE) involves placing a device called a transducer on the chest. The device sends ultrasound waves through the chest wall to the heart. As the ultrasound waves bounce off the structures of the heart, a computer converts them into pictures on the computer screen. A TTE uses sound waves to create pictures of the heart chambers, valves, walls and the blood vessels attached to your heart. The test is also called echocardiography or diagnostic cardiac ultrasound.
Vasculitis involves inflammation of the blood vessels. The inflammation can cause the walls of the blood vessels to thicken, which reduces the width of the passageway through the vessel. If blood flow is restricted, it can result in organ and tissue damage.

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Ventricular fibrillation (VF) also called V-fib, is a serious cardiac rhythm disorder in which disordered electrical activity causes the heart's lower chambers (ventricles) to quiver or fibrillate, instead of contracting (beating) normally. This prohibits the heart from pumping blood, causing collapse and cardiac arrest. This type of arrhythmia is a life-threatening medical emergency.
Ventricular tachycardia (VT) is a rhythm disorder caused by abnormal electrical signals in the ventricles of the heart.

- **Monomorphic ventricular tachycardia** is ventricular tachycardia with stable QRS morphology.
- **Non-sustained ventricular tachycardia (NSVT)** is defined as 3 or more consecutive beats originating from the ventricle, lasting less than 30 seconds, at a rate more than 100 beats per minute (bpm).
- **Polymorphic ventricular tachycardia** is a ventricular rhythm, with a rate greater than 100 bpm with a varying QRS pattern that terminates spontaneously (causing syncope if lasting more than a few seconds) or will deteriorate into ventricular fibrillation, causing cardiac arrest.
- **Sustained ventricular tachycardia (SVT)** is defined as a ventricular rhythm more than 100 bpm (widened QRS complex with duration greater than 120 ms) lasting more than 30 seconds or requiring termination due to hemodynamic instability.

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Disclaimer section

Purpose

The purpose of the HealthHelp's clinical guidelines is to assist healthcare professionals in selecting the medical service that may be appropriate and supported by evidence to safely improve

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outcomes. Medical information is constantly evolving, and HealthHelp reserves the right to review and update these clinical guidelines periodically. HealthHelp reserves the right to include in these guidelines the clinical indications as appropriate for the organization's program objectives. Therefore the guidelines are not a list of all the clinical indications for a stated procedure, and associated Procedure Code Tables may not represent all codes available for that state procedure or that are managed by a specific client-organization.

Clinician Review

These clinical guidelines neither preempt clinical judgment of trained professionals nor advise anyone on how to practice medicine. Healthcare professionals using these clinical guidelines are responsible for all clinical decisions based on their assessment. All Clinical Reviewers are instructed to apply clinical indications based on individual patient assessment and documentation, within the scope of their clinical license.

Payment

The use of these clinical guidelines does not provide authorization, certification, explanation of benefits, or guarantee of payment; nor do the guidelines substitute for, or constitute, medical advice. Federal and State law, as well as member benefit contract language (including definitions and specific contract provisions/exclusions) take precedence over clinical guidelines and must be considered first when determining eligibility for coverage. All final determinations on coverage and payment are the responsibility of the health plan. Nothing contained within this document can be interpreted to mean otherwise.

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National and Local Coverage Determination (NCD and LCD)

NOTICE
To ensure appropriate review occurs to the most current NCD and/or LCD, always defer to https://www.cms.gov/medicare-coverage-database/search.aspx.

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Background

National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) are payment policy documents outlined by the Centers for Medicare and Medicaid Services (CMS) and the government's delegated Medicare Audit Contractors (MACs) that operate regionally in jurisdictions.

CMS introduced variation between different jurisdictions/Medicare Audit Contractors (MACs) and their associated covered code lists with the transition to ICD 10. The variation resulted in jurisdictions independently defining how codes are applied for exclusions, limitations, groupings, ranges, etc. for the medical necessity indications outlined in the NCD and LCD. Due to this variation, there is an inconsistent use/application of codes and coverage determinations across the United States between the different MACs.

In addition, **WITHOUT** notice, CMS can change the codes that indicate medical necessity and the format of the coverage determinations/associated documents (eg, Articles). This is an additional challenge for organizations to keep up with ongoing, unplanned changes in covered codes and medical necessity indications.

Medical Necessity Codes

Due to the variation in code application between jurisdictions/MACs and that updates can happen without notification, HealthHelp is not able to guarantee full accuracy of the codes listed for any Coverage Determination, and advises that prior to use, the associated Coverage Determination Articles are reviewed to ensure applicability to HealthHelp's programs and any associated NCDs and LCDs.

For Internal Use Only:

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