2026 Cardiac Ventricular Assist Devices (VAD)

Cardiology

CARD-VAD-HH

Guideline	Guideline Initiated	Previous Review Date	Last Review Date
Extracorporeal Ventricular Assist Device	06/30/2019	05/30/2025	10/06/2025
Intracorporeal Ventricular Assist Device	NEW	N/A	10/06/2025
Percutaneous Ventricular Assist Device	06/30/2019	02/04/2025	10/06/2025

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Extracorporeal or Intracorporeal VAD Contraindications

Contraindications for a ventricular assist device include **ANY** of the following:

1. Age is more than 80 years old (for destination therapy).
   References: [3] [8]
2. Anatomy is prohibitive.
   References: [3] [8] [6]
3. Cachexia or obesity
   References: [3] [8]
4. Chemical dependency
   References: [3] [8] [6]
5. Cognitive function is impaired.
   References: [3] [8]
6. Contraindication to long-term oral anticoagulation
   References: [3] [8] [6]
7. End-stage non-cardiac disease (eg, liver, lung, neurological, renal) is irreversible.
   References: [3] [8]
8. Infection is active.
   References: [3] [8]
9. Malignancy is **NOT** treated.
   References: [3] [8]
10. Peripheral vascular disease (PVD) is present and severe.
    Reference: [3] [8]
11. Prolonged intubation is present (more than 7 days).
    References: [3] [8]
12. Right ventricular dysfunction and **NOT** responsive to guideline-directed medical therapy
    References: [3] [8] [10]

Extracorporeal Ventricular Assist Device (eVAD)

Extracorporeal Ventricular Assist Device (eVAD) 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 20.9.1	Ventricular Assist Devices

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 Cardiology Preamble

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

eVAD Guideline

An extracorporeal ventricular assist device (eVAD) is considered medically appropriate when the documentation demonstrates **ALL** of the following:

1. **ANY** of the following:
    a. Cardiogenic shock.
    b. Dilated cardiomyopathy, recent onset, is non-ischemic.
    c. Heart failure (HF) is acute (diagnosis up to 4 weeks) and advanced (New York Heart Association [NYHA] Stage IIIb to IV or American College of Cardiology [ACC]/American Heart Association [AHA] stage D disease for 45 of last 60 days).

    References: [12] [1] [2] [4]
2. Clinical work-up identifies **ANY** of the following:

a. Cardiopulmonary exercise testing shows peak oxygen consumption (VO_2) less than 14 to 16 mL/kg/min or less than 50% predicted value.

b. End-organ dysfunction (cardiac cachexia, pulmonary hypertension, worsening renal and/or hepatic function) is progressive and **ANY** of the following:

   i. Cardiac index is 2 L/min/m^2 or less.

   ii. Pulmonary capillary wedge pressure (PCWP) is more than 20 mmHg.

   iii. Systolic blood pressure (SBP) is 90 mmHg or less.

   iv. Tissue perfusion is poor (eg, arterial lactate, cool extremities, oliguria, rising serum creatinine).

c. HF, where hospitalization occurred more than 3 times in the previous 12 months, and **NO** obvious precipitating cause.

d. Interagency registry for mechanically assisted circulatory support (INTERMACS) score is **ANY** of the following:

   i. 2: Progressive decline

   ii. 3: Stable but inotrope dependent

   iii. 4: Resting symptoms on oral therapy at home

e. Left ventricular ejection fraction (LVEF) is 25% or less.

References: [1] [10] [12] [7] [1]

3. Medical therapy, at optimal levels and **NOT** tolerated or unresponsive; including optimal guideline-directed medical therapy (GDMT) and cardiac resynchronization therapy (when indicated).
References: [3] [1] [7] [12]

4. Short-term VAD use for **ANY** of the following:

   a. Bridge to decision (BTD)

   b. Bridge to recovery (BTR)

References: [1] [7] [10] [12] [3]

eVAD Procedure Codes

Table 1. Ventricular Assist Device (VAD) Associated Procedure Codes

CODE	DESCRIPTION
33975	Insertion of ventricular assist device; extracorporeal, single ventricle
33976	Insertion of ventricular assist device; extracorporeal, biventricular
33977	Removal of ventricular assist device; extracorporeal, single ventricle
33978	Removal of ventricular assist device; extracorporeal, biventricular
33981	Replacement of extracorporeal ventricular assist device, single or biventricular, pump(s), single or each pump

Intracorporeal Ventricular Assist Device (iVAD)

Intracorporeal Ventricular Assist Device (iVAD) 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 20.9.1	Ventricular Assist Devices

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 Cardiology Preamble

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

iVAD Guideline

An intracorporeal ventricular assist device (iVAD) is considered medically appropriate when the documentation demonstrates **ALL** of the following:

1. **ANY** of the following:
    a. Cardiogenic shock.
    b. Dilated cardiomyopathy, recent onset, is non-ischemic.
    c. Heart failure (HF) is acute (diagnosis up to 4 weeks) and advanced (New York Heart Association [NYHA] Stage IV or American College of Cardiology [ACC]/ American Heart Association [AHA] stage D disease for 45 of last 60 days).

    References: [12] [11] [1] [2] [4]

2. Clinical work-up identifies **ANY** of the following:
    a. Cardiopulmonary exercise testing shows peak oxygen consumption (VO_2) less than 14 to 16 mL/kg/min or less than 50% predicted value.
    b. End-organ dysfunction (cardiac cachexia, pulmonary hypertension, worsening renal and/or hepatic function) is progressive and **ANY** of the following:
        i. Cardiac index is 2 L/min/m^2 or less.
        ii. Pulmonary capillary wedge pressure (PCWP) is more than 20 mmHg.
        iii. Systolic blood pressure (SBP) is 90 mmHg or less.
        iv. Tissue perfusion is poor (eg, arterial lactate, cool extremities, oliguria, rising serum creatinine).
    c. HF, where hospitalization occurred more than 3 times in the previous 12 months, and **NO** obvious precipitating cause.
    d. Inotrope dependence and interagency registry for mechanically assisted circulatory support (INTERMACS) score is **ANY** of the following:
        i. 1: Critical cardiogenic shock
        ii. 2: Progressive decline
    e. Left ventricular ejection fraction (LVEF) is 25% or less.

    References: [1] [10] [12] [7]

3. Long-term VAD use for **ANY** of the following:
    a. Bridge to candidacy (BTC)
    b. Bridge to recovery (BTR)
    c. Bridge to transplantation (BTT)
    d. Destination therapy (DT)

    References: [1] [7] [10] [12] [3]

4. Medical therapy, at optimal levels and **NOT** tolerated or unresponsive; including optimal guideline-directed medical therapy (GDMT) and cardiac resynchronization therapy (when indicated).
   References: [3] [1] [7] [12]

iVAD Procedure Codes

Table 1. Intracorporeal Ventricular Assist Device (iVAD) Associated Procedure Codes

Code	Description
33979	Insertion of ventricular assist device, implantable intracorporeal, single ventricle
33980	Removal of ventricular assist device, implantable intracorporeal, single ventricle
33982	Replacement of ventricular assist device pump(s); implantable intracorporeal, single ventricle, without cardiopulmonary bypass
33983	Replacement of ventricular assist device pump(s); implantable intracorporeal, single ventricle, with cardiopulmonary bypass

Percutaneous Ventricular Assist Device (pVAD)

Percutaneous Ventricular Assist Device (pVAD) 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 20.9.1	Ventricular Assist Devices

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 Cardiology Preamble

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

pVAD Contraindications

A percutaneous ventricular assist device (pVAD) is contraindicated for **ANY** of the following: []

1. Anatomy is prohibitive.
   Reference: [8]
2. Contraindication to long-term oral anticoagulation
   Reference: [8]
3. End-stage non-cardiac disease (eg, liver, lung, neurological, renal) is irreversible.
   References: [8] [3]
4. Psychosocial limitations are severe (eg, active substance abuse, impaired cognitive function, inability to adhere to plan of care, lack of social support, unmanaged psychiatric disorder).
   References: [8] [3]
5. Right ventricular failure and **NOT** responsive to guideline-directed medical therapy.
   Reference: [8]
6. Ventricular arrhythmia is uncontrolled.
   Reference: [8]
7. Weight is less than 3 Kg in a pediatric individual.
   References: [8] [5]

pVAD Relative Contraindications

Relative contraindications for percutaneous ventricular assist device include **ANY** of the following:

1. Age is more than 80 years (for destination therapy).
   Reference: [3]
2. Infection is active.
   Reference: [3]
3. Intubation is prolonged (more than 7 days).
   Reference: [3]
4. Obesity or malnutrition
   Reference: [3]
5. Malignancy is untreated.
   Reference: [3]

6. Peripheral vascular disease (PVD) is present and severe.
   Reference: [3]
7. Psychosocial limitations (eg, active substance abuse, impaired cognitive function, lack of social support, unmanaged psychiatric disorder)
   Reference: [3]
8. Rehabilitation is impaired by musculoskeletal disease.
   Reference: [3]

pVAD Guideline

A percutaneous ventricular assist device (pVAD) is considered medically appropriate when the documentation demonstrates **ALL** of the following:

1. **ANY** of the following:
   a. Bridge to decision (BTD)
   b. Bridge to transplant (BTT)
   c. Destination therapy (DT)

   Reference: [11]
2. **ANY** of the following:
   a. Cardiogenic shock is refractory to guideline-directed medical management and **ANY** of the following:
      i. Fulminant myocarditis
      ii. Heart failure (HF) is advanced (New York Heart Association [NYHA] Stage IIIb to IV or ACC/AHA Stage D
      iii. Myocardial infarction (post-acute)
   b. High-risk coronary artery interventions (eg, percutaneous coronary intervention [PCI])[1]

   References: [9] [1] [10] [7] [5] [8]

[1]High-risk candidates for percutaneous coronary intervention (PCI) may include individuals with severe multi-vessel coronary artery disease, left main coronary artery stenosis without collateral circulation or stenting, or members with a left ventricular (LV) ejection fraction of ≤35%. Ventricular support devices may be indicated for use during high-risk PCI performed in elective or urgent, hemodynamically stable members with severe coronary artery disease (CAD) when a heart team, including a cardiac surgeon, has determined high-risk PCI is the appropriate option.

pVAD Procedure Codes

Table 1. Percutaneous Ventricular Assistive Device (pVAD) Associated Procedure Codes

CODE	DESCRIPTION
33990	Insertion of ventricular assist device, percutaneous including radiological supervision and interpretation; left heart arterial access only
33991	Insertion of ventricular assist device, percutaneous including radiological supervision and interpretation; left heart, both arterial and venous access, with transseptal puncture
33992	Removal of percutaneous left heart ventricular assist device, arterial or arterial and venous cannula(s), at separate and distinct session from insertion
33993	Repositioning of percutaneous right or left heart ventricular assist device with imaging guidance at separate and distinct session from insertion
33995	Insertion of ventricular assist device, percutaneous, including radiological supervision and interpretation; right heart, venous access only

VAD Summary of Changes

Ventricular assist devices had the following version changes from 2025 to 2026:

Table 1. 2026 VAD Summary of Changes

Date	Type of Change	Summary

10/06/2025	Annual	• iVAD: New guideline
		• Extracorporeal or Intracorporeal VAD Contraindications
		  ▪ Established time frame for "prolonged intubation"
		• eVAD guideline:
		  ▪ Added definition for INTERMACS score
		  ▪ Changed description of INTERMACS score per the evidence
		  ▪ Changed "Short-term or long-term" to "Short-term" per the evidence
		  ▪ Removed the following from under "Short-term VAD" per the evidence:
		  ◦ "Bridge to candidacy"
		  ◦ "Bridge to transplantation"
		  ◦ "Destination therapy"
		• pVAD Relative Contraindications:
		  ▪ Established time frame for "prolonged intubation"
		• pVAD guideline:
		  ▪ Moved "Bridge to decision," Bridge to transplant" and "Destination therapy" from under "Heart Failure" per the evidence

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Extracorporeal Ventricular Assist Device Summary of Changes

Table 1. 2026 Extracorporeal Ventricular Assist Device Summary of Changes

Date	Type of Change	Summary
[last re-view date]	Annual	• Added INTERMACS table to definitions • Changed the following: ▪ INTERMACS score description per the evidence ▪ Cardiopulmonary exercise testing shows peak oxygen consumption (VO_2) less than "12" to "14 to 16 mL/kg/min" per the evidence • Removed the following as current evidence no longer supports the indication: ▪ "Bridge to candidacy," "bridge to transplantation" and "destination therapy" as they belong in the Intracorporeal Ventricular Assist Device (iVAD) Guideline. ▪ "Long term" from "Short or long-term use" as "long term" refers to iVAD ▪ "Inotrope dependency" from "Inotrope dependency and INTERMACS score" as it is redundant with criteria below

Intracorporeal Summary of Changes

Table 1. 2026 Intracorporeal Ventricular Assist Device Summary of Changes

Date	Type of Change	Summary
	New Guideline	• New Guideline

Percutaneous Ventricular Assist Device Summary of Changes

Table 1. 2026 Percutaneous Ventricular Assist Device Summary of Changes

Date	Type of Change	Summary
	Annual	• Rearranged indications for correctness per the evidence

VAD Definitions

Acute refers to initial diagnosis, up to 4 weeks.

American College of Cardiology (ACC)/American Heart Association (AHA) Stages of Heart Failure

- **Stage A**: At-risk for heart failure (HF) but without symptoms, structural heart disease or cardiac biomarkers of stretch or injury (eg, hypertension, atherosclerotic cardiovascular disease (CVD), diabetes, metabolic syndrome and obesity, exposure to cardiotoxic agents, genetic variant for cardiomyopathy or family history of cardiomyopathy).

- **Stage B**: Pre-heart failure, without current or previous symptoms or signs of HF but evidence of one of the following: structural heart disease, evidence of increasing filling pressures, risk factors and increased natriuretic peptide levels or persistently elevated cardiac troponin in the absence of competing diagnoses.
- **Stage C**: Symptomatic heart failure is structural heart disease with current or previous symptoms of HF.
- **Stage D**: Advanced heart failure has marked HF symptoms that interfere with daily life and with recurrent hospitalization despite attempts to optimize guideline-directed medical therapy (GDMT).

Anticoagulant is a substance that is used to prevent and treat blood clots in blood vessels and the heart.
Arterial lactate is a measurement of the amount of lactate in the blood that comes from the arteries. Lactate is a substance produced by cells when the body converts food into energy.
Bridge to candidacy is the use of a long term device (eg, mechanical circulatory support, ventricular assist device, total artificial heart) in an individual who is not yet on the heart transplantation list and their eligibility for transplant has yet to be determined.
Bridge to decision is the use of a short term device (eg, mechanical circulatory support, ventricular assist device) in a member who requires support while awaiting further treatment decision(s).
Bridge to recovery is the use of a long term device (eg, mechanical circulatory support, ventricular assist device, total artificial heart) in an individual in which recovery is likely, but support is needed to carry them through in the interim.
Bridge to transplantation is the use of a long term device (eg, mechanical circulatory support, ventricular assist device, total artificial heart) to preserve an individual's health until they are able to have organ transplantation.
Cardiac cachexia is unintentional severe weight loss caused by severe heart failure.
Cardiac index (CI) is an assessment of the cardiac output value based on the patient's size. To find the cardiac index, divide the cardiac output by the person's body surface area (BSA). The normal range for CI is 2.5 to 4 L/min/m2.
Cardiac resynchronization therapy is a procedure to implant a device in the chest to make the heart's chambers contract in a more organized and efficient way. Cardiac resynchronization therapy (CRT) uses a device called a biventricular pacemaker (also called a cardiac resynchronization device) that sends electrical signals to both ventricles. The signals trigger the ventricles to contract in a more coordinated way, which improves the pumping of blood out of the heart. Sometimes the device also contains an implantable cardioverter-defibrillator (ICD), which can deliver an electrical shock to reset the heart if the heart rhythm becomes dangerously erratic.

Cardiogenic shock (CS) is a serious and life-threatening condition that occurs when the heart is unable to pump enough blood to the body's vital organs and is commonly triggered by heart attack or heart failure.

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.

Cardiopulmonary exercise testing (also known as oxygen consumption [VO2] testing) is a specialized type of stress test or exercise test that measures one's exercise ability. Information about the heart and lungs is collected to understand if the body's response to exercise is normal or abnormal.

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.

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.

Destination therapy refers to durable mechanical circulatory support implanted in patients with advanced/refractory heart failure who are not heart-transplant candidates at the time of implant, with the device intended as long-term definitive therapy rather than a bridge to transplantation.

Dilated cardiomyopathy is a condition in which the left ventricle, the heart's main pumping chamber, is enlarged (dilated). As the chamber gets bigger, its thick muscular wall stretches, becoming thinner and weaker. This affects the heart's ability to pump enough oxygen-rich blood to the rest of the body.

End-organ dysfunction is damage occurring in the major organs fed by the circulatory system (eg, heart, kidneys, brain, eyes) which can sustain damage due to uncontrolled hypertension, hypotension, or hypovolemia.

Fulminant is a description for any process that occurs suddenly and escalates quickly, intense, and severe to the point of being lethal.

Guideline directed medical therapy (GDMT) for heart failure are specific treatments (eg, medications, implantable cardiac defibrillators [ICD]) used by health care providers as a standardized treatment for heart failure.

These medications include:

- Angiotensin converting enzyme inhibitors (ACE-I) (eg, enalapril, lisinopril)
- Angiotensin receptor blockers (ARB) (eg, losartan, olmesartan)
- Angiotensin receptor-Neprilysin inhibitors (ARNI) (eg, Entresto)
- Aldosterone antagonists (eg, eplerenone, spirololactone)
- Beta blockers (eg, atenolol, metoprolol)
- Hydralazine/isosorbide dinitrate (HYD/ISDN)

- Hyperpolarization activated cyclic nucleotide-gated (HCN) channel blockers (eg, Ivabradine).
- Loop diuretics (eg, hydrochlorothiazide, metolazone)

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.

Hemodynamic stability is a medical term that describes when a person's blood flow is stable, and their blood pressure and heart rate are normal.

Hypotension is a medical condition characterized by low blood pressure. It occurs when the force of blood pushing against the artery walls is lower than normal, typically defined as a systolic pressure below 90 mmHg and/or a diastolic pressure below 60 mmHg. In other words, it is a condition in which the blood pressure is too low.

Impaired cognitive function, also known as cognitive impairment, is a medical term for problems with thinking, learning, and memory. It can affect a person's ability to understand, reason, and make decisions.

Inotropes are substances that alter the contractility of the heart. Positive inotropic drugs increase the force of cardiac contraction and are indicated in conditions with low cardiac output, such as cardiogenic shock following myocardial infarction, acute heart failure, advanced heart failure and low cardiac output after cardiac surgery. Negative inotropic drugs decrease the force of cardiac contractility.

Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS) score is a profile that provides important prognostic information for patients with advanced heart failure (HF) receiving mechanical support. A lower score is indicative of a poor prognosis.

Table 1. INTERMACS Profiles

Profile	Description	Features
1	Critical cardiogenic shock	Life-threatening hypotension and rapidly escalating inotropic/pressor support, with critical organ hypoperfusion often confirmed by worsening acidosis and lactate levels.
2	Progressive decline	"Dependent" on inotropic support but nonetheless shows signs of continuing deterioration in nutrition, renal function, fluid retention, or other major status indicator. Can also apply to a patient with refractory volume overload, perhaps with evidence of impaired perfusion, in whom inotropic infusions cannot be maintained because of tachyarrhythmias, clinical ischemia, or other intolerance.
3	Stable but inotrope dependent	Clinically stable on mild-moderate doses of intravenous inotropes (or has a temporary circulatory support device) after repeated documentation of failure to wean without symptomatic hypotension, worsening symptoms, or progressive organ dysfunction (usually renal).
4	Resting symptoms on oraltherapy at home	Patient who is at home on oral therapy but frequently has symptoms of congestion at rest or with activities of daily living(dressing or bathing). He or she may have orthopnea, shortness of breath during dressing or bathing, gastrointestinal symptoms (abdominal discomfort, nausea, poor appetite), disabling ascites, or severe lower extremity edema.
5	Exertion intolerant	Patient who is comfortable at rest but unable to engage in any activity, living predominantly within the house or housebound.
6	Exertion limited	Patient who is comfortable at rest without evidence of fluid overload but who is able to do some mild activity. Activities of daily living are comfortable, and minor activities outside the home such as visiting friends or going to a restaurant can be performed, but fatigue results within a few minutes or with any meaningful physical exertion.
7	Advanced NYHA class III	Patient who is clinically stable with a reasonable level of comfortable activity, despite a history of previous decompensation that is not recent. This patient is usually able to walk more than a block. Any decompensation requiring intravenous diuretics or hospitalization within the previous month should make this person a Patient Profile 6 or lower.

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.

Left ventricular ejection fraction (LVEF), also known as ejection fraction (EF), is defined as the percentage of blood ejected from the left ventricle during each contraction.

Malignancy refers to cells that grow uncontrollably and spread locally and/or to distant sites. Malignant tumors are cancerous (ie, they invade other sites). They spread to distant sites via the bloodstream or the lymphatic system.

Myocardial infarction (MI), also called a heart attack, occurs when the blood flow that brings oxygen to the heart muscle is severely reduced or cut off completely. The coronary arteries that supply the heart muscle with blood flow can become narrowed from a buildup of fat, cholesterol and other substances that together are called plaque. This process is known as atherosclerosis. When plaque within a coronary artery breaks, a blood clot forms around the plaque and can block the flow of blood through the artery to the heart muscle. Ischemia results when there is an inadequate blood supply to the heart muscle causing damage or death of part of the heart muscle, resulting in an MI.

Myocarditis is inflammation of the muscle tissue of the heart (myocardium) that causes tissue death. Myocarditis may be caused by many disorders, including infection, toxins and drugs that affect the heart, and systemic disorders such as sarcoidosis, but often the cause is unknown. [2]

New York Heart Association (NYHA) Functional Classification for Heart Failure

CLASS	SYMPTOMS EXPERIENCED
Class I (Mild)	Cardiac disease, but no symptoms and no limitation in ordinary physical activity (eg, shortness of breath when walking, climbing stairs).
Class II (Mild)	Mild symptoms (eg, mild shortness of breath and/or angina) and slight limitation during ordinary activity.
Class III (Moderate)	Marked limitation in activity due to symptoms, even during less-than-ordinary activity, (eg, walking short distances [20–100 m]). Comfortable only at rest. Class IIIa: no dyspnea at rest. Class IIIb: recent dyspnea at rest.
Class IV (Severe)	Severe limitations. Experience symptoms while at rest. Unable to carry on any physical activity without discomfort.

Oliguria is urine output of less than 0.5 mL/kg/h.

Peak oxygen consumption (VO2) is the maximum amount of oxygen that an individual can utilize during intense or maximal exercise. This measurement is generally considered the best indicator of cardiovascular fitness and aerobic endurance.

Percutaneous describes something that is occurring within or performed through the skin.

Peripheral vascular disease is a blood circulation disorder that causes the blood vessels outside of the heart and brain to narrow, block or spasm.

Predicted value measures the likelihood that a member has the condition that they are being tested for.

Prohibitive anatomy is a complication in the structural makeup of the body or body parts that hinders the ability to access or alter it.

Pulmonary capillary wedge pressure (PCWP) is the measurement of the compliance of the left side of the heart and the pulmonary circulation; high pressure can indicate left ventricle failure, mitral valve pathology, cardiac insufficiency and/or cardiac compression post hemorrhage.

Pulmonary hypertension is increased pressure in the pulmonary circulation that results in thickening and narrowing of the pulmonary arteries. Pulmonary hypertension can be either primary, the cause being idiopathic (unknown origin) or it can be secondary which occurs as a result of an identified medical condition.

Refractory is resistance to treatment or cure.

Right ventricular dysfunction is condition in which the muscle of the right ventricle is not pumping as efficiently as it should be. This can be caused by a number of conditions, including left sided heart failure, high blood pressure in the lungs and heart valve disease.

Systolic blood pressure is the pressure of blood against artery walls when the heart contracts. It's the first number in a blood pressure reading, such as 120/80.

[2]Merck & Co, Inc., "Mycocarditis". [Online]. Available: www.merckmanuals.com

Tissue perfusion is the flow of blood through tissue, which delivers oxygen and nutrients to cells and removes waste. It's essential for maintaining healthy organs and tissue.

Ventricular arrhythmia is an abnormal heart rhythm that makes the lower chambers of the heart twitch instead of pump, which can limit or stop your heart from supplying blood to your body.

Ventricular assist device (VAD) is a type of implantable mechanical circulatory support device designed to help pump blood from the heart to the rest of the body. A VAD is used in people who have weakened hearts or heart failure. Percutaneous VADs are inserted with a catheter through a blood vessel and do not require open heart surgery.

VAD References

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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 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.

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.

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