Medical Coverage Policy

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Cardiac Ablation of Abnormal Electrical Rhythms in Adults

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INSTRUCTIONS FOR USE

The following Coverage Policy applies to health benefit plans administered by Cigna Companies. Certain Cigna Companies and/or lines of business only provide utilization review services to clients and do not make coverage determinations. References to standard benefit plan language and coverage determinations do not apply to those clients. Coverage Policies are intended to provide guidance in interpreting certain standard benefit plans administered by Cigna Companies. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement, Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer's benefit plan document always supersedes the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Each coverage request should be reviewed on its own merits. Medical directors are expected to exercise clinical judgment where appropriate and have discretion in making individual coverage determinations. Where coverage for care or services does not depend on specific circumstances, reimbursement will only be provided if a requested service(s) is submitted in accordance with the relevant criteria outlined in the applicable Coverage Policy, including covered diagnosis and/or procedure code(s). Reimbursement is not allowed for services when billed for conditions or diagnoses that are not covered under this Coverage Policy (see "Coding Information" below). When billing, providers

must use the most appropriate codes as of the effective date of the submission. Claims submitted for services that are not accompanied by covered code(s) under the applicable Coverage Policy will be denied as not covered. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations.

Overview

This Coverage Policy addresses transcatheter ablation for the treatment of supraventricular tachycardia (SVT), premature ventricular contractions (PVC), and ventricular arrhythmias in adults ≥18 years of age. This policy does not address transcatheter ablation for the treatment of supraventricular tachycardia (SVT), premature ventricular contractions (PVC), or ventricular arrhythmias in individuals under 18 years of age.

For information on coverage of transcatheter ablation for the treatment of atrial fibrillation please refer to the Cigna Medical Coverage Policy Nonpharmacological Treatments for Atrial Fibrillation.

Coverage Policy

Transcatheter ablation is considered medically necessary as a treatment for ANY of the following arrhythmias in an adult ≥ 18 years of age:

- accessory pathway ablation in individuals with atrioventricular reentrant tachycardia (AVRT), preexcited atrial fibrillation (AF), or high-risk findings on an electrophysiological study
- cavotricuspid isthmus (CTI) dependent atrial flutter
- CTI dependent atrial flutter induced at the time of AF ablation
- junctional tachycardia when medical therapy is not effective or contraindicated
- premature ventricular contractions (PVCs) when **EITHER** of the following are met:
  - PVC burden is >15% of total beats
  - PVCs are symptomatic and medical or pharmacologic management is not effective, is contraindicated, is not tolerated, or is not preferred by the individual
- recurrent symptomatic non–CTI-dependent atrial flutter
- symptomatic atrioventricular nodal reentrant tachycardia (AVNRT)
- symptomatic focal atrial tachycardia (AT) as an alternative to pharmacological therapy
- ventricular arrhythmias (i.e., ventricular tachycardia, ventricular fibrillation) when medical or pharmacologic management is not effective, is contraindicated, is not tolerated, or is not preferred by the individual

Transcatheter ablation is considered not medically necessary for ANY of the following indications:

- Inappropriate sinus tachycardia (IST)
- Premature atrial contraction (PAC)

Cardio-neuroablation (CNA) is considered experimental, investigational or unproven for any indication.

Thoracoscopic epicardial ablation is considered experimental, investigational or unproven for the treatment of atrial flutter.

Health Equity Considerations

Health equity is the highest level of health for all people; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which people are born, grow, live, work, and age.

Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include safe housing, transportation, and neighborhoods; racism, discrimination and violence; education, job opportunities and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

SVT affects approximately 2 in 1,000 people in the United States. A subset of SVT called paroxysmal supraventricular tachycardia (PSVT) currently affects 570,000 individuals and is most common in women and older adults. PSVT is a clinical syndrome characterized by the presence of a regular and rapid tachycardia of abrupt onset and termination. These features are characteristic of AVNRT or atrioventricular reentrant tachycardia (AVRT), and, less frequently, AT. Patients with SVT account for approximately 50,000 emergency departments visits each year. Existing heart conditions like congenital heart defects and heart failure can increase risk for SVT. SVT affects from 10-20% of adults with congenital heart disease. Pregnancy can increase risk for these abnormal heartbeat rhythms or trigger abnormal heartbeats in patients with SVT.

Sacks et al. (2020) conducted a retrospective analysis of insurance claim data to evaluate the impact gender has on diagnosis, treatment, healthcare resource use (HRU), and expenditure in men and women newly diagnosed with paroxsysmal supraventricular tachycardia (PSVT). Individuals (n=5466) were included if they were 18 – 40 years old and were newly diagnosed with PSVT with observable data for one year prior to diagnosis and one year after diagnosis. There were 3655 women and 1811 men included in the analysis. Women had slightly greater usage of beta and calcium channel blockers post diagnosis compared to men (46.07% vs. 44.17%). Significantly more women than men had at least one emergency department (ED) visit and at least one hospital admission post-diagnosis (49.6% vs. 44.5%; $p<0.01$ and 24.7% vs. 20.0%; $p<0.01$, respectively). Significantly less women were treated with cardiac ablation compared to men in the year following diagnosis (12.59% vs. 15.30%; $p<0.01$). In the year prior to SVT diagnosis, more women were treated for panic/anxiety disorder ($p<0.01$) while more men were treated for atrial fibrillation ($p<0.0001$) suggesting women are more frequently misdiagnosed as having anxiety. Author noted limitations of the study included a reliance on claims data and short-term follow-up. This study demonstrates the need for provider education focusing on adherence to published guidelines to diagnose and treat PSVT to avoid misdiagnoses and treatment delays in women.

General Background

Supraventricular Tachycardia (SVT)

SVT is any tachycardia with atrial rates more than 100 beats/minute at rest and whose origin involves tissue from the His bundle or above. These SVTs include inappropriate sinus tachycardia, atrial tachycardia (AT) including focal and multifocal AT, macroreentrant AT (including typical atrial flutter), junctional tachycardia, atrioventricular nodal reentrant tachycardia (AVNRT), and various forms of accessory pathway-mediated reentrant tachycardias. These SVTs exclude atrial fibrillation (AF).

The etiology of SVT is usually nonspecific. However, precipitating factors (e.g., exercise, caffeine, cigarette consumption, relation to emotional upsets, and alcohol intake) should always be

considered. The most common symptoms of SVT include heart palpitations, chest pain, lightheadedness, shortness of breath, and fainting. These symptoms are similar to those of panic and anxiety disorders, which can lead to misdiagnosis. Tests like electrocardiograms (ECG) and ambulatory heart monitors which measure the electrical impulses of the heart can help diagnose SVT. These tests can also help determine the type of SVT a patient has which is critical for determining a treatment plan. What makes diagnosing SVT difficult is that it usually occurs only in short periods of time and often an ECG of these periods is not available. Once an ECG is obtained, there are many types of SVT to consider.

Treatment for SVT varies from patient to patient. Treatment depends on several factors such as the type of SVT, the frequency and duration of SVT episodes, and the severity of symptoms. Treatment also depends on patient preferences. Treatment may include a "watch and wait" approach, vagal maneuvers, intermittent "pill-in-the-pocket" drug therapy, prolonged drug therapy, or procedures like catheter ablation. The goal of SVT treatment is to prevent abnormal heartbeats, minimize symptoms and reduce the risk of complications. It's important that patients are a part of the decision-making process when it comes to treatment.

An invasive electrophysiological (EP) study permits the precise diagnosis of the underlying arrhythmia mechanism, localization of the site of origin and provides definitive treatment if coupled with catheter ablation. Radiofrequency current is the most used energy source for SVT ablation. Cryoablation is used as an alternative to radiofrequency ablation to minimize injury to the AV node during ablation of specific arrhythmias. Selection of the energy source depends on operator experience, arrhythmia target location, and patient preference.

U.S. Food and Drug Administration (FDA)
Catheter ablation is a procedure and, therefore, not subject to FDA regulation. Any medical devices, drugs, biologics, or tests used as a part of this procedure may be subject to FDA regulation.

Numerous radiofrequency ablation and cryoablation catheters have received FDA approval through the premarket application (PMA) process for treatment of arrhythmias.

Professional Societies/Organizations
American College of Cardiology/American Heart Association/Heart Rhythm Society: In 2015, the ACC/AHA/HRS updated the guideline for the management of adult patients with supraventricular tachycardia (Page, et al., 2016). The guideline is aimed at the adult population, ≥18 years of age, and offers no specific recommendations for pediatric patients. The guideline states that the recommendations for ongoing management, along with other recommendations and algorithms for specific SVTs, are meant to include consideration of patient preferences and clinical judgment; this may include consideration of consultation with a cardiologist or clinical cardiac electrophysiologist, as well as patient comfort with possible invasive diagnostic and therapeutic intervention. Recommendations for treatment options (including drug therapy, ablation, or observation) must be considered in the context of frequency and duration of the SVT, along with clinical manifestations, such as symptoms or adverse consequences (e.g., development of cardiomyopathy).

The guideline addresses the following evidence-based recommendations for catheter ablation:

Ongoing Management of Suspected Focal Atrial Tachycardia (AT)

- Catheter ablation is recommended in patients with symptomatic focal AT as an alternative to pharmacological therapy (Class I recommendation; Level of Evidence B-NR).

The guideline states that a large number of nonrandomized cohort studies on focal AT ablation have accumulated in the past two decades. In a 2012 ablation registry provided by 74 voluntary medical centers in Spain, AT was found in 333 of 11,042 of the ablation procedures performed. In experienced centers, when the AT can be induced in the laboratory, acute success rates above 90% to 95% have consistently been reported, with a complication rate of <1% to 2%.

Ongoing Management of Atrioventricular Nodal Reentrant Tachycardia (AVNRT)

- Catheter ablation of the slow pathway is recommended in patients with AVNRT (Class I recommendation; Level of Evidence B-NR).

The guideline states that catheter ablation of AVNRT is regarded as first-line therapy for treatment of symptomatic AVNRT. It is potentially curative and chronic pharmacological therapy is usually not needed after the procedure. Slow-pathway ablation, also called modification, is the preferred target during ablation of AVNRT. Large registry studies report the success rates of slow-pathway ablation to be >95%, with a <1% risk of AV block. Cryoablation of AVNRT is an alternative to radiofrequency ablation. Recent systematic reviews and trials randomizing patients to radiofrequency ablation versus cryoablation suggest an equivalent acute success rate, with a lower rate of AV block with cryoablation but a higher rate of recurrence during long-term follow-up with cryoablation.

- Oral verapamil or diltiazem is recommended for ongoing management in patients with AVNRT who are not candidates for, or prefer not to undergo, catheter ablation (Class I recommendation; Level of Evidence B-R).
- Oral beta blockers are recommended for ongoing management in patients with AVNRT who are not candidates for, or prefer not to undergo, catheter ablation (Class I recommendation; Level of Evidence B-R).
- Flecainide or propafenone is reasonable for ongoing management in patients without structural heart disease or ischemic heart disease who have AVNRT and are not candidates for, or prefer not to undergo, catheter ablation and in whom beta blockers, diltiazem, or verapamil are ineffective or contraindicated (Class IIa recommendation, Level of Evidence B-R).
- Clinical follow-up without pharmacological therapy or ablation is reasonable for ongoing management in minimally symptomatic patients with AVNRT (Class IIa recommendation, Level of Evidence B-NR).
- Oral sotalol or dofetilide may be reasonable for ongoing management in patients with AVNRT who are not candidates for, or prefer not to undergo, catheter ablation (Class IIa recommendation, Level of Evidence B-NR).
- Oral digoxin or amiodarone may be reasonable for ongoing treatment of AVNRT in patients who are not candidates for, or prefer not to undergo, catheter ablation (Class IIb recommendation, Level of Evidence B-R).
- Self-administered ("pill-in-the-pocket") acute doses of oral beta blockers, diltiazem, or verapamil may be reasonable for ongoing management in patients with infrequent, well-tolerated episodes of AVNRT (Class IIb recommendation, Level of Evidence C-D).

Ongoing Management of Orthodromic Atrioventricular Reentrant Tachycardia (AVRT)

- Catheter ablation of the accessory pathway is recommended in patients with AVRT and/or preexcited AF (Class I recommendation; Level of Evidence B-NR).

The guideline states that several large series support the use of catheter ablation of the accessory pathway as first-line therapy in patients who have had AF and/or AVRT. These series report a success rate of approximately 93% to 95% and a 3% risk of major complications when patients

are followed up for six months to eight years. AF in younger patients is usually associated with the accessory pathway and is unlikely to occur after ablation; in contrast, older patients may have recurrence of AF from causes unrelated to the accessory pathway. Catheter ablation is also effective for treating permanent form of junctional reciprocating tachycardia (PJRT) by ablating the concealed accessory pathway with a success rate of approximately 90%. Catheter ablation of an atriofascicular (Mahaim) pathway is successful in preventing reentrant tachycardia in approximately 70% to 100% of patients.

- Oral beta blockers, diltiazem, or verapamil are indicated for ongoing management of AVRT in patients without pre-excitation on their resting ECG (Class I recommendation; Level of Evidence C-D).
- Oral flecainide or propafenone is reasonable for ongoing management in patients without structural heart disease or ischemic heart disease who have AVRT and/or pre-excited AF and are not candidates for, or prefer not to undergo, catheter ablation (Class IIa recommendation; Level of Evidence B-R).
- Oral dofetilide or sotalol may be reasonable for ongoing management in patients with AVRT and/or pre-excited AF who are not candidates for, or prefer not to undergo, catheter ablation (Class IIb recommendation; Level of Evidence B-R).
- Oral amiodarone may be considered for ongoing management in patients with AVRT and/or pre-excited AF who are not candidates for, or prefer not to undergo, catheter ablation and in whom beta blockers, diltiazem, flecainide, propafenone, and verapamil are ineffective or contraindicated (Class IIb recommendation; Level of Evidence B-R).
- Oral beta blockers, diltiazem, or verapamil may be reasonable for ongoing management of orthodromic AVRT in patients with pre-excitation on their resting ECG who are not candidates for, or prefer not to undergo, catheter ablation (Class IIb recommendation; Level of Evidence C-LD).
- Oral digoxin may be reasonable for ongoing management of orthodromic AVRT in patients without pre-excitation on their resting ECG who are not candidates for, or prefer not to undergo, catheter ablation (Class IIb recommendation; Level of Evidence C-LD).

Ongoing Management of Atrial Flutter

- Catheter ablation of the cavotricuspid isthmus (CTI) is useful in patients with atrial flutter that is either symptomatic or refractory to pharmacological rate control (Class I recommendation; Level of Evidence B-R).

The guideline states that rate control can be difficult to achieve in atrial flutter, and a rhythm control strategy is often chosen. Catheter ablation of CTI-dependent atrial flutter is often preferred to long-term pharmacological therapy; in this rhythm, the CTI represents the optimal target for ablation because a line of ablation between the tricuspid valve annulus and inferior vena cava can effectively interrupt the circuit.

- Catheter ablation is useful in patients with recurrent symptomatic non–CTI-dependent flutter after failure of at least 1 antiarrhythmic agent (Class I recommendation; Level of Evidence C-LD).

The guideline states that no prospective randomized controlled trials (RCTs) have compared the efficacy or safety of antiarrhythmic drugs with that of catheter ablation for non–CTI-dependent atrial flutter. In general, catheter ablation of non–CTI-dependent atrial flutter is more difficult than ablation of CTI-dependent flutter because the anatomic circuits are complex, are often not anatomically defined, and can be difficult to locate. Observational data support the relative effectiveness and safety of catheter ablation in experienced centers. Many of the atrial flutters that are observed during the first three months after catheter ablation or cardiac surgery will not

persist beyond the periprocedural period, so attempts at ablation can be deferred unless pharmacological therapy and/or cardioversion are unsuccessful.

- Catheter ablation is reasonable in patients with CTI-dependent atrial flutter that occurs as the result of flecainide, propafenone, or amiodarone used for treatment of AF (Class IIa recommendation, Level of Evidence B-R).

The guideline states that some patients with AF treated with propafenone, flecainide, or amiodarone will develop atrial flutter. In this circumstance, if flutter becomes the dominant arrhythmia, ablation of the CTI and continued use of the antiarrhythmic drug can decrease the incidence of atrial flutter and facilitate the pharmacological management of AF.

- Catheter ablation of the CTI is reasonable in patients undergoing catheter ablation of AF who also have a history of documented clinical or induced CTI-dependent atrial flutter (Class IIa recommendation, Level of Evidence C-LD).

The guideline states that when AF and atrial flutter coexist, one randomized study demonstrated that at one-year follow-up, greater success in terms of arrhythmia suppression and quality-of-life score resulted from AF ablation (with or without atrial flutter ablation) than from atrial flutter ablation alone. Possibly AF ablation alone is sufficient to control both arrhythmias, although CTI ablation reduced the early postablation arrhythmia recurrence rate

- Catheter ablation is reasonable in patients with recurrent symptomatic non–CTI-dependent flutter as primary therapy, before therapeutic trials of antiarrhythmic drugs, after carefully weighing potential risks and benefits of treatment options (Class IIa recommendation, Level of Evidence C-LD).

The guideline states that no prospective RCTs have compared the efficacy or safety of antiarrhythmic drugs with that of catheter ablation for non–CTI-dependent atrial flutter. Observational data, however, support the relative effectiveness and safety of catheter ablation in experienced centers. Many of the atrial flutters that are observed during the first three months after ablation or cardiac surgery will not persist beyond the periprocedural period, so attempts at ablation can be deferred unless attempts at pharmacological therapy or cardioversion are unsuccessful.

- Catheter ablation may be reasonable for asymptomatic patients with recurrent atrial flutter (Class IIb recommendation, Level of Evidence C-LD).

The guideline states that catheter ablation of atrial flutter is highly effective, with single-procedure success rates >90% and an excellent safety profile. In patients with recurrent atrial flutter, long-term maintenance of sinus rhythm is more likely with ablation than with pharmacological therapy. Also, ablation may avoid potential development of tachycardia-mediated cardiomyopathy.

Management of Asymptomatic Patients with Asymptomatic Pre-Excitation

- Catheter ablation of the accessory pathway is reasonable in asymptomatic patients with preexcitation if an EP study identifies a high risk of arrhythmic events, including rapidly conducting preexcited AF (Class IIa recommendation, Level of Evidence B-R^{SR}).

The guideline states that in a large prospective cohort study of 756 asymptomatic patients with close to eight years of follow-up, 9% of patients developed malignant AF (shortest R-R interval ≤250 ms), and 2% developed ventricular fibrillation. Malignant arrhythmias correlated more with high-risk EP properties of the accessory pathway than with the presence or absence of symptoms.

Ablation of the accessory pathway(s) in high-risk patients was also examined in one RCT that enrolled 76 patients, showing that arrhythmic events (defined as symptomatic SVT, AF, and ventricular fibrillation in this study) occurred in 7% of patients who underwent ablation versus 77% who did not undergo ablation. Another study that examined patients on the basis of whether an ablation was performed reported that none of the asymptomatic patients who had undergone ablation of the accessory pathway developed a malignant arrhythmia during eight years of follow-up. The risk of complications with ablation ranged from 0.1% (complete heart block) to 0.9% (ablation-induced right bundle-branch block). It is recommended that the risks and benefits of proceeding with ablation of pathways found not to have high-risk characteristics be discussed thoroughly with patients in advance of the EP procedure.

- Catheter ablation of the accessory pathway is reasonable in asymptomatic patients if the presence of pre-excitation precludes specific employment (such as with pilots) (Class IIa recommendation, Level of Evidence B-R^{SR}).

The guideline states that patients with asymptomatic pre-excitation whose job activities would place them or others at risk if a hemodynamically significant arrhythmia occurred (such as airline pilots) are potential candidates for catheter ablation. Catheter ablation is associated with a success rate of approximately 95% and a 3% risk of major complications when patients are followed up for six months to eight years. Other documents advise EP study in asymptomatic athletes who engage in moderate- or high-level competitive sports.

These recommendations have been designated with the notation ^{SR} to emphasize the rigor of support from the Evidence Review Committee's systematic review (Al-Khatib, et al., 2016).

Ongoing Management of Junctional Tachycardia

- Catheter ablation may be reasonable in patients with junctional tachycardia when medical therapy is not effective or contraindicated (Class IIb recommendation, Level of Evidence C-LD).

The guideline states that radiofrequency ablation has been performed as a potentially curative therapy for junctional tachycardia since the early 1990s. However, in view of the reported 5% to 10% risk of AV block, catheter ablation is generally reserved for highly symptomatic patients in whom drug therapy has been ineffective or not tolerated. Many practitioners use cryoablation as an alternative to radiofrequency ablation. Given that it is often difficult to distinguish junctional tachycardia from AVNRT on the ECG, EP study with the goal of ablation may be a helpful diagnostic and potentially therapeutic intervention. Junctional tachycardia may be observed during and after slow pathway ablation of AVNRT, because of irritation of the compact AV node. This iatrogenic junctional tachycardia is transient and generally benign and can be distinguished from AVNRT through pacing maneuvers at EP study. It is crucial to recognize this phenomenon at the time of EP study because attempts to ablate the junctional tachycardia are unnecessary and could result in AV block.

Ongoing Management of SVT in Adult Congenital Heart Disease (ACHD) Patients

- Preoperative catheter ablation or intraoperative surgical ablation of accessory pathways or AT is reasonable in patients with SVT who are undergoing surgical repair of Ebstein anomaly (Class IIa recommendation, Level of Evidence B-R).

The guideline states that the prevalence of SVT among patients with Ebstein anomaly was 33% in one large series, the highest noted among ACHD patients, and increased with age. AT, atrial flutter, or AF develops in ≥50% of patients with Ebstein anomaly and significant tricuspid

regurgitation. Right-sided accessory pathways are present in 15% to 30% of patients with Ebstein anomaly and may be multiple in up to ≥29% of those patients. Catheter ablation of accessory pathways in patients with Ebstein anomaly is associated with lower success rates than for other populations, acute success rate of 75% to 89% of procedures, with acute recurrence in 25% to 30%. In a series of 83 adults undergoing arrhythmia surgery at the time of surgical repair of Ebstein anomaly, accessory pathways were present in 32%, and atrial flutter/fibrillation was noted in 54% (483), with no recurrence of AP after surgery. Successful surgical ablation of accessory pathways has been reported in 92% to 100%. In a series of patients undergoing right atrial maze procedures or isthmus ablation for atrial flutter/fibrillation in association with repair of Ebstein anomaly, freedom from recurrent flutter/fibrillation was 75% during 34 months of follow-up. In a comparison study of combined operative arrhythmia surgery with repair, versus catheter ablation followed by surgical repair, the combined approach was effective in 94% of cases versus 76% of patients treated with the catheter approach alone. In a series of patients undergoing repair of Ebstein anomaly, patients who underwent preoperative EP study with intraoperative ablation of arrhythmia substrate had lower risk of SCD than patients without arrhythmia intervention. In patients with Ebstein anomaly undergoing planned surgical intervention, an integrated approach of arrhythmia intervention has been demonstrated to be safe and effective.

- Catheter ablation is reasonable for treatment of recurrent symptomatic SVT in ACHD patients (Class IIa recommendation, Level of Evidence B-NR).

The guideline states that multiple observational and multicenter studies have demonstrated acute success rates between 65% and 100% for treatment of SVT associated with ACHD. Acute success rates vary by tachycardia mechanism and type of congenital heart disease and repair. Success rates are highest for SVT associated with AVNRT (>80%), accessory pathways (75% to 89% among patients with Ebstein anomaly), or focal AT (80% to 100%). Success rates for catheter ablation of AT or atrial flutter are significantly lower than that reported in patients without ACHD, with overall 65% to 82% acute success in mixed anatomic substrates, but success rates have improved with advanced mapping and ablation techniques. Acute success rates in ablation of AT or atrial flutter varies significantly by type of congenital heart disease, ranging from 93% to 100% in patients with repaired ASD, 85% to 100% in atrial baffle repairs of transposition of the great arteries, and 54% to 75% of univentricular heart or Fontan repairs. Older age and presence of univentricular heart physiology was associated with decreased acute success rates in a series of 193 ablations of AT. Recurrent AT has been reported in 20% to 85% of patients during short-term follow-up, with development of AF reported in 7% to 30% of patients. Recurrent SVT may represent the same or a new reentrant circuit, and arrhythmia burden may be decreased by ablation procedures. Ablation procedures in patients with complex congenital heart disease are best performed in centers with advanced mapping techniques and expertise in congenital heart disease.

Ongoing Management of SVT in Pregnant Patients

- Catheter ablation may be reasonable in pregnant patients with highly symptomatic, recurrent, drug refractory SVT with efforts toward minimizing radiation exposure (Class IIb recommendation, Level of Evidence C-LD).

The guideline states that the risk of radiation exposure to the fetus is a concern with catheter ablation in pregnant patients, because high-dose ionizing radiation has been linked to excess malignancy and congenital malformations. The fetal radiation dose for most common cardiovascular interventions is not likely to exceed the 50-mGy negligible-risk threshold dose for excess malignancy. One study that used phantoms to simulate pregnancy estimated a low lifetime risk of malignancies from radiation exposure to the conceptus during a typical ablation procedure. With current technologies such as electro-anatomic mapping systems, catheter ablation

procedures using minimal or even zero fluoroscopy have been described in pregnant women. It is recommended that if a catheter ablation procedure is required in a pregnant woman, radiation-reduction technologies should be used, and the procedure should be avoided in the first trimester when the teratogenic risk is greatest. Shielding the fetus by covering the mother with a lead apron does not eliminate radiation to the fetus because most of the radiation to the fetus comes from scatter.

The guideline addresses the following evidence-based recommendations for acute treatment of SVT of unknown mechanism:

- Vagal maneuvers are recommended for acute treatment in patients with regular SVT (Class I recommendation, Level of Evidence B-R).
- Adenosine is recommended for acute treatment in patients with regular SVT (Class I recommendation, Level of Evidence B-R).
- Synchronized cardioversion is recommended for acute treatment in patients with hemodynamically unstable SVT when vagal maneuvers or adenosine are ineffective or not feasible (Class I recommendation, Level of Evidence B-NR).
- Synchronized cardioversion is recommended for acute treatment in patients with hemodynamically stable SVT when pharmacological therapy is ineffective or contraindicated (Class I recommendation, Level of Evidence B-NR).
- Intravenous diltiazem or verapamil can be effective for acute treatment in patients with hemodynamically stable SVT (Class IIa recommendation, Level of Evidence B-R).
- Intravenous beta blockers are reasonable for acute treatment in patients with hemodynamically stable SVT (Class IIa recommendation, Level of Evidence C-LD).

The guideline addresses the following evidence-based recommendations for ongoing management of SVT of unknown mechanism:

- Oral beta blockers, diltiazem, or verapamil is useful for ongoing management in patients with symptomatic SVT who do not have ventricular pre-excitation during sinus rhythm (Class I recommendation, Level of Evidence B-R).
- EP study with the option of ablation is useful for the diagnosis and potential treatment of SVT (Class I recommendation, Level of Evidence B-NR).
- Patients with SVT should be educated on how to perform vagal maneuvers for ongoing management of SVT (Class I recommendation, Level of Evidence C-LD).
- Flecainide or propafenone is reasonable for ongoing management in patients without structural heart disease or ischemic heart disease who have symptomatic SVT and are not candidates for, or prefer not to undergo, catheter ablation (Class IIa recommendation, Level of Evidence B-R).
- Sotalol may be reasonable for ongoing management in patients with symptomatic SVT who are not candidates for, or prefer not to undergo, catheter ablation (Class IIb recommendation, Level of Evidence B-R).
- Dofetilide may be reasonable for ongoing management in patients with symptomatic SVT who are not candidates for, or prefer not to undergo, catheter ablation and in whom beta blockers, diltiazem, flecainide, propafenone, or verapamil are ineffective or contraindicated (Class IIb recommendation, Level of Evidence B-R).
- Oral amiodarone may be considered for ongoing management in patients with symptomatic SVT who are not candidates for, or prefer not to undergo, catheter ablation and in whom beta blockers, diltiazem, dofetilide, flecainide, propafenone, sotalol, or verapamil are ineffective or contraindicated (Class IIb recommendation, Level of Evidence C-LD).
- Oral digoxin may be reasonable for ongoing management in patients with symptomatic SVT without preexcitation who are not candidates for, or prefer not to undergo, catheter ablation (Class IIb recommendation, Level of Evidence C-LD).

Class (Strength) of Recommendation:

- Class I (Strong) Benefit >>>>Risk
- Class IIa (Moderate) Benefit>>Risk
- Class IIb (Weak) Benefit > Risk
- Class III No Benefit (Moderate) Benefit=Risk
- Class III Harm (Strong) Benefit>Risk

Level (Quality) of Evidence:

- Level A if the data were derived from high-quality evidence from more than one randomized clinical trial, meta-analyses of high-quality randomized clinical trials, or one or more randomized clinical trials corroborated by high-quality registry.
- Level B-R (Randomized) when data were derived from moderate quality evidence from one or more randomized clinical trials, or meta-analyses of moderate-quality randomized clinical trials.
- Level B-NR (Nonrandomized) was used to denote moderate-quality evidence from one or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies. This designation was also used to denote moderate-quality evidence from meta-analyses of such studies.
- Level C-LD (Limited Data) when the primary source of the recommendation was randomized or nonrandomized observational or registry studies with limitations of design or execution, meta-analyses of such studies, or physiological or mechanistic studies of human subjects.
- Level C-EO (Expert Opinion) was defined as expert opinion based on the clinical experience of the writing group.

Inappropriate Sinus Tachycardia (IST)

The clinical practice guideline states that success rates with radiofrequency ablation to modify the sinus node in individuals with IST have been observed in the range of 76–100% in nonrandomized cohort studies. However, IST recurrence has been observed in 27–45% of individuals. Complications can be significant and can include:

- symptomatic sinus or junctional bradycardia necessitating pacemaker placement
- phrenic nerve injury with paralysis of the right hemidiaphragm
- significant facial and upper-extremity swelling caused by narrowing of the superior vena cava/RA junction, which may rarely result in superior vena cava syndrome

The authors state that sinus node modification should only be considered in individuals who are highly symptomatic and cannot be adequately treated by medication and with the informed consent that the risks for significant harm may outweigh the modest potential benefits of ablation.

American College of Cardiology (ACC)/American Heart Association (AHA)/American College of Clinical Pharmacy (ACCP)/Heart Rhythm Society (HRS): In 2023, the ACC and AHA updated their guidelines for the diagnosis and management of patients with atrial fibrillation (AF) with endorsement from the ACCP and HRS. The recommendation for AF catheter ablation states that "Younger patients are likely to derive greater long-term benefit, including delaying AF progression. However, clinical trials have demonstrated improved cardiovascular outcomes with rhythm control, even with median ages in the 70s."

Recommendations for AF Catheter Ablation

- In patients who are undergoing ablation for AF, ablation of additional clinically significant supraventricular arrhythmias can be useful to reduce the likelihood of future arrhythmia (Class 2a recommendation; Level of Evidence B-NR).

The guideline states that atrial fibrillation, particularly atrial flutter (AFL), can be associated with other atrial arrhythmias and that ablation of a previously documented or inducible sustained SVT or AFL is useful to reduce the likelihood of recurrent arrhythmias during an ablation for AF (Joglar, et al., 2024).

Heart Rhythm Society (HRS); European Heart Rhythm Association (EHRA); European Cardiac Arrhythmia Society (ECAS) Asia Pacific Heart Rhythm Society (APHRS); Sociedad Latinoamericana de Estimulación Cardíaca y Electrofisiología (SOLAECE): The 2017 HRS/EHRA/ECAS/APHRS/SOLAECE expert consensus statement on catheter and surgical ablation of atrial fibrillation addresses cavotricuspid isthmus ablation (Calkins, et al., 2017). The writing group recommendations state:

- If a patient has a history of typical atrial flutter or typical atrial flutter is induced at the time of AF ablation, delivery of a cavotricuspid isthmus linear lesion is recommended, (Class I, Level of Evidence B-R).
- the usefulness of linear ablation lesions in the absence of macroreentrant atrial flutter is not well established, (Class IIb, Level of Evidence C-LD).

Pediatric and Congenital Electrophysiology Society (PACES)/ Heart Rhythm Society (HRS): In 2012, the PACES and the HRS published an expert consensus statement on the management of the asymptomatic young patient with a Wolff-Parkinson-White (WPW, ventricular preexcitation) electrocardiogram pattern, which has been endorsed by the American College of Cardiology Foundation (ACCF), the American Heart Association (AHA), the American Academy of Pediatrics (AAP), and the Canadian Heart Rhythm Society (CHRS). For the specific purpose of this statement, the young patient is defined as being between 8 and 21 years of age, an age span routinely cared for by pediatricians and pediatric cardiologists and generally considered old enough to undergo exercise testing and catheter ablation if indicated.

Statements relevant to the use of catheter ablation include the following:

- Young patients with a shortest excited R-R interval (SPERRI) ≤ 250 ms in atrial fibrillation are at increased risk for SCD. It is reasonable to consider catheter ablation in this group, taking into account the procedural risk factors based on the anatomical location of the pathway (Class IIA, Levels of Evidence B/C).
- Young patients with a SPERRI ≥ 250 ms in atrial fibrillation are at lower risk for SCD, and it is reasonable to defer ablation (Class IIA, Level of Evidence C). Ablation may be considered in these patients at the time of diagnostic study if the location of the pathway and/or patient characteristics do not suggest that ablation may incur any increased risk of adverse events, such as AV block or coronary artery injury (Class IIB, Level of Evidence C).
- Young patients deemed to be at low risk might subsequently develop cardiovascular symptoms such as syncope or palpitations. These patients should then be considered symptomatic and may be eligible for catheter ablation procedures regardless of the prior assessment.
- Asymptomatic patients with a WPW ECG pattern and structural heart disease are at risk for both atrial tachycardia and AV reciprocating tachycardia, which may result in unfavorable hemodynamics. Ablation may be considered regardless of the anterograde characteristics of the accessory pathway (Class IIB, Level of Evidence C).
- Asymptomatic patients with a WPW ECG pattern and ventricular dysfunction secondary to dyssynchronous contractions may be considered for ablation, regardless of anterograde characteristics of the bypass tract (Class IIB, Level of Evidence C).

Classification of Recommendations:

- Class I: Conditions for which there is evidence and/or general agreement that a given procedure or treatment plan is beneficial, useful, and effective
- Class II: Conditions for which there is conflicting evidence and/or divergence of opinion about the usefulness/efficacy of a procedure or treatment
- Class IIa: Weight of evidence/opinion is in favor of usefulness/efficacy
- Class IIb: Usefulness/efficacy is less well established by evidence/opinion
- Class III: Conditions for which there is conflicting evidence and/or general agreement that a procedure or treatment is not useful/effective and in some cases may be harmful

Level of Evidence:

- Level of Evidence A: Data derived from multiple randomized clinical trials or meta-analyses
- Level of Evidence B: Data derived from a single randomized trial or nonrandomized studies
- Level of Evidence C: Only consensus opinion of experts, case studies, or standard of care
- Level of Evidence D: Expert opinion without studies

Premature Atrial Contraction (PAC)
There is insufficient evidence in the published peer-reviewed medical literature to assess the safety and efficacy of transcatheter ablation for the treatment of PACs.

Thoracoscopic Epicardial Ablation for the Treatment of Atrial Flutter
A thoracoscopic epicardial approach to ablation has been proposed for the treatment of atrial flutter. The thoracoscopic approach to ablation is a closed chest procedure and does not enter the heart. There is insufficient evidence in the published peer-reviewed medical literature to assess the safety and efficacy of a thoracoscopic epicardial approach for the treatment of atrial flutter.

Ventricular Arrhythmias (VA) and Premature Ventricular Contractions (PVC)
As opposed to supraventricular tachycardias, ventricular arrhythmias arise in the ventricular myocardium or in the His-Purkinje tissue and produce wide complex tachycardias on an electrocardiogram. These ectopic, or non-sinus, depolarizations can produce premature ventricular complexes (PVCs), ventricular tachycardia (VT), or ventricular fibrillation (VF) the latter of which leads to immediate cardiac arrest. Ventricular arrhythmias are associated with caffeine, alcohol, nicotine, poor sleep, psychological stress, increased age, heart disease, genetic mutation, and myocardial infarction. They can present as palpitations, dizziness, syncope, shortness of breath, or sudden cardiac arrest. Advanced cardiac life support guidelines should be utilized for unstable episodes of VT and VF with an emphasis on prompt defibrillation and identifying and reversing any precipitating causes. Treatment options for stable VAs include antiarrhythmic drug therapy, catheter mapping and ablation, and implantable cardioverter-defibrillator (Garan, 2024; Goldberger, 2024).

U.S. Food and Drug Administration (FDA)
Catheter ablation is a procedure and, therefore, not subject to FDA regulation. Any medical devices, drugs, biologics, or tests used as a part of this procedure may be subject to FDA regulation.

Numerous radiofrequency ablation and cryoablation catheters have received FDA approval through the premarket application (PMA) process for the treatment of arrhythmias.

Literature Review
There is a paucity of current, well-designed, peer-reviewed evidence evaluating the use of catheter ablation for the treatment of VAs.

Professional Societies/Organizations

American College of Cardiology (ACC), American Heart Association (AHA), and Heart Rhythm Society (HRS): In a 2017 (reaffirmed 2023) guideline for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death (Al-Khatib, et al., 2018), the AHA, ACC, and HRS stated that "catheter ablation is an important treatment option for patients with VA when antiarrhythmic medications are ineffective, not tolerated, or not desired by the patient". The authors also reported that "very frequent PVCs, 10,000 to 20,000 a day, can be associated with depressed LV function in some patients that is reversible with control of the PVCs, and has been referred to as PVC induced cardiomyopathy". As a result, the following PVC specific recommendation was given:

- "For patients who require arrhythmia suppression for symptoms or declining ventricular function suspected to be due to frequent PVCs (generally 15% of beats and predominately of 1 morphology) and for whom antiarrhythmic medications are ineffective, not tolerated, or not the patient's preference, catheter ablation is useful" (Class I recommendation; Level of Evidence: B-NR). **Level 5**

Heart Rhythm Society (HRS), European Heart Rhythm Association (EHRA), the Asia Pacific Heart Rhythm Society (APHRS), and the Latin American Heart Rhythm Society (LAHRS): A 2019 expert consensus statement on catheter ablation of ventricular arrhythmias from the HRS, EHRA, APHRS, and the LAHRS emphasized the importance of catheter ablation of VAs, particularly for those with structural heart disease and high-risk arrhythmias. The statement contains numerous condition specific recommendations supporting the use of catheter ablation for the treatment of VAs particularly when the VA has failed pharmacologic or medical therapy, is symptomatic, and/or to reduce the burden of arrhythmias and decrease the need for ICD shocks in individuals who are receiving ICD therapy. Specific to cardiomyopathy and PVCs, the authors stated that when the PVC burden is >15–25% of total beats and a comprehensive cardiac evaluation fails to identify alternate etiologies, PVC-induced cardiomyopathy should be suspected. Therefore, the following recommendation was given:

- "In patients with cardiomyopathy suspected to be caused by frequent and predominantly monomorphic PVCs and for whom AADs [antiarrhythmic drug] are ineffective, not tolerated, or not preferred for long-term therapy, catheter ablation is recommended" (Class I recommendation; LOE B-NR).

All of the recommendations are based on expert opinions, clinical experience, and data from peer-reviewed studies including randomized controlled trials, observational studies, and registries (Cronin, et al., 2020). **Level 5**

<u>Cardio-neuroablation (CNA)</u>
There is insufficient evidence in the published peer-reviewed scientific literature to support the safety and efficacy of CNA for any indication. Studies primarily include retrospective, open label, patient cohorts, and a single RCT with short-term follow-ups, small patient populations, and heterogenous patient populations and treatment parameters.

Cardio-neuroablation (cardioneuroablation, cardioneuralablation) has been proposed as a treatment option for conditions associated with or exacerbated by increased vagal tone (e.g., vasovagal syncope, functional atrioventricular block, sinus node dysfunction). This ablative procedure is aimed at vagal denervation. (Pachon, et al., 2023; Piotrowski, et al., 2023; Aksu, et al., 2021; Gorev, et al., 2021; Hu and Yao, 2020; Debruyne, et al., 2018; Aksu, et al., 2016; Pachon, et al., 2011).

Professional Societies/Organizations

European Heart Rhythm Association (EHRA), the Heart Rhythm Society (HRS), the Asia Pacific Heart Rhythm Society (APHRS) and the Latin American Heart Rhythm Society (LAHRS): In a 2024 scientific statement on CNA for the treatment of reflex syncope and functional bradyarrhythmias, the EHRA, HRS, APHRS and LAHRS stated that strong recommendations on the use of CNA cannot be made because there is a lack of well-designed randomized and sham-controlled clinical trials evaluating the safety and efficacy of this technology (Aksu, et al., 2024).

Medicare Coverage Determinations

	Contractor	Determination Name/Number	Revision Effective Date
NCD	National	No National Coverage Determination found	
LCD		No Local Coverage Determination found	

Note: Please review the current Medicare Policy for the most up-to-date information.
(NCD = National Coverage Determination; LCD = Local Coverage Determination)

Coding Information

Notes:

1. This list of codes may not be all-inclusive since the American Medical Association (AMA) and Centers for Medicare and Medicaid Services (CMS) code updates may occur more frequently than policy updates
2. Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

Transcatheter Ablation

Considered Medically Necessary when criteria in the applicable policy statements listed above are met:

CPT®* Codes	Description
93620†	Comprehensive electrophysiologic evaluation including insertion and repositioning of multiple electrode catheters with induction or attempted induction of arrhythmia; with right atrial pacing and recording, right ventricular pacing and recording, His bundle recording
93621†	Comprehensive electrophysiologic evaluation including insertion and repositioning of multiple electrode catheters with induction or attempted induction of arrhythmia; with left atrial pacing and recording from coronary sinus or left atrium (List separately in addition to code for primary procedure)
93622†	Comprehensive electrophysiologic evaluation including insertion and repositioning of multiple electrode catheters with induction or attempted induction of arrhythmia; with left ventricular pacing and recording (List separately in addition to code for primary procedure)
93623†	Programmed stimulation and pacing after intravenous drug infusion (List separately in addition to code for primary procedure)
93653†	Comprehensive electrophysiologic evaluation with insertion and repositioning of multiple electrode catheters, induction or attempted induction of an arrhythmia with right atrial pacing and recording and catheter ablation of arrhythmogenic focus, including intracardiac electrophysiologic 3-dimensional mapping, right ventricular pacing and recording, left atrial pacing and recording from coronary sinus or left

CPT®* Codes	Description
	atrium, and His bundle recording, when performed; with treatment of supraventricular tachycardia by ablation of fast or slow atrioventricular pathway, accessory atrioventricular connection, cavo-tricuspid isthmus or other single atrial focus or source of atrial re-entry
93654†	Comprehensive electrophysiologic evaluation with insertion and repositioning of multiple electrode catheters, induction or attempted induction of an arrhythmia with right atrial pacing and recording and catheter ablation of arrhythmogenic focus, including intracardiac electrophysiologic 3-dimensional mapping, right ventricular pacing and recording, left atrial pacing and recording from coronary sinus or left atrium, and His bundle recording, when performed; with treatment of ventricular tachycardia or focus of ventricular ectopy including left ventricular pacing and recording, when performed
93655†	Intracardiac catheter ablation of a discrete mechanism of arrhythmia which is distinct from the primary ablated mechanism, including repeat diagnostic maneuvers, to treat a spontaneous or induced arrhythmia (List separately in addition to code for primary procedure)
93662†	Intracardiac echocardiography during therapeutic/diagnostic intervention, including imaging supervision and interpretation (List separately in addition to code for primary procedure)

†**Note: Considered Not Medically Necessary when used to treat inappropriate sinus tachycardia (IST) and/or premature atrial contraction (PAC)**

Cardio-neuro Ablation (CNA)

Experimental/Investigational/Unproven :

CPT®* Codes	Description
93799	Unlisted cardiovascular service or procedure

Thorascopic Epicardial Ablation

Experimental/Investigational/Unproven for the treatment of atrial flutter:

CPT®* Codes	Description
93799	Unlisted cardiovascular service or procedure

References

1. Aksu T, Brignole M, Calo L, Debruyne P, Di Biase L, Deharo JC, Fanciulli A, Fedorowski A, Kulakowski P, Morillo C, Moya A, Piotrowski R, Stec S, Sutton R, van Dijk JG, Wichterle D, Tse HF, Yao Y, Sheldon RS, Vaseghi M, Pachon JC, Scanavacca M, Meyer C, Amin R, Gupta D, Magnano M, Malik V, Schauerte P, Shen WK, Acosta JCZ. Cardioneuroablation for the treatment of reflex syncope and functional bradyarrhythmias: A Scientific Statement of the European Heart Rhythm Association (EHRA) of the ESC, the Heart Rhythm Society (HRS),

the Asia Pacific Heart Rhythm Society (APHRS) and the Latin American Heart Rhythm Society (LAHRS). Europace. 2024 Aug 3;26(8):euae206.

2. Aksu T, Golcuk E, Yalin K, et al. Simplified cardioneuroablation in the treatment of reflex syncope, functional AV block, and sinus node dysfunction. Pacing Clin Electrophysiol. 2016;39(1):42-53.

3. Aksu T, Guler TE, Bozyel S, et al. Medium-term results of cardioneuroablation for clinical bradyarrhythmias and vasovagal syncope: effects on QT interval and heart rate. J Interv Card Electrophysiol. 2021;60(1):57-68.

4. Al-Khatib SM, Arshad A, Balk EM, Das SR, Hsu JC, Joglar JA, Page RL. Risk Stratification for Arrhythmic Events in Patients With Asymptomatic Pre-Excitation: A Systematic Review for the 2015 ACC/AHA/HRS Guideline for the Management of Adult Patients With Supraventricular Tachycardia: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. Circulation. 2016 Apr 5;133(14):e575-86.

5. Al-Khatib SM, Stevenson WG, Ackerman MJ, Bryant WJ, Callans DJ, Curtis AB, Deal BJ, Dickfeld T, Field ME, Fonarow GC, Gillis AM, Granger CB, Hammill SC, Hlatky MA, Joglar JA, Kay GN, Matlock DD, Myerburg RJ, Page RL. 2017 AHA/ACC/HRS Guideline for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. Circulation. 2018 Sep 25;138(13):e272-e391. Reaffirmed 2023.

6. American College of Cardiology: CardioSmart. Supraventricular Tachycardia. Last Edited Dec 2024. Accessed Feb 13, 2025. Available at URL address: https://www.cardiosmart.org/topics/supraventricular-tachycardia

7. American Heart Association. Ablation for Arrhythmias. Oct 2024. Accessed Feb 13, 2025. Available at URL address: https://www.heart.org/en/health-topics/arrhythmia/prevention--treatment-of-arrhythmia/ablation-for-arrhythmias

8. Calkins H, Hindricks G, Cappato R, Kim YH, Saad EB, Aguinaga L, et al. 2017 HRS/EHRA/ECAS/APHRS/SOLAECE expert consensus statement on catheter and surgical ablation of atrial fibrillation: Executive summary. J Arrhythm. 2017 Oct;33(5):369-409.

9. Centers for Medicare and Medicaid Services (CMS). Local Coverage Determinations (LCDs) alphabetical index. Accessed Feb 13, 2025. Available at URL address: https://www.cms.gov/medicare-coverage-database/reports/local-coverage-proposed-lcds-alphabetical-report.aspx?proposedStatus=A&sortBy=title

10. Centers for Medicare and Medicaid Services (CMS). National Coverage Determinations (NCDs) alphabetical index. Accessed Feb 13, 2025. Available at URL address: https://www.cms.gov/medicare-coverage-database/reports/national-coverage-ncd-report.aspx?chapter=all&labOnly=allncd&sortBy=title

11. Cronin EM, Bogun FM, Maury P, Peichl P, Chen M, Namboodiri N, Aguinaga L, Leite LR, Al-Khatib SM, Anter E, Berruezo A, Callans DJ, Chung MK, Cuculich P, d'Avila A, Deal BJ, Della Bella P, Deneke T, Dickfeld TM, Hadid C, Haqqani HM, Kay GN, Latchamsetty R, Marchlinski F, Miller JM, Nogami A, Patel AR, Pathak RK, Saenz Morales LC, Santangeli P, Sapp JL Jr, Sarkozy A, Soejima K, Stevenson WG, Tedrow UB, Tzou WS, Varma N, Zeppenfeld K. 2019

HRS/EHRA/APHRS/LAHRS expert consensus statement on catheter ablation of ventricular arrhythmias. Heart Rhythm. 2020 Jan;17(1):e2-e154.

12. Debruyne P, Rossenbacker T, Collienne C, et al. Unifocal right-sided ablation treatment for neurally mediated syncope and functional sinus node dysfunction under computed tomographic guidance. Circ Arrhythm Electrophysiol. 2018;11(9):e006604.

13. Garan H. Ventricular arrhythmias. In: Goldman L, Cooney KA, ed. Goldman-Cecil Medicine. 27th ed, Vol 2. Philadelphia, PA: Elsevier; 2024:332-340.

14. Goldberger AL. Ventricular arrhythmias. In: Goldberger ZD, Shvilkin A, eds. Goldberger's Clinical Electrocardiography. 10th ed. Philadelphia, PA: Elsevier Inc; 2024:172-189.

15. Gorev MV, Nardaia SG, Sergeeva OA, et al. Long-term success of cardioneuroablation in a patient with tachycardia-bradycardia syndrome and syncope. J Innov Card Rhythm Manag. 2021;12(10):4715-4719.

16. Hu F, Yao Y. Cardioneuroablation in the management of vasovagal syncope, sinus node dysfunction, and functional atrioventricular block – techniques. J Atr Fibrillation. 2020;13(1):2394.

17. Joglar JA, Chung MK, Armbruster AL, Benjamin EJ, Chyou JY, Cronin EM, Deswal A, Eckhardt LL, Goldberger ZD, Gopinathannair R, Gorenek B, Hess PL, Hlatky M, Hogan G, Ibeh C, Indik JH, Kido K, Kusumoto F, Link MS, Linta KT, Marcus GM, McCarthy PM, Patel N, Patton KK, Perez MV, Piccini JP, Russo AM, Sanders P, Streur MM, Thomas KL, Times S, Tisdale JE, Valente AM, Van Wagoner DR. 2023 ACC/AHA/ACCP/HRS Guideline for the Diagnosis and Management of Atrial Fibrillation: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Circulation. 2024 Jan 2;149(1):e1-e156.

18. Mayo Clinic. Patient Care & Health Information. Tests & Procedures. Cardiac ablation. SVT ablation. Last updated Feb 2, 2024. Accessed Feb 13, 2025. Available at URL address: https://www.mayoclinic.org/tests-procedures/svt-ablation/pyc-20385010

19. Mayo Clinic. Patient Care & Health Information. Diseases & Conditions. Supraventricular tachycardia. Last updated Mar 2024. Accessed Feb 13, 2025. Available at URL address: https://www.mayoclinic.org/diseases-conditions/supraventricular-tachycardia/symptoms-causes/syc-20355243

20. Pachon JCM, Pachon EIM, Pachon MZC, et al. Catheter ablation of severe neurally meditated reflex (neurocardiogenic or vasovagal) syncope: cardioneuroablation long-term results. Europace. 2011;13(9):1231-1242.

21. Pachon JC, Pachon EI, Aksu T, Gopinathannair R, Kautzner J, Yao Y, Kusumoto F. Cardioneuroablation: Where are we at? Heart Rhythm O2. 2023 Mar 21;4(6):401-413.

22. Page RL, Joglar JA, Caldwell MA, Calkins H, Conti JB, Deal BJ, et al. 2015 ACC/AHA/HRS Guideline for the Management of Adult Patients With Supraventricular Tachycardia: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. J Am Coll Cardiol. 2016 Apr 5;67(13):e27-e115. (Correction. J Am Coll Cardiol. 2016 Dec 27;68(25):2922-2923.)

23. Pediatric and Congenital Electrophysiology Society (PACES); Heart Rhythm Society (HRS); American College of Cardiology Foundation (ACCF); American Heart Association (AHA); American Academy of Pediatrics (AAP); Canadian Heart Rhythm Society (CHRS), Cohen MI, Triedman JK, Cannon BC, Davis AM, Drago F, Janousek J, et al. PACES/HRS expert consensus statement on the management of the asymptomatic young patient with a Wolff-Parkinson-White (WPW, ventricular preexcitation) electrocardiographic pattern: developed in partnership between the Pediatric and Congenital Electrophysiology Society (PACES) and the Heart Rhythm Society (HRS). Endorsed by the governing bodies of PACES, HRS, the American College of Cardiology Foundation (ACCF), the American Heart Association (AHA), the American Academy of Pediatrics (AAP), and the Canadian Heart Rhythm Society (CHRS). Heart Rhythm. 2012 Jun;9(6):1006-24.

24. Piotrowski R, Baran J, Sikorska A, et al. Cardioneuroablation for Reflex Syncope: Efficacy and Effects on Autonomic Cardiac Regulation - A Prospective Randomized Trial. JACC Clin Electrophysiol. 2023;9(1):85-95.

25. Sacks NC, Everson K, Emden MR, Cyr PL, Wood DR, Raza S, Wood KA, Pokorney SD. Disparities in the Management of Newly Diagnosed Paroxysmal Supraventricular Tachycardia for Women Versus Men in the United States. J Am Heart Assoc. 2020 Oct 20;9(19):e015910.

26. U.S. Food and Drug Administration (FDA). Center for Devices and Radiological Health. Premarket Approval (PMA). Page Last Updated: Feb 2025. Accessed Feb 13, 2025. Available at URL address: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMA/pma.cfm

Revision Details

Type of Revision	Summary of Changes	Date
Annual Review	Title change. Added policy statement for: • PVCs • Ventricular arrhythmias • thoracoscopic epicardial ablation for atrial flutter.	7/15/2025
Annual Review	• Added policy statement for inappropriate sinus tachycardia and premature atrial contraction (PAC). • Added policy statement for cardio-neuroablation.	4/15/2024