

**Policy #: 141**

**Original policy date: 2/2005**  
**Revised date: 11/1/2009**

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**Title**

**Radiofrequency Ablation of the Pulmonary Vein for Treatment of Atrial Fibrillation**

For Catheter Ablation of other Arrhythmogenic Foci, please see policy #[123](#).

**Description**

Atrial fibrillation (AF) is the most common cardiac arrhythmia, with a prevalence estimated at 0.4% of the population, increasing with age. The underlying mechanism of atrial fibrillation involves an interplay between electrical triggering events and the myocardial substrate that permits propagation and maintenance of the aberrant electrical circuit. The most common focal trigger of atrial fibrillation appears to be located within the cardiac muscle that extends into the pulmonary veins.

Atrial fibrillation accounts for approximately one third of hospitalizations for cardiac rhythm disturbances. Symptoms of atrial fibrillation, i.e., palpitations, decreased exercise tolerance, and dyspnea, are primarily related to poorly controlled or irregular heart rate. The loss of atrioventricular (AV) synchrony results in a decreased cardiac output, which can be significant in patients with compromised cardiac function. In addition, patients with AF are at higher risk for stroke, and anticoagulation is typically recommended. Atrial fibrillation is also associated with other cardiac conditions, such as valvular heart disease, heart failure, hypertension, and diabetes. Although episodes of atrial fibrillation can be converted to normal sinus rhythm using either pharmacologic or electroshock conversion, the natural history of atrial fibrillation is one of recurrence, thought to be related to fibrillation-induced anatomic and electrical remodeling of the atria.

Atrial fibrillation can be subdivided into paroxysmal (episodes that last fewer than 7 days and are self-terminating), persistent (episodes that last for more than 7 days and can be terminated pharmacologically or by electrical cardioversion), or permanent. Treatment strategies can be broadly subdivided into rate control, in which only the ventricular rate is controlled and the atria are allowed to fibrillate, or rhythm control, in which there is an attempt to reestablish and maintain normal sinus rhythm. Rhythm control has long been considered an important treatment goal for management of AF, although its primacy has recently been challenged by the results of several randomized trials that reported that pharmacologically maintained rhythm control offered no improvement in mortality or cardiovascular morbidity compared to rate control.

Currently, the main indications for a rhythm control are for patients with paroxysmal or persistent AF who have hemodynamic compromise associated with episodes of AF or who have bothersome symptoms despite adequate rate control. A rhythm control strategy involves initial pharmacologic or electronic cardioversion, followed by pharmacologic treatment to maintain normal sinus rhythm. However, antiarrhythmic medications are often not effective in maintaining sinus rhythm. As a result, episodes of recurrent AF are typical, and patients with persistent AF may require multiple episodes of cardioversion. Implantable atrial defibrillators, which are designed to detect and terminate an episode of AF, may be an alternative in patients otherwise requiring serial cardioversions, but these have not yet achieved widespread use. Patients with paroxysmal AF, by definition, do not require cardioversion, but may be treated pharmacologically to prevent further arrhythmic episodes.

Treatment of permanent AF, by definition, focuses on rate control, using either pharmacologic therapy or ablation of the AV node followed by ventricular pacing. Although AV nodal ablation produces symptomatic improvement, it does entail lifelong anticoagulation (due to the ongoing fibrillation of the atria), loss of AV synchrony, and lifelong pacemaker dependency. Implantable defibrillators are contraindicated in patients with permanent AF.

The cited treatment options are not considered curative. A variety of ablative procedures have been investigated as potentially curative approaches, or perhaps modifying the arrhythmia such that drug therapy becomes more effective. Ablative approaches focus on interruption of the electrical pathways that contribute to AF through modifying the triggers of AF and/or the myocardial substrate that maintains the aberrant rhythm. The Maze procedure, an open surgical procedure often combined with other cardiac surgeries (i.e., valve repair), is an ablative procedure involving sequential atriotomy incisions designed to create electrical barriers that prevent the maintenance of AF. Because of the highly invasive nature of this procedure, it is currently reserved mainly for patients who are undergoing open heart surgery for other reasons, such as valve repair or coronary artery bypass grafting.

Radiofrequency ablation using a percutaneous catheter-based approach is a widely used technique for a variety of supraventricular arrhythmias, in which intracardiac mapping identifies a discrete arrhythmogenic focus that is the target of ablation. The situation is more complex for AF, since there is not a single arrhythmogenic focus. Since the inception of ablation techniques in the early 1990s, there has been a progressive understanding of the underlying electrical pathways in the heart that are associated with AF. In the late 1990s, it was recognized that AF most frequently arose from an abnormal focus at or near the junction of the pulmonary veins and the left atrium, thus leading to the feasibility of more focused, percutaneous ablation techniques. The basic strategies that have emerged for focal ablation within the pulmonary veins, as identified by electrophysiologic mapping, are segmental ostial ablation guided by pulmonary vein potential (electrical approach), or circumferential pulmonary vein ablation (anatomic approach). Circumferential pulmonary vein ablation is the most commonly used approach at the present time.

#### **When services are covered for commercial products and for Medicare HMO Blue, Medicare PPO Blue, and Blue Medicare PFFS PlusRx**

We cover **transcatheter radiofrequency ablation of the pulmonary veins** as a treatment for atrial fibrillation (AF) for the following indications:<sup>1</sup>

- patients with symptomatic paroxysmal or persistent atrial fibrillation, who have failed antiarrhythmic medications, as an alternative to continued medical management; or
- patients with class II or III congestive heart failure and symptomatic AF in whom heart rate is poorly controlled by standard medications, as an alternative to atrioventricular nodal ablation and pacemaker insertion.

#### **When services are not covered for commercial products or for Medicare HMO Blue, Medicare PPO Blue, and Blue Medicare PFFS PlusRx**

We do not cover **transcatheter ablation of the pulmonary veins** as a treatment for AF since it is considered investigational<sup>1</sup> for all other indications and does not meet the Blue Cross Blue Shield of Massachusetts Medical Technology Assessment Guidelines, #[350](#).

#### **Individual consideration**

All our medical policies are written for the majority of people with a given condition. Each policy is based on medical science. For many of our medical policies, each individual's unique clinical circumstances may be considered in light of current scientific literature. For consideration of an individual patient, physicians may send relevant clinical information to:

**For services already billed**

Blue Cross Blue Shield of Massachusetts  
 Provider Appeals  
 PO Box 986065  
 Boston, MA 02298

**Prior to performance of service**

Blue Cross Blue Shield of Massachusetts  
 Case Creation/Medical Policy  
 One Enterprise Drive  
 Quincy, MA 02171  
 Tel: 1-800-327-6716  
 Fax: 1-888-641-5330

**Authorization Information****For Managed Care members:**

- No authorization is required for this service when performed in an outpatient setting; authorization is required when performed in an inpatient setting; *see **Managed Care Guidelines** for additional requirements.*

**For Indemnity and PPO members:**

- No authorization is required for this service when performed in an outpatient setting; authorization is required when performed in an inpatient setting; *see **Indemnity and PPO Guidelines** for additional requirements.*

**Managed Care Guidelines**

**All authorization requirements are determined by the individual's subscriber certificate, explanation of coverage, or summary plan description, however;**

- **For Medicare HMO Blue members:** The service must meet the criteria for coverage noted in this policy, be medically necessary, prescribed by a plan physician and provided by a network provider.
- **For Medicare HMO Blue members:** Referrals are required for all visits to a specialist.
- For all other Managed Care plans, any specialist visit requires a referral, except for visits performed by OB/GYN specialists.
- Authorization is required for an inpatient admission.

**Indemnity and PPO Guidelines**

**All authorization requirements are determined by the individual's subscriber certificate, explanation of coverage, or summary plan description, however;**

- Authorization is required for an inpatient admission.
- Authorizations are not required for most outpatient services as determined by the individual's subscriber certificate.
- Referrals to a specialist are not required.

**Other information**

For our Medical Technology Assessment Guidelines, see document [#350](#).

**Coding information**

*Procedure codes are from current CPT, HCPCS Level II, Revenue Code, and/or ICD-9-CM manuals, as recommended by the American Medical Association, Centers for Medicare and Medicaid Services and American Hospital Associations. Blue Cross Blue Shield Association national codes may be developed when appropriate.*

*The following codes are included below for informational purposes. Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.*

**CPT codes:**

- **93651:** intracardiac catheter ablation of arrhythmogenic focus; for treatment of supraventricular tachycardia by ablation of fast or slow atrioventricular pathways, accessory atrioventricular connections or other atrial foci, singly or in combination
- **93799:** unlisted cardiovascular service or procedure

**Note:** There is no specific CPT code for pulmonary vein ablation.

**Facility coding****ICD-9 CM procedure codes:**

- **37.34:** excision or destruction of other lesion or tissue of heart, other approach (i.e., ablation of heart tissue via peripherally inserted catheter)

**Policy update history**

Updated 2/05 to exclude coverage for catheter ablation of arrhythmogenic foci in the pulmonary veins as a treatment of atrial fibrillation; effective May 2005. Updated 9/05 to include references on ablation of arrhythmogenic foci in the pulmonary veins from the 2005 BCBSA National Policy. Updated 6/07 based on a comparison review of the BCBSA national policy, Pulmonary Vein Isolation as a Treatment of Atrial Fibrillation; BCBSMA continues to benchmark the unchanged national policy statement- investigational. Updated 11/07 based on a comparison review of the BCBSA national medical policy, Pulmonary Vein Isolation as a Treatment of Atrial Fibrillation; footnote edited to include added references; BCBSA coverage determination remains unchanged, investigational; BCBSMA continues to benchmark the BCBSA policy. Reviewed 04/09 based on a comparison of the BCBSA national medical policy, Radiofrequency Ablation of the Pulmonary Vein for the Treatment of Atrial Fibrillation; which BCBSA now covers for specific indications; BCBSMA will benchmark the BCBSA medical policy effective 11/1/2009 as published in the August 2009 Provider Focus. Reviewed 4/09 MPG – Cardiology, no changes in coverage were made. Updated 11/09 to add coverage of radiofrequency ablation of the pulmonary vein for treatment of atrial fibrillation for commercial products and for Medicare HMO Blue, Medicare PPO Blue, and Blue Medicare PFFS PlusRx, effective 11/1/09. New policy #141, issued 11/1/2009. This treatment was previously addressed on medical policy #123, Catheter Ablation of Other Arrhythmogenic Foci.

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#### Footnotes

<sup>1</sup> Based on BCBSA national policy 2.02.19, Radiofrequency Ablation of the Pulmonary Vein for the Treatment of Atrial Fibrillation, issued 1/2009.