

## Evidence Based Guideline

# Maze Procedure for Atrial Fibrillation or Flutter

**File Name:** maze\_procedure\_for\_atrial\_fibrillation\_or\_flutter  
**Origination:** 6/1994  
**Last Review:** 3/2006

**Active guideline, no longer scheduled for routine literature review.**

### Description of Procedure or Service

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Atrial fibrillation (AF) is a rapid and irregular heart beat that occurs above the ventricle in the upper chambers of the heart. It is characterized by disorganized activity without effective [atrial](#) contraction. The upper chambers are frequently abnormal in patients with atrial fibrillation and show some enlargement and increased conduction time. [Atrial flutter](#) (AFL) is a variation of atrial fibrillation.

The Maze procedure is a surgical intervention that treats atrial fibrillation (AF) by interrupting the circular electrical patterns that are responsible for this arrhythmia (abnormal heart rhythm). Strategic placement of incisions in both [atria](#) stops the formation and the conduction of errant electrical impulses and channels the normal electrical impulse in one direction from the top of the heart to the bottom. Scar tissue generated by the incisions permanently blocks the travel routes of the electrical impulses that cause atrial fibrillation, eliminating the arrhythmia.

The Maze procedure involves making incisions in the heart that are intended to do the following:

- ◆ direct an impulse from the [sinoatrial \(SA\) node](#) to the atrioventricular (AV) node;
- ◆ preserve activation of the entire atrial [myocardium](#); and
- ◆ block re-entrant impulses that are responsible for AF or AFL.
- ◆ Transmural [atrial](#) incisions are intended to interrupt all of the potential macroreentrant circuits in the right [atrium](#), creating “blind alleys” along the route from the [SA](#) to the [AV node](#). The intention is to form an electrical conduit, or maze, from the SA to the [AV node](#), so that an electrical impulse originating in the [SA node](#) can only exit from that area in one direction. This impulse then reaches the [AV node](#) and results in synchronous ventricular contraction.

Alternative methods of creating lesions in the atria by ablation have been developed, using energy sources such as radiofrequency, cryotherapy, microwave and ultrasound.

### Evidence Based Guideline for Maze Procedure for Atrial Fibrillation or Flutter

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The Maze procedure may be appropriate for drug-resistant hemodynamically significant atrial fibrillation or [atrial flutter](#).

### Medical Evidence regarding Maze Procedure for Atrial Fibrillation or Flutter indi-

## Policy: Maze Procedure for Atrial Fibrillation or Flutter

### **cates it is not recommended in the following situations:**

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The Maze procedure is not recommended for indications other than drug-resistant hemodynamically significant atrial fibrillation or [atrial flutter](#).

### **Benefits Application**

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Please refer to certificate for availability of benefit. This guideline relates only to the services or supplies described herein. Benefits may vary according to benefit design; therefore certificate language should be reviewed before applying the terms of the policy.

### **Billing/Coding/Physician Documentation Information**

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This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at [www.bcbsnc.com](http://www.bcbsnc.com). They are listed in the Category Search on the Medical Policy search page.

*Applicable codes: 33253, 33254, 33255, 33256, 33257, 33258, 33259, 33265, 33266*

### **Medical Term Definitions**

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#### **Atrial flutter**

a condition of cardiac arrhythmia in which the atrial contractions are rapid (200-320 per minute), but regular. The ventricles are not able to respond to each atrial impulse, so that a partial block is usually present.

#### **Atrioventricular node**

microscopic collection of specialized cardiac muscle fibers located in the atrium. These muscle fibers transmit the impulse to contract the heart from the atrium to the ventricles.

#### **Atrium**

an upper chamber of the heart; plural is atria.

#### **Myocardium**

the middle and the thickest layer of the heart wall, composed of cardiac muscle.

#### **Sinoatrial node**

where normal cardiac rhythm originates. Also known as the “pacemaker” of the heart.

### **Scientific Background and Reference Sources**

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National Association - 12/95

Medical Policy Advisory Group - 1/99

Specialty Matched Consultant Advisory Panel - 8/2000

Medical Policy Advisory Group - 10/2000

## Policy: Maze Procedure for Atrial Fibrillation or Flutter

Specialty Matched Consultant Advisory Panel - 8/2002

BCBSA Medical Policy Reference Manual 7.01.14, 7/12/02

BCBSA Medical Policy Reference Manual [Electronic Version]. 7.01.14, 10/09/03

ECRI Health Technology Forecast (2004, April 9). Arrhythmia. Retrieved April 13, 2004 from [http://www.ta.ecri.org/Forecast/Prod/summary/detail.aspx?doc\\_id=4944&q=maze+surgery&anm](http://www.ta.ecri.org/Forecast/Prod/summary/detail.aspx?doc_id=4944&q=maze+surgery&anm)

Romano MA, Bach DS, Pagani FD, Prager RL, Deeb GM, Bolling SF. (April 2004). Atrial reduction plasty Cox maze procedure: extended indications for atrial fibrillation surgery. *Ann Thorac Surg*, 77(4), 1282-7. Retrieved April 13, 2004 from [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list\\_uids=15063252](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15063252).

Gillinov AM, McCarthy PM. (November 2003). Curative surgery for atrial fibrillation: current status and minimally invasive approaches. *Expert Rev Cardiovasc Ther*, 1(4), 595-603. Retrieved April 13, 2004 from [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list\\_uids=15194996](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15194996).

Cox JL. (February 2004). Cardiac surgery for arrhythmias. *J Cardiovasc Electrophysiol*, 15(2), 250-62. Retrieved April 13, 2004 from [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list\\_uids=15028063](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15028063).

Chen MS, McCarthy PM, Lever HM, Smedira NG, Lyte BL. (February 2004). Effectiveness of atrial fibrillation surgery in patients with hypertrophic cardiomyopathy. *Am J Cardiol*, 93(3), 373-5. Retrieved April 13, 2004 from [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list\\_uids=14759397](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14759397).

Gillinov AM, McCarthy PM. (February 2004). Advances in the surgical treatment of atrial fibrillation. *Cardiol Clin*, 22(1), 147-57. Retrieved April 13, 2004 from [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list\\_uids=14994854](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14994854).

Specialty Matched Consultant Advisory Panel - 06/2004

National Institute for Health and Clinical Excellence (NICE) Interventional Procedure Guidance #121 (2005, May). Radiofrequency ablation for atrial fibrillation in associated with other cardiac surgery. Retrieved December 12, 2005, from <http://www.nice.org.uk/pdf/ip/IPG121guidance.pdf>

National Institute for Health and Clinical Excellence (NICE) Interventional Procedure Guidance #122 (2005, May). Microwave ablation for atrial fibrillation in associated with other cardiac surgery. Retrieved December 12, 2005, from <http://www.nice.org.uk/pdf/ip/IPG122guidance.pdf>

National Institute for Health and Clinical Excellence (NICE) Interventional Procedure Guidance #123 (2005, May). Cryoablation for atrial fibrillation in associated with other cardiac surgery. Retrieved December 12, 2005, from <http://www.nice.org.uk/pdf/ip/IPG123guidance.pdf>

## Policy Implementation/Update Information

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- 11/93 Evaluated: Investigational for treatment of drug resistant atrial fibrillation
- 4/94 Evaluated: Eligible for treatment of drug resistant atrial fibrillation and flutter
- 7/96 Reaffirmed: National Association reviewed 12/95. No changes.
- 1/99 Reaffirmed: Medical Policy Advisory Group
- 5/99 Reformatted, Description of Procedure or Service changed, Medical Term Definitions added.
- 8/00 Specialty Matched Consultant Advisory Panel. No changes to criteria.
- 9/00 System coding changes.

## **Policy: Maze Procedure for Atrial Fibrillation or Flutter**

- 10/00 Medical Policy Advisory Group review. No changes to criteria. Approve.
- 9/02 Specialty Matched Consultant Advisory Panel review. References added. Criteria changes.
- 5/04 Benefits Application and Billing/Coding sections updated for consistency.
- 7/29/04 Specialty Matched Consultant Advisory Panel review 06/08/2004 with no changes made in policy criteria. References added.
- 3/16/06 Specialty Matched Consultant Advisory Panel review 2/27/06. No changes made to coverage criteria. Statement added to Description "Alternative methods of creating lesions in the atria by ablation have been developed, using energy sources such as radiofrequency, cryotherapy, microwave and ultrasound." Policy number added to Key Words section. References updated. Policy status changed to: "Active policy, no longer scheduled for routine literature review."
- 9/18/06 Medical Policy changed to Evidence Based Guideline. (adn)
- 1/29/07 CPT codes updated. (adn)
- 12/31/07 Coding update. Added CPT codes 33257, 33258, 33259. (adn)
- 6/22/10 Policy Guideline Number(s) removed (amw)

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Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.