

## Evidence Based Guideline

# Transmyocardial Revascularization (TMR)

**File Name:** transmyocardial\_revascularization\_(tmr)  
**Guideline Number:** EBG.SUR6790  
**Origination:** 6/1997  
**Last Review:** 11/2005

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

### Description of Procedure or Service

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**Transmyocardial revascularization** (TMR), also known as **transmyocardial** laser **revascularization** (TMLR), is a procedure that attempts to improve blood flow to oxygen deprived (ischemic) heart muscle. TMLR is performed under general anesthesia through an opening in the chest (a thoracotomy). The procedure involves the creation of small holes or channels into the heart muscle. The goal of the procedure is to have the new channels act like blood vessels and carry blood and oxygen into the heart muscle. This procedure does not require **cardiopulmonary bypass**. TMR is intended for patients with myocardial ischemia who are not candidates for other types of **revascularization** procedures, such as **coronary artery bypass surgery** (CABG) or **percutaneous transluminal coronary angioplasty** (PTCA). It may also be utilized as an adjunct to **coronary artery bypass surgery** in patients with documented large areas of remaining ischemic myocardium that is not amenable to surgical revascularization.

### Evidence Based Guideline for Transmyocardial Revascularization

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Open **transmyocardial revascularization** may be appropriate for the following:

- ◆ Patients with New York Class III or IV angina who are not candidates for **coronary artery bypass graft** (CABG) surgery or **percutaneous transluminal coronary angioplasty** (PTCA) surgery; or
- ◆ As an adjunct to **coronary artery bypass** surgery (CABG) in patients with documented large areas of remaining ischemic myocardium that are not amenable to surgical revascularization.

#### **New York Heart Association (NYHA) Functional Classification**

|           |  |
|-----------|--|
| Class I   | Ordinary physical activity does not cause symptoms               |
| Class II  | Comfortable at rest, ordinary physical activity causes symptoms  |
| Class III | Comfortable at rest, less than ordinary activity causes symptoms |
| Class IV  | Symptoms at rest   |

### Medical Evidence regarding Transmyocardial Revascularization indicates it is not recommended in the following situations:

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Transmyocardial revascularization is not recommended for any use other than those listed above.

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## Policy: Transmyocardial Revascularization (TMR)

### 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: 33140, 33141*

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

### Medical Term Definitions

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#### **Cardiopulmonary bypass**

a process of placing a patient onto a machine that circulates and oxygenates the blood outside of the body. The machine takes blood from the body, oxygenates it and then returns it to the body. The goal is to enable the surgeon time to perform heart surgery on a temporarily non-functioning heart.

#### **Coronary artery bypass graft**

a procedure that takes a healthy blood vessel from another part of the body and grafts it into the coronary artery area of the heart to overcome the diseased and/or blocked old artery. The blood is then expected to flow through the new artery (the graft) and bypass the blockage, supplying the heart with adequate blood and oxygen.

#### **Percutaneous Transluminal Coronary Angioplasty (PTCA)**

a procedure used to dilate a coronary artery. A catheter is inserted through the skin and threaded through a major blood vessel into the blocked area of the coronary artery. The inserted catheter is surrounded by a deflated balloon. Once the catheter and balloon is inside the middle of the pulmonary artery, the balloon is inflated. This flattens the blockage (generally fatty deposits) against the artery wall and enlarges the inside of the vessel.

#### **Revascularization**

creating new or improved vessels.

#### **Transmyocardial**

across or through the heart muscle.

### Scientific Background and Reference Sources

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12/96 National Association TEC evaluation

Horvath KA, Cohn LH. Transmyocardial Laser Revascularization: results of a multicenter trial with trans-

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myocardial laser revascularization used as sole therapy for end-stage coronary artery disease. *The Journal of Thoracic and Cardiovascular Surgery*. 1997;113(4):645-654.

Frazier OH, Kadipasaoglu, K. Transmyocardial Laser Revascularization. *Texas Heart Institute Journal*. 1998;25(1):24-29

BCBSA TEC Assessment. January 1999, pg. 20-24

Transmyocardial Revascularization (TMR) for Treatment of Severe Angina. [www.hcfa.gov/pubforms/transmmit/ab992260.htm](http://www.hcfa.gov/pubforms/transmmit/ab992260.htm). 4/21/1999

Medical Policy Advisory Group - 8/12/99

Medical Policy Reference Manual 11/1/1999

Specialty Matched Consultant Advisory Panel. 11/199

Medical Policy Advisory Group 12/2/1999

BCBSA Medical Policy Reference Manual - 5/31/01; 7.01.54

Specialty Matched Consultant Advisory Panels - 12/2001

Specialty Matched Consultant Advisory Panel - 11/2003

Specialty Matched Consultant Advisory Panel - 11/2005

## Policy Implementation/Update Information

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- 6/97 Original policy issued.
- 5/99 Revised based on BCBSA TEC Assessment, HCFA guidelines, and several journal articles indicating that there are health outcome advances with the surgery.
- 7/99 Reformatted, Description of Procedure or Service changed, Medical Term Definitions added.
- 8/99 Medical Policy Advisory Group
- 12/99 Reaffirmed, Medical Policy Advisory Group
- 12/00 2001 CPT code added; 33141. System coding changes.
- 12/01 Revised. Indication removed from non-covered section that states "performed as a percutaneous procedure". Removed indication from non-covered section and added to covered section that states, "as an adjunct to coronary artery bypass surgery (CABG) in patients with documented large areas of remaining ischemic myocardium that are not amenable to surgical revascularization". Added New York Heart Association (NYHA) Functional Classification table for clarity.
- 11/03 Biannual policy review. Specialty Matched Consultant Advisory Panel review. Reaffirm policy. Format change for consistency. No criteria change to policy.
- 11/17/05 Biennial policy review. Specialty Matched Consultant Advisory Panel review 11/07/05. Policy reflected current standard of care. Policy status changed to "Active policy, no longer scheduled for routine literature review."
- 9/18/06 Medical Policy changed to Evidence Based Guideline. (adn)

## **Policy: Transmyocardial Revascularization (TMR)**

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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.