

Medical Affairs Policy & Procedure

Title/Service: Lung Volume Reduction Surgery

Revised	
Reviewed	04/28/00, 4/30/04, 06/23/06, 05/18/07, 05/15/08, 04/24/09, 04/28/10, 09/16/2011
Developed	04/28/00
Policy Committee Approval	09/16/2011

Description:

Lung volume reduction surgery (LVRS) or reduction pneumoplasty, also referred to as lung shaving or lung contouring, is performed on patients with severe emphysema in order to allow the remaining compressed lung to expand, and thus, improve respiratory function.

Indications of Coverage:

Lung Volume Reduction Surgery is considered medically necessary when **all** of the following criteria are met:

- A. A radiologist has evaluated the individual's xrays or computed tomography (CT) scan and describes severe upper lobe predominant emphysema
- B. The individual's Body Mass Index (BMI) is less than 32
- C. Symptoms are stable with less than 20 mg prednisone (or equivalent) per day
- D. CT scan describes bilateral emphysema
- E. Forced expiratory volume in one second (FEV1) less than 45% of predicted (for individuals more than 70 years of age, the FEV1 must be less than 15% predicted)
- F. Total lung capacity (TLC) greater than 100% of predicted post-bronchodilator
- G. Residual volume (RV) greater than 150% of predicted post-bronchodilator
- H. Arterial blood gas studies document a PCO2 less than 60 mm Hg (less than 55 mm Hg if one mile above sea level) and a PO2 greater than 45 mm Hg on room air (greater than 30 mm Hg if one mile above sea level)
- I. Documented exercise tolerance (walks more than 140 meters within six minutes or completes three minutes of unloaded pedaling)

- J. Individual has not smoked for the previous four months and a plasma cotinine level less than 13.7 ng/mL (or arterial carboxyhemoglobin less than 2.5% if the individual is using nicotine products) is documented
- K. The pulmonologist has cleared the patient for surgery
- L. The individual has received clearance for surgery by a cardiologist if any of the following are documented:
 - 1. Unstable angina
 - 2. Left ventricular ejection fraction (LVEF) is less than 45% or cannot be estimated from the echocardiogram
 - 3. Dobutamine-radionuclide cardiac scan indicates coronary artery disease or ventricular dysfunction
 - 4. Arrhythmia (more than five premature ventricular contractions per minute or cardiac rhythm other than sinus or premature ventricular contractions on EKG at rest)
- M. The individual has completed a pulmonary rehabilitation program designed to maximize the individual's potential to successfully undergo and recover from surgery. The program must include a six to ten week series of at least sixteen, and no more than twenty preoperative sessions, each lasting a minimum of two hours. It must also include at least six, and no more than ten, postoperative sessions, each lasting a minimum of two hours, within eight weeks of the surgery.

Limitations of Coverage:

- A. Review contract and endorsements for exclusions and prior authorization or benefit requirements.
- B. If used for a condition/diagnosis other than is listed in the Indications of Coverage, deny as experimental or investigative.
- C. If used for a condition/diagnosis that is listed in the Indications of Coverage, but the criteria are not met, deny as not medically necessary.
- D. Lung volume reduction surgery is considered not medically necessary when any of the following are documented:
- E. The individual is unable to complete the preoperative pulmonary rehabilitation program

- F. FEV0 is less than 20% of predicted value with either homogeneous distribution of emphysema on CT scan, or carbon monoxide diffusing capacity of less than 20% of predicted value

Documentation Required:

- Office notes
- Imaging reports
- Pulmonary rehabilitation reports

Rationale:

This guideline is based on the Medicare National Coverage Determination, which was based on the results of the National Emphysema Treatment Trial (NETT). At this time, there is sufficient evidence to show an improvement in function and a decrease in dyspnea when the procedure is performed in carefully selected individuals. Preoperative and postoperative pulmonary rehabilitation is important in the long-term outcome of the procedure.

References:

1. Center for Medicare and Medicaid Services (CMS). National Coverage Determination (NCD): Lung Volume Reduction Surgery (Reduction Pneumoplasty). NCD 240.1. Baltimore, MD. Effective date: 11/17/2005. Available at: www.cms.gov/medicare-coverage-database/overview-and-quick-search.aspx?list_type=ncd. Accessed: 25 Aug 11.

Approved by the Medical Director