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<b>Preauthorization</b>	No	<b>Review Dates:</b> 03/07, 05/08, 05/09, 03/10, 03/11, 03/12, 03/13, 03/14, 03/15, 03/16, 03/17, 03/18, 03/19, 03/20	

***Preauthorization is not required.***

*The following protocol contains medical necessity criteria that apply for this service. The criteria are also applicable to services provided in the local Medicare Advantage operating area for those members, unless separate Medicare Advantage criteria are indicated. If the criteria are not met, reimbursement will be denied and the patient cannot be billed. Please note that payment for covered services is subject to eligibility and the limitations noted in the patient's contract at the time the services are rendered.*

Populations	Interventions	Comparators	Outcomes
Individuals: • With moderate-to-severe chronic obstructive pulmonary disease	Interventions of interest are: • Single course of outpatient pulmonary rehabilitation	Comparators of interest are: • Usual care without outpatient pulmonary rehabilitation	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life
Individuals: • With idiopathic pulmonary fibrosis	Interventions of interest are: • Single course of outpatient pulmonary rehabilitation	Comparators of interest are: • Usual care without outpatient pulmonary rehabilitation	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life
Individuals: • With bronchiectasis	Interventions of interest are: • Single course of outpatient pulmonary rehabilitation	Comparators of interest are: • Usual care without outpatient pulmonary rehabilitation	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life
Individuals: • With scheduled lung surgery for volume reduction, transplantation, or resection	Interventions of interest are: • Single course of preoperative outpatient pulmonary rehabilitation	Comparators of interest are: • Usual care without outpatient pulmonary rehabilitation	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life
Individuals: • Who have had lung volume reduction surgery	Interventions of interest are: • Single course of outpatient pulmonary rehabilitation	Comparators of interest are: • Usual care without outpatient pulmonary rehabilitation	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life
Individuals: • Who have had lung transplantation	Interventions of interest are: • Single course of outpatient pulmonary rehabilitation	Comparators of interest are: • Usual care without outpatient pulmonary rehabilitation	Relevant outcomes include: • Symptoms • Functional outcomes • Quality of life

Populations	Interventions	Comparators	Outcomes
Individuals: <ul style="list-style-type: none"> <li>Who have had lung cancer resection</li> </ul>	Interventions of interest are: <ul style="list-style-type: none"> <li>Single course of outpatient pulmonary rehabilitation</li> </ul>	Comparators of interest are: <ul style="list-style-type: none"> <li>Usual care without outpatient pulmonary rehabilitation</li> </ul>	Relevant outcomes include: <ul style="list-style-type: none"> <li>Symptoms</li> <li>Functional outcomes</li> <li>Quality of life</li> </ul>
Individuals: <ul style="list-style-type: none"> <li>Who have had an initial course of pulmonary rehabilitation</li> </ul>	Interventions of interest are: <ul style="list-style-type: none"> <li>Repeat or maintenance outpatient pulmonary rehabilitation</li> </ul>	Comparators of interest are: <ul style="list-style-type: none"> <li>Usual care without repeat or maintenance outpatient pulmonary rehabilitation</li> </ul>	Relevant outcomes include: <ul style="list-style-type: none"> <li>Symptoms</li> <li>Functional outcomes</li> <li>Quality of life</li> </ul>
Individuals: <ul style="list-style-type: none"> <li>With an indication for outpatient pulmonary rehabilitation</li> </ul>	Interventions of interest are: <ul style="list-style-type: none"> <li>Single course of home-based pulmonary rehabilitation</li> </ul>	Comparators of interest are: <ul style="list-style-type: none"> <li>Single course of ambulatory care-based pulmonary</li> </ul>	Relevant outcomes include: <ul style="list-style-type: none"> <li>Symptoms</li> <li>Functional outcomes</li> <li>Quality of life</li> </ul>

## DESCRIPTION

Pulmonary rehabilitation (PR) is a multidisciplinary approach to reducing symptoms and improving quality of life in patients with compromised lung function. PR programs generally include a patient assessment followed by therapeutic interventions including exercise training, education, and behavior change.

## SUMMARY OF EVIDENCE

### CHRONIC PULMONARY DISEASE REHABILITATION

For individuals with moderate-to-severe chronic obstructive pulmonary disease (COPD) who receive a single course of outpatient PR, the evidence includes numerous randomized controlled trials (RCTs) and systematic reviews. Relevant outcomes are symptoms, functional outcomes, and quality of life. The published studies found improved outcomes (i.e., functional ability, quality of life) in patients with moderate-to-severe COPD who underwent a comprehensive PR program in the outpatient setting. Among the many randomized trials, the structure of the PR programs varied, so it is not possible to provide guidance on the optimal components or duration of a PR program. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals with idiopathic pulmonary fibrosis who receive a single course of outpatient PR, the evidence includes an RCT. Relevant outcomes are symptoms, functional outcomes, and quality of life. The number of controlled studies is limited. One small RCT evaluated a comprehensive PR program in patients with idiopathic pulmonary fibrosis; at three months post intervention, outcomes did not differ between groups that did and did not receive PR. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with bronchiectasis who receive a single course of outpatient PR, the evidence includes RCTs, systematic reviews, and observational data. Relevant outcomes are symptoms, functional outcomes, and quality of life. A systematic review of four RCTs on PR for patients with bronchiectasis found that some, but not all, outcomes, improved more with PR than with nonexercise control conditions immediately after the intervention. The evidence is insufficient to determine the effects of the technology on health outcomes.

Although most published evidence on outpatient PR for chronic pulmonary diseases assesses COPD, observational studies have reported on outcomes from PR for other chronic pulmonary diseases. Clinical guidelines from

pulmonary organizations have supported the use of outpatient PR for individuals who are experiencing disabling symptoms and have significantly diminished quality of life despite optimal medical management. Therefore, outpatient PR may be considered medically necessary for this population.

#### PREPARATION FOR LUNG SURGERY

For individuals with scheduled lung surgery for volume reduction, transplantation, or resection who receive a single course of outpatient PR, the evidence includes RCTs and observational studies. Relevant outcomes are symptoms, functional outcomes, and quality of life. There is a lack of large RCTs comparing PR with no PR for preoperative candidates undergoing lung volume reduction surgery (LVRS), lung transplantation, or lung cancer resection. Moreover, the available studies have evaluated exercise programs, but not necessarily comprehensive PR programs. Also, the few small RCTs, and observational studies have only reported short-term outcomes and inconsistent evidence of benefit even on these outcomes. The evidence is insufficient to determine the effects of the technology on health outcomes.

Findings from the National Emphysema Treatment Trial have suggested that PR is an appropriate component of care for patients with COPD before undergoing LVRS. Also, PR is considered standard of care in patients undergoing lung transplantation to maximize preoperative pulmonary status. Thus, PR may be considered medically necessary for patients considered appropriate candidates for LVRS or lung transplantation.

#### PULMONARY REHABILITATION AFTER LUNG SURGERY

For individuals who have had LVRS who receive a single course of outpatient PR, the evidence includes a case series. Relevant outcomes are symptoms, functional outcomes, and quality of life. No published RCTs were identified. The case series evaluated a comprehensive PR program after LVRS in 49 patients who had not received preoperative PR. Health-related quality of life was higher at three to six months and 12 to 18 months postsurgery. The series did not provide data on patients who underwent LVRS and did not have postoperative PR, or patients who had preoperative PR. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have had lung transplantation who receive a single course of outpatient PR, the evidence includes RCTs, systematic reviews, and observational studies. Relevant outcomes are symptoms, functional outcomes, and quality of life. Neither of the two RCTs identified in a 2010 systematic review reported on functional outcomes, but uncontrolled studies have reported improvements in functional outcomes. An RCT, published after the systematic review, found that patients who had a postsurgical exercise intervention walked more one year postdischarge than before and had a significantly greater six-minute walk distance. Findings on other outcomes were mixed. The most recent RCT (2017) did not identify a difference in outcomes with longer duration of PR. Case series data also support improvements in six-minute walk distance after postoperative PR. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have had lung cancer resection who receive a single course of outpatient PR, the evidence includes an RCT. Relevant outcomes are symptoms, functional outcomes, and quality of life. One small RCT has evaluated a comprehensive PR program in patients who underwent thoracotomy for lung cancer. The trial was terminated early, had a high dropout rate, and reported mixed findings. An exercise-only intervention in patients who had lung cancer surgery had mixed findings and did not evaluate functional outcomes. The evidence is insufficient to determine the effects of the technology on health outcome

#### REPEAT OR MAINTENANCE PULMONARY REHABILITATION

For individuals who have had an initial course of PR who receive repeat or maintenance outpatient PR, the evidence includes RCTs. Relevant outcomes are symptoms, functional outcomes, and quality of life. There are only a few RCTs, and many of them have methodologic limitations and/or did not report clinically significant outcomes. The evidence is insufficient to determine the effects of the technology on health outcome.

## HOME-BASED PULMONARY REHABILITATION

For individuals who have an indication for outpatient PR who receive a single course of home-based PR, the evidence includes RCTs and systematic reviews. Relevant outcomes are symptoms, functional outcomes, and quality of life. Most studies of home-based PR have compared outcomes with standard care. Very few have compared home-based PR with the hospital- or clinic-based PR, and the available studies are mostly of low quality. The evidence is insufficient to determine the effects of the technology on health outcome.

## POLICY

A single course of pulmonary rehabilitation in the outpatient ambulatory care setting may be considered **medically necessary** for treatment of chronic pulmonary disease for patients with moderate to severe disease who are experiencing disabling symptoms and significantly diminished quality of life despite optimal medical management.

A single course of pulmonary rehabilitation may be considered **medically necessary** in an outpatient ambulatory care setting as a preoperative conditioning component for those considered appropriate candidates for lung volume reduction surgery (see the Lung Volume Reduction Surgery for Severe Emphysema Protocol) or for lung transplantation (see the Lung and Lobar Lung Transplant Protocol).

Pulmonary rehabilitation programs are considered **medically necessary** following lung transplantation.

Pulmonary rehabilitation programs are considered **investigational** following other types of lung surgery, including but not limited to lung volume reduction surgery and surgical resection of lung cancer.

Multiple courses of pulmonary rehabilitation are considered **investigational**, either as maintenance therapy in patients who initially respond or in patients who fail to respond, or whose response to an initial rehabilitation program has diminished over time.

Home-based pulmonary rehabilitation programs are considered **investigational**.

Pulmonary rehabilitation programs are considered **investigational** in all other situations.

## POLICY GUIDELINES

A pulmonary rehabilitation outpatient program is a comprehensive program that generally includes team assessment, patient training, psychosocial intervention, exercise training, and follow-up. The overall length of the program and the total number of visits for each component may vary from program to program.

Team assessment includes input from a physician, respiratory care practitioner, nurse, and psychologist, among others.

Patient training includes breathing retraining, bronchial hygiene, medications, and proper nutrition.

Psychosocial intervention addresses support system and dependency issues.

Exercise training includes strengthening and conditioning and may include stair climbing, inspiratory muscle training, treadmill walking, cycle training (with or without ergometer), and supported and unsupported arm exercise training. Exercise conditioning is an essential component of pulmonary rehabilitation. Education in disease management techniques without exercise conditioning does not improve health outcomes of patients who have chronic obstructive pulmonary disease.

Follow-up to a comprehensive outpatient pulmonary rehabilitation program may include supervised home exercise conditioning.

Candidates for pulmonary rehabilitation should be medically stable and not limited by another serious or unstable medical condition. Contraindications to pulmonary rehabilitation include severe psychiatric disturbance (e.g., dementia, organic brain syndrome), and significant or unstable medical conditions (e.g., heart failure, acute cor pulmonale, substance abuse, significant liver dysfunction, metastatic cancer, disabling stroke).

## BACKGROUND

In 2013, the American Thoracic Society and the European Respiratory Society defined pulmonary rehabilitation (PR) as a “comprehensive intervention based on a thorough patient assessment followed by patient-tailored therapies that include, but are not limited to exercise training, education, and behavior change.”<sup>1</sup> PR programs are intended to improve patient functioning and quality of life. Most research has focused on patients with chronic obstructive pulmonary disease, although there has been some interest in patients with asthma, cystic fibrosis, or bronchiectasis.

PR is also routinely offered to patients awaiting lung transplantation and lung volume reduction surgery. PR before lung surgery may stabilize or improve patients’ exercise tolerance, teach patients techniques that will help them recover after the procedure, and allow health care providers to identify individuals who might be suboptimal surgical candidates due to noncompliance, poor health, or other reasons.

## RELATED PROTOCOLS

Heart/Lung Transplant

Lung and Lobar Lung Transplant

Lung Volume Reduction Surgery for Severe Emphysema

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Services that are the subject of a clinical trial do not meet our Technology Assessment and Medically Necessary Services Protocol criteria and are considered investigational. *For explanation of experimental and investigational, please refer to the Technology Assessment and Medically Necessary Services Protocol.*

It is expected that only appropriate and medically necessary services will be rendered. We reserve the right to conduct prepayment and postpayment reviews to assess the medical appropriateness of the above-referenced procedures. **Some of this protocol may not pertain to the patients you provide care to, as it may relate to products that are not available in your geographic area.**

## REFERENCES

We are not responsible for the continuing viability of web site addresses that may be listed in any references below.

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