Pulmonary Rehabilitation's Role in Pulmonary Hypertension

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Pulmonary rehabilitation (PR) should be considered an adjunct therapy for the pulmonary hypertension (PH) patient. The definition of PR published by the American Thoracic Society (ATS)/European Respiratory Society (ERS) in 2006 states: "Pulmonary rehabilitation is evidencebased, multidisciplinary, and comprehensive intervention for patients with chronic respiratory disease who are symptomatic and often have decreased daily life activities. Integrated into the individualized treatment of the patient, pulmonary rehabilitation is designed to reduce symptoms, optimize functional status, increase participation, and reduce health care costs through stabilizing or reversing systemic manifestations of the disease." This definition applies to the PH patient with the ultimate goal of optimizing his or her quality of life through assessment, education, and therapeutic exercise. The PH patient's success in PR starts with a strong partnership between the referring PH clinic and the local PR program.

Pulmonary rehabilitation is not just exercise or education but *must have the essential components* including respiratory and nutritional assessment, education, therapeutic exercise, psychosocial intervention, and long-term adherence. In fact, the typical PR program may meet 3 times a week, over an 8- to 12-week period of time, include approximately 10 to 15 hours of education and 30 hours of therapeutic exercise. The commitment by the PH patient is great but so are the benefits. The success of the PR program is also measured by the strength of the PR's medical director who guides the multidisciplinary team in evidence-based practice.

The PR goals for the PH patient are not that different from the goals of PH medical management: improve cardiovascular endurance, increase exercise performance, enhance ability to perform activities of daily living (ADL), improve quality of life, reduce hospitalizations, and decrease symptoms—especially dyspnea through breathing retraining and ensuring adequate oxygenation at rest and with activity.

The table lists the components of standard PR that should be addressed with the PH patient plus additional areas of concern for PH-specific PR. The initial assessment allows the PR program to develop an individualized treatment plan for the 40+ hours of PR treatment.

Pulmonary rehabilitation can play a critical role in optimizing the treatment and quality of life for the PH patient. Pulmonary rehabilitation should become a standard of medical care for the PH patient through collaboration with PH clinics.

To find a PR program in your state go to the American Association of Respiratory Care Web site, http://www.your lunghealth.org/finding_care/qrc/pulm_care/ index.cfm or the American Association of Cardiovascular and Pulmonary Rehabilitation Web site, http://www.aacvpr.org/ Resources/SearchableCertifiedProgram Directory/tabid/113/Default.aspx.

References

1. de Man FS, Handoko ML, Groepenhoff H, et al. Effects of exercise training in patients with idio-

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pathic pulmonary arterial hypertension. *Eur Respir* J. 2009;34(3):669-675.

2. Shapiro S, Traiger GL. Exercise and Pulmonary Hypertension. In: Hodgkin JE, Celli BR, Connors GL, eds. *Pulmonary Rehabilitation: Guidelines to Success.* 4th ed. Philadelphia, PA: Mosby Elsevier; 2009:518-528.

3. Mereles D, Ehlken N, Kreuscher S, et al. Exercise and respiratory training improve exercise capacity and quality of life in patients with severe chronic pulmonary hypertension. *Circulation*. 2006;114(14): 1482-1489.

4. Adamali H, Gaine SP, Rubin LJ. Medical treatment of pulmonary arterial hypertension. *Semin Respir Crit Care Med.* 2009;30(4):484-492.

	Pulmonary Rehab	PH-Specific Pulmonary Rehab
Assessment	H&P Diagnostic test review ADL critique Psychosocial evaluation 6-minute walk test Goal development	Evaluate symptoms (syncope, dizziness, palpitations, fatigue, chest pain, peripheral edema, blood pressure) Right heart catheterization hemodynamics WHO Group diagnostic class WHO Functional class Sleep study and/or overnight oximetry Current PH drug treatment, delivery method, dose, expected side effects, back-up pumps Anticoagulation and INR Lung transplant candidacy status
Education	Lung anatomy and physiology Chronic lung diseases Description and interpretation of diagnostic tests Breathing retraining Bronchial hygiene Pulmonary medication use and side effects Importance and benefits of supplemental oxygen therapy Exercise principles Energy conservation and ADLs Nutrition Coping Advance directives Self assessment and symptom management to prevent exacerbations	Identify and self-monitor PH symptoms Recognize symptom-limited exercise Know signs of right heart failure Weight and edema checks Avoid falls if on anticoagulation INR test results and frequency Expected reaction to PH medications Emergency procedures (pumps and lines) Heart catheterizations Pregnancy risks Lung transplantation
Psychosocial Interventions	Coping strategies Depression management Control of panic and anxiety Stress reduction Relaxation techniques Anger control Support systems, including caregiver/spouse issues Sexuality Modifying addictive behaviors	Quality of life testing (eg, CAMPHOR) Loss of job or income due to disability Family dynamics Pregnancy issues Impact of severe lung disease at relatively young age Genetic testing Lack of visible signs of illness Possible lung transplant evaluation
Exercise	Quantify exercise capacity including functional status Prescription for exercise training Detect exercise-induced hypoxemia Determine need for supplemental oxygen therapy, assessing type of portable system, delivery device (pulsed vs continuous) and liter flow rate, especially when high liter flows are required Determine best home oxygen system to deliver adequate flow for safe home activity Understand nonpulmonary limitations to exercise; ie, orthopedic, balance, fall risk Diabetic patients must bring glucometer, diabetic medications, and snacks	PH PR exercise documentation form to include PH symptoms Collaborative partnership with PH clinic and PR required to communicate concerns, issues, symptoms How to exercise safely and overcome fear of exertion Always have back-up pumps and medications as prescribed Know the safety measures for lines/pumps with exercise equipment Avoid exercises that increase intrathoracic pressure or valsalva maneuvers
Long-term Adherence	Disease management including a maintenance exercise program Schedule and keep pulmonary MD follow-up appointments Keep primary MD informed and updated on medical status Attend support and educational groups Be connected with the national association for your specific disease process Comorbidites treated	Schedule and keep PH clinic appointments PH medications will be needed for life Attend PH support groups Treatment goals to prolong life, increase functional capacity and quality of life Exercise with a partner or in a supervised setting, never alone