

In Canada there is a high and growing incidence and prevalence of chronic lung disease. It is one of the leading causes of death in Canada.² One in four individuals will be diagnosed with chronic obstructive pulmonary disease (COPD) and receive treatment for the disease during their lifetime.¹ Exercise and physical activity training, prescribed by a physiotherapist, is an essential component of PR programs for improving functional performance and quality of life (QOL).²

Role of Physiotherapy in the Management of Chronic Lung Disease

Pulmonary rehabilitation (PR), including physiotherapy, is the standard of care for patients with COPD. PR programs are comprehensive, multi-disciplinary, patient-centered programs that include exercise training and self-management education, and psychosocial and nutritional interventions. Physiotherapists prescribe high-intensity lower limb aerobic training and upper and lower limb strengthening exercises to patients enrolled in PR and provide education on appropriate self-management techniques.

PR programs are provided as outpatient hospital-based programs, outpatient community-based programs and in the community. PR programs range from six to 12 weeks in duration. All delivery models are equally cost effective and result in positive health outcomes for patients with COPD.

Impact on Patient Experience

Participation in a PR program leads to a greater sense of achievement of desired health outcomes, reduced anxiety about the negative consequences of COPD, and better understanding of the variability of symptoms and personal control.³

- PR programs, including exercise training and self-management strategies, decreases respiratory symptoms and disability, and increases participation in physical and social activities.⁴
- PR reduces symptoms of anxiety and depression in patients with COPD.⁵
- PR programs enable COPD patients to remain in their homes longer.²

Impact on Population Health

Exercise and self-management strategies positively impact self-management, exercise tolerance and health-related QOL in individuals with COPD.⁵

- Multidisciplinary outpatient PR programs significantly improves exercise capacity, and QOL in people with COPD.^{6,8}
- PR significantly reduces exacerbations, hospitalizations, and days of hospitalizations in the year following participation in PR.^{7,8}
- PR for COPD reduces an individual's anxiety and shortness of breath and improves perceived health.⁸

Impact on Health Care Costs

Research shows that outpatient PR programs can produce cost effective 'cost per quality adjusted life years' (QALY) ratios, resulting in a savings of \$152 per patient with the addition of PR to standard care.⁹

- Health resource use is lower for patients with severe to very severe COPD who attend PR.⁶
- Exercise and self-management decreases COPD medication costs.⁶
- PR decreases health service utilization, and reduces direct costs with an average reduction in costs of \$344 per person per year over a one year period.¹⁰

Summary

Pulmonary Rehabilitation including physiotherapy is recommended in several international guidelines as a component in the management of COPD.⁴ It is a clinically effective tool for the management of individuals with COPD in hospitals and in the community. Physiotherapy is a cost-effective intervention that contributes to the individual's QOL and reduces demand on the health care system.

Key References:

1. Gershon AS, Warner L, Cascagnette P, Victor JC, To T. Lifetime risk of developing chronic obstructive pulmonary disease: a longitudinal population study. *Lancet*. 2011; Sep 10;378(9795):991-6.
2. Valuation of Physiotherapy Services in Canada; CPA report using MCDA analysis for determining value of physiotherapy services; Mitton G; Dionne F. 2012.
3. Fischer M, Scharloo M, Abbink K, van 't Hul A, van Ranst D, Rudolphus A, Weinman J, Rabe K, Kaptein AA. The dynamics of illness perceptions: testing assumptions of Leventhal's common-sense model in a pulmonary rehabilitation setting. *Br Journal of Health Psychol*. 2010;15(Pt4):887-903.
4. Garvey C, Fromer L, Saver DF, Yawn BP. Pulmonary rehabilitation: an underutilized resource in primary COPD care. *Phys Sportsmed*. 2010;38(4):54-60.
5. Harrison SL, Greening NJ, Williams JE, Morgan MD, Steiner MC, Singh SJ. Have we underestimated the efficacy of pulmonary rehabilitation in improving mood? *Respir Med*. 2012;106(6): 838-44.
6. Ninot G, Mouleuc G, Picot MC, Jaussent A, Hayot M, Desplan M, Brun JF, Mercier J, Prefaut C. Cost-saving effect of supervised exercise associated to COPD self-management education program. *Respir Med*. 2011; 105(3):377-85.
7. Rubi M, Renom F, Ramis F, Medinas M, Centeno MJ, Górriz M, Crespi E, Martín B, Soriano JB. Effectiveness of pulmonary rehabilitation in reducing health resources use in chronic obstructive pulmonary disease. *Archives of Physical Medicine and Rehabilitation*. 2010;91(3):364-8.
8. Nici L, Lareau S, ZuWallack R. Pulmonary rehabilitation in the treatment of chronic obstructive pulmonary disease. *Am Fam Physician*. 2010 Sep 15; 82(6):655-60
9. Griffiths TL, Phillips CJ, Davies S, Burr ML, Campbell IA. Cost-effectiveness of an outpatient multidisciplinary pulmonary rehabilitation programme. *Thorax*. 2001; 56(10):779-84.
10. Golmohammadi K, Jacobs P, Sin DD. Economic evaluation of a community based pulmonary rehabilitation program for chronic obstructive pulmonary disease. *Lung*. 2004;182(3):187-196.
11. Johnston K, Grimmer-Somers K. Pulmonary rehabilitation: overwhelming evidence but lost in translation? *Physiotherapy Canada*. 2010; 62(4): 368-73.

¹ The **quality-adjusted life year** (QALY) is a measure of disease burden, including both the quality and the quantity of life lived

The value of a health care service is more than its proven cost-effectiveness. Quality of life, access, and continuity of care and integration of services are equally important criteria when looking at the broader concept of value.