

# Rehabilitative Care for Chronic Obstructive Pulmonary Disease

## A Guide for Ontario Health Teams

### Chronic obstructive pulmonary disease: A priority population for OHTs

Chronic obstructive pulmonary disease (COPD) is one of the most common chronic diseases worldwide and the fourth leading cause of death in Canada.<sup>1,2</sup> In Ontario, one in nine adults lives with COPD.<sup>3</sup> COPD is also the second most common reason for hospitalization in Ontario and Canada.<sup>4,5</sup>

Management of COPD requires interdisciplinary care to address patients' health care and psychosocial needs.<sup>2</sup> Respiratory rehabilitation, also known as pulmonary rehabilitation, is an important and effective component of management of COPD, and locally and internationally recognized as the established standard of care.<sup>1,2,8</sup>

### Respiratory rehabilitation for individuals with COPD

→ For COVID-19 specific information, see page 4

Respiratory rehabilitation is an interdisciplinary and multi-component program of care tailored to an individual patient's need to optimize their physical and social wellness and performance, and improve their autonomy.<sup>6</sup>

Respiratory rehabilitation has many components, including:

- Exercise training (aerobic and strength training)<sup>1,2,7,8</sup>
- Psychological and social support (e.g., stress management, behaviour interventions, referral to mental health services, referral to social services, advance care planning)<sup>1,2,7,8</sup>
- Patient education and self-management (understanding lung disease and the role of exercise, medication information, oxygen, etc.)<sup>1,2,7,8</sup>
- Symptom reduction such as dyspnea management, effective coughing, energy conservation, pursed lips breathing and managing exacerbations<sup>1,2,7,8</sup>
- Nutritional counselling<sup>1,2,7,8</sup>
- Medication counselling and teach-back<sup>1,2,7,8</sup>
- Smoking cessation<sup>1,2,7,8</sup>

Respiratory rehabilitation is physician prescribed and delivered by a comprehensive interprofessional health team which may include respiratory therapists, nurse educators, physiotherapists, occupational

#### About these guides

The GTA Rehab Network's [Guides for Ontario Health Teams \(OHTs\)](#) have been developed to illustrate the role of rehabilitative care in providing connected care for OHT priority populations.

Using evidence-based information, the guides highlight practical examples of how rehabilitative care is integral to achieving positive patient outcomes for individuals seen by primary care, admitted to hospital, or living at home.

They also outline some key considerations for OHTs to support the planning and provision of integrated care for these populations.

therapists, social workers, registered dietitians and kinesiologists.<sup>7</sup> It is recommended for patients with moderate to severe, stable COPD, who have activity or exercise limitations and breathlessness despite appropriate pharmacological treatment and management.<sup>8</sup>

The benefits from respiratory rehabilitation are significant. It is the most effective therapeutic strategy for improving shortness of breath, overall health status and exercise capacity.<sup>1,9</sup> For patients with stable COPD, respiratory rehabilitation that includes at least four weeks of supervised exercise results in improvements in health-related quality of life (HRQoL) and functional exercise capacity, as well as a reduction in hospitalization.<sup>6</sup> In patients who have experienced an acute exacerbation of COPD, respiratory rehabilitation within one month of hospital discharge significantly reduces hospital readmissions and leads to significant improvement in HRQoL.<sup>10</sup>

Respiratory rehabilitation must be accessible to all individuals with moderate to severe COPD, including patients with co-occurring conditions (provided the latter are stable) and patients with recent hospitalization.<sup>1,2,6</sup> Respiratory rehabilitation is also beneficial for older patients with COPD and patients with both cognitive impairment and COPD.<sup>11,12</sup> The recommended duration of a respiratory rehabilitation program that includes aerobic and resistance training, nutrition, psychosocial and behavioural intervention, should be six to eight weeks long at a minimum, with at least twice weekly supervised sessions.<sup>12</sup>

There are three key barriers to respiratory rehabilitation. The first barrier is knowledge about its benefits in the management of COPD.<sup>1</sup> Health care providers are not always aware of the short and long-term benefits of respiratory rehabilitation and therefore do not refer those eligible to be enrolled.<sup>1</sup> Patients also lack awareness of the benefits and the availability of programs in their communities.<sup>1</sup> The second barrier is long-term uptake and completion. Increasing or introducing physical activity and achieving lasting results in patients living with COPD requires behavioural changes that do not occur easily.<sup>13</sup> Changing physical activity behavior in patients with COPD requires an interdisciplinary set of skills that includes components from respiratory medicine, rehabilitation sciences, social sciences and behavioural sciences.<sup>13</sup> The third barrier is access to programs. The most common limitations to access include geography, culture, finances and transportation.<sup>1</sup> However, there is optimism that access will increase with the availability of more local programs, the use of community centres where fitness instructors can be supported by experts in respiratory rehab, and the development of hybrid programs that include a virtual component.<sup>9,14</sup>

## How respiratory rehabilitation contributes to the care of patients with chronic obstructive pulmonary disease

<b>Primary Care/Prevention</b>
<p><b>Keeping patients healthy</b></p> <ul style="list-style-type: none"> <li>• A respiratory rehabilitation education program delivered in a primary health care centre has been shown to improve outcomes such as quality of life, fatigue, symptoms, exercise capacity, level of dyspnoea and clinical risk of exacerbation.<sup>15</sup> The program consisted of basic concepts in respiratory pathophysiology; supervised exercises; and a practical workshop on</li> </ul>

using inhalation devices, understanding chronic disease and self-care measures in case of exacerbation.<sup>15</sup>

**Supporting primary care practitioners**

- Registered respiratory therapists (RRT) and respiratory nurse educators are valuable resources in primary care settings as they support correct diagnosis, improve adherence to treatment and increase patients’ motivation to care for their respiratory health.<sup>16,17,18</sup> In addition, RRTs and nurse educators may provide patient education, motivational counselling, reviews of device technique, and knowledge of supplemental oxygen therapy and simple spirometry.<sup>16,17,18</sup>

**Improving post-operative outcomes**

- A simple and low-cost rehabilitation program consisting of home visits with phone calls and a participant-recorded diary can improve perioperative function and reduce postoperative pulmonary complications for patients with mild to moderate COPD undergoing lobectomy.<sup>19</sup>

**Acute Care**

**Improving function**

- Early rehabilitation of patients with acute respiratory failure in an intensive care unit can shorten the duration of their mechanical ventilation.<sup>20</sup>

**Improving outcomes**

- Best practice for patients with COPD admitted to acute care includes early ambulation (particularly after an acute exacerbation), bronchopulmonary (lung) hygiene, and a referral to respiratory rehabilitation.<sup>12</sup>

**Rehab/Complex Continuing Care**

**Supporting early intervention**

- Respiratory rehabilitation should begin as soon as possible, within one month of hospital discharge following an acute exacerbation.<sup>12</sup>

**Supporting best outcomes for patients in an ideal care setting**

- Centre-based respiratory rehabilitation is a preferred intervention because of its efficiency and access to exercise equipment, as well as the psychosocial support provided in a group setting.<sup>1,12</sup> It should be delivered by an interdisciplinary team and be individualized in setting goals and training to target.<sup>12</sup> It should be least six to eight weeks in duration, to total 40 hours with two to three sessions per week at 1.5-2 hours per session.<sup>12</sup> Community-based respiratory rehabilitation, whether attached to a medical centre or a fitness centre, also has an advantage over entirely home-based programs with more accessible exercise equipment and social support.<sup>12</sup>

#### **Maintaining function**

- Patients who have completed intensive respiratory rehabilitation should then transition to an exercise maintenance program.<sup>8,12</sup> In the absence of doing so, patients rarely adhere to healthy behaviours on a longer term basis, and over several months the gains in exercise tolerance as well as quality of life diminish gradually to return to pre-rehabilitation levels.<sup>12</sup>

### **Home Care/Community Support**

#### **Reducing health care use**

- Continued supervised maintenance exercise programs following inpatient or outpatient rehabilitation programs reduce respiratory-related hospital admissions and overall risk of an exacerbation.<sup>21</sup>

#### **Overcoming barriers to care**

- While centre-based respiratory rehabilitation is a preferred treatment route, where barriers to participation exist, services can be consolidated under the role of one health care professional with expertise in respiratory rehabilitation and delivered at home.<sup>12</sup> Patients receiving home-based respiratory rehabilitation should have a formal program developed.<sup>12</sup> The program goals should be developed with patient input.<sup>12, 22</sup>

#### **Improving access to care through innovation**

- Tele-health technology is a feasible and practical solution for patients with moderate to very severe COPD in improving their exercise tolerance and quality of life.<sup>23</sup> Use of this technology is growing and provides access to remote communities through real-time educational sessions from the host centre with local exercise supervision.<sup>14</sup>

#### **Improving outcomes**

- Home-based respiratory rehabilitation that includes physical training, health education, psychological support and motivational communication is a safe and effective alternative for patients, even those requiring supplemental oxygen or using ambulatory aids.<sup>23</sup> Home-based respiratory rehabilitation improves exercise tolerance, reduces anxiety and depression and increases measured health quality of life which can be maintained for several months.<sup>24</sup>

## **Caring for patients during COVID-19 pandemic and beyond**

Patients living with COPD are among those most vulnerable to COVID-19.<sup>3</sup> Currently available resources and evolving guidelines for caring for patients living with COPD during the COVID-19 pandemic include the following:

- **Global Initiative for Chronic Obstructive Lung Disease (GOLD)** - [Guidance on COVID-19](#): Brief international guidelines on best practices for patients living with COPD during the COVID-19 pandemic.
- **Canadian Thoracic Society** - [COVID-19 information for healthcare professionals and the respiratory community](#): COPD position statement to help physicians optimize management for their patients during the COVID-19 pandemic; managing COPD during COVID-19 infographic for patients; and COPD mitigation strategy for salbutamol inhaler shortage.
- **British Thoracic Society** - [COVID-19: Information for the respiratory community](#): Information, guidance and resources, including NICE rapid guideline for community-based care of patients with COPD, pulmonary rehabilitation resource pack and guidance for patients being seen in the community.
- **GTA Rehab Network** - [COVID-19 rehab resources](#): An online collection of resources on rehabilitation for patients with, or recovering from, COVID-19.

## Recommendations for Ontario Health Teams

- ✓ **Consider how to incorporate respiratory rehabilitation across your services** – Respiratory rehabilitation plays a key specialized role in comprehensive care for patients who are living with COPD. It improves symptom management for patients at different stages of COPD progression. It should be provided at different stages in patients’ COPD journey, in a coordinated manner in order to support their changing care needs.
- ✓ **Develop strategies to overcome barriers to respiratory rehabilitation** – Refer patients to respiratory rehabilitation programs. If access to programs is limited, consider introducing community models of care that align with best practices. If rehabilitative intervention for COPD patients is delivered at home, ensure a formal comprehensive program of care has been developed.
- ✓ **Solicit input from clients/patients who have received respiratory rehabilitation** – Participation and completion of respiratory rehabilitation requires a behavioural shift. Solicit input from patients who have completed the program on successful engagement strategies or consider co-designing services.
- ✓ **Follow emerging guidelines to continue to care for COPD patients during COVID-19 and beyond** – COPD patients are vulnerable to COVID-19. The guidelines can assist health professionals to optimize care and wellness of patients living with COPD while minimizing their COVID-19 exposure risk.

## References

- <sup>1</sup> Global Initiative for Chronic Obstructive Lung Disease. (2018). *Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease*. Retrieved from Global Initiative for Chronic Obstructive Lung Disease: [https://goldcopd.org/wp-content/uploads/2017/11/GOLD-2018-v6.0-FINAL-revised-20-Nov\\_WMS.pdf](https://goldcopd.org/wp-content/uploads/2017/11/GOLD-2018-v6.0-FINAL-revised-20-Nov_WMS.pdf)
- <sup>2</sup> Health Quality Ontario. (2012, March). *Chronic obstructive pulmonary disease (COPD): Final Recommendations*. Retrieved from Health Quality Ontario: <https://www.hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/chronic-obstructive-pulmonary-disease-copd>
- <sup>3</sup> Global Initiative for Chronic Obstructive Lung Disease. (2019). *GOLD COVID-19 Guidance*. Available from Global Initiative for Chronic Obstructive Lung Disease: <https://goldcopd.org/gold-covid-19-guidance/>
- <sup>4</sup> Gershon, A.S., Mecredy, G.C. & Ratnasingham, S. (2017). Chronic obstructive pulmonary disease in Ontario, 1996/97 to 2014/15 [Internet]. Toronto (ON): Institute for Clinical Evaluative Sciences. Available from: <https://www.ices.on.ca/Publications/ Atlases-and-Reports/2017/COPD>
- <sup>5</sup> Canadian Institute for Health Information. (2012). All-Cause Readmission to Acute Care and Return to the Emergency Department (Ottawa, Ont.). Retrieved from: [https://secure.cihi.ca/free\\_products/Readmission\\_to\\_acutecare\\_en.pdf](https://secure.cihi.ca/free_products/Readmission_to_acutecare_en.pdf)
- <sup>6</sup> OHTAC COPD Collaborative. (2012, March). *Chronic obstructive pulmonary disease (COPD) evidentiary framework*. Retrieved from Ontario Health Technology Assessment Series, 12 (2), 1-97. [https://www.hqontario.ca/en/mas/tech/pdfs/2012/rev\\_COPD\\_Framework\\_March.pdf](https://www.hqontario.ca/en/mas/tech/pdfs/2012/rev_COPD_Framework_March.pdf)
- <sup>7</sup> Camp, P.G., Hernandez, P., Bourbeau, J., Kirkham, A., Debigare, R., Stickland, M.K., Goodridge, D., Marciniuk, D.D., Road, J.D., Bhutani, M. & Dechman, G. (2015). Pulmonary rehabilitation in Canada: A report from the Canadian Thoracic Society COPD Clinical Assembly. *Canadian Respiratory Journal*, 22(3), 147-152. <https://doi.org/10.1155/2015/369851>
- <sup>8</sup> Health Quality Ontario. (2018, December). *Quality Standards: Chronic obstructive pulmonary disease – Care in the community for adults*. Retrieved from Health Quality Ontario: <https://www.hqontario.ca/Evidence-to-Improve-Care/Quality-Standards/View-all-Quality-Standards/Chronic-Obstructive-Pulmonary-Disease/Resources>
- <sup>9</sup> McCarthy, B., Casey, D., Devane, D., Murphy, K., Murphy, E. & Lacasse, Y. (2015). Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database System Reviews*. <https://doi.org/10.1002/14651858>
- <sup>10</sup> COPD Working Group. (2012). Pulmonary rehabilitation for patients with chronic pulmonary disease (COPD): an evidence-based analysis. *Ontario health technology assessment series*, 12(6), 1–75.
- <sup>11</sup> Cleutjens, F. A., Spruit, M. A., Ponds, R. H., Vanfleteren, L. G., Franssen, F. M., Dijkstra, J. B., Gijzen, C., Wouters, E.F.M. & Janssen, D.J.A. (2017). The impact of cognitive impairment on efficacy of pulmonary rehabilitation in patients with COPD. *Journal of American Medical Directors Association*, 18(5). <https://doi.org/10.1016/j.jamda.2016.11.016>
- <sup>12</sup> Health Quality Ontario; Ministry of Health and Long-Term Care. (2015, February). *Quality-based procedures: Clinical handbook for chronic obstructive pulmonary disease (acute and postacute)*.

Retrieved from Health Quality Ontario: <http://www.hqontario.ca/Evidenceto-Improve-Care/Health-Technology-Assessment/>

[Other-Publications/Clinical-Handbooks-for-QualityBased-Procedures](#)

<sup>13</sup> Spruit, M. A., Pitta, F., McAuley, E., ZuWallack, R. L. & Nici, L. (2015). Pulmonary rehabilitation and physical activity in patients with chronic obstructive pulmonary disease. *American Journal of Respiratory and Critical Care Medicine*, 192(8), 924-933. <https://doi.org/10.1164/rccm.201505-0929CI>.

<sup>14</sup> Stickland, M.K., Jourdain, T., Wong, E.Y.L., Rodgers, W.M., Jendzjowsky, N.G. & MacDonald, F.G. (2011). Using Telehealth technology to deliver pulmonary rehabilitation to patients with chronic obstructive pulmonary disease. *Canadian Respiratory Journal*, 18(4), 216-220. <https://doi.org/10.1155/2011/640865>

<sup>15</sup> Blaquez, M. C., Colungo Francia, C., Alvira Balada, M. C., Kostov, B., Gonzales-de Paz, L. & Siso-Almirall, A. (2018). Effectiveness of an educational program for respiratory rehabilitation of chronic obstructive pulmonary disease patients in primary care in improving the quality of life, symptoms, and clinical risk. *Atencion Primaria*, 50 (9), 539-546. <https://doi.org/10.1016/j.aprim.2017.03.019>.

<sup>16</sup> Slack, C. L., Hayward, K. & Markham, A. W. (2018). The Calgary COPD & Asthma Program: The role of the respiratory therapy profession in primary care. *Canadian Journal of Respiratory Therapy*. <https://doi.org/10.29390/cjrt-2018-018>

<sup>17</sup> Rickards, T. & Kitts, E. (2018). The roles, they are changing: Respiratory Therapists as part of the multidisciplinary, community, primary health care team. *Canadian Journal of Respiratory Therapy*, 54(4). <https://doi.org/10.29390/cjrt-2018-024>

<sup>18</sup> Fletcher, M.J. & Dahl, B.H. (2013) Expanding nurse practice in COPD: is it key to providing high quality, effective and safe patient care? *Primary Care Respiratory Journal: Journal of the General Practice Airways Group*, 22(2), 230-233. <https://doi.org/10.4104/pcrj.2013.00044>

<sup>19</sup> Rispoli, M., Salvi, R., Cennamo, A., Di Natale, D., Natale, G., Meoli, I., Gioia, M.R., Esposito, M., Nespoli, M.R., De Finis, M., Buono, S., Corcione, A., Lavoretano, S., Bianco, A., Fiorelli, A., Curcio, C. & Perrotta, F. (2020). Effectiveness of home-based preoperative pulmonary rehabilitation in COPD patients undergoing lung cancer resection. *Tumori Journals*, <https://doi.org/10.1177/0300891619900808>

<sup>20</sup> Chou, W., Lai, C. -C., Cheng, K. -C., Yuan, K. -S., Chen, C. -M. & Cheng, A. -C. (2019). Effectiveness of early rehabilitation on patients with chronic obstructive lung disease and acute respiratory failure in intensive care units: A case-control study. *Chronic Respiratory Disease*, 16, 1-8. <https://doi.org/10.1177/1479973118820310>

<sup>21</sup> Jenkins, A. R., Gowler, H., Curtis, F., Holden, N. S., Bridle, C. & Jones, A. W. (2018). Efficacy of supervised maintenance exercise following pulmonary rehabilitation on health care use: a systematic review and meta-analysis. *International Journal of Chronic Obstructive Pulmonary Disease*. <https://doi.org/10.2147/COPD.S150650>

<sup>22</sup> Paradise, R.K., Dryden, E., Elvin, D., Fisher, C., Touw, S., Trumble, L. & Batalden, M. (2020). Incorporating patient input into the design of a disease management program for COPD. *Healthcare*, 8(1). <https://doi.org/10.1016/j.hjdsi.2019.05.003>

<sup>23</sup> Marquis, N., Larivee, P., Dubois, M.-F. & Tousignant, M. (2015). In-home pulmonary telerehab with chronic obstructive pulmonary disease: A pre-experimental study on effectiveness, satisfaction, and adherence. *Telemedicine and e-Health*, 21(11). <https://doi.org/10.1089/tmj.2014.0198>



<sup>24</sup> Coquart, J. B., Le Rouzic, O., Racil, G., Wallaert, B. & Grosbois, J.-M. (2017). Real-life feasibility and effectiveness of home-based pulmonary rehabilitation in chronic obstructive pulmonary disease requiring medical equipment. *International Journal of Chronic Obstructive Pulmonary Disease*, 12. <https://doi.org/10.2147/COPD.S150827>