

# Pulmonary Tele-rehabilitation Creating a Care Network across Quebec



## INTRODUCTION

The prevalence of people diagnosed with chronic obstructive pulmonary disease (COPD), in 2011, was 594,000 in Quebec, Canada. This number is an estimate, as the disease is under-diagnosed. Less than two percent (2%) of patients with COPD have access to Pulmonary Rehabilitation (PR) in Canada despite pulmonary rehabilitation being an important part of the treatment to decrease hospitalization and improve quality of life. A retrospective analysis of data from 2017 to 2020 was completed to document the feasibility and clinical impacts (quality of life and exercise tolerance) of the program. The results were published in Annals of Thoracic Surgery in January 2022 and confirmed that clinical outcomes following PR were comparable in the groups receiving face-to-face rehabilitation, and those receiving it virtually. Significant improvements in 6MWT and CAT scores were noted in both groups immediately after PR. Participants in both programs showed persistent improvement in 6MWT at 1, 3, 6 and 12 months after PR. Innovation and a Value-Based Healthcare (VBHC) approach was therefore needed to optimize access to this health care service.

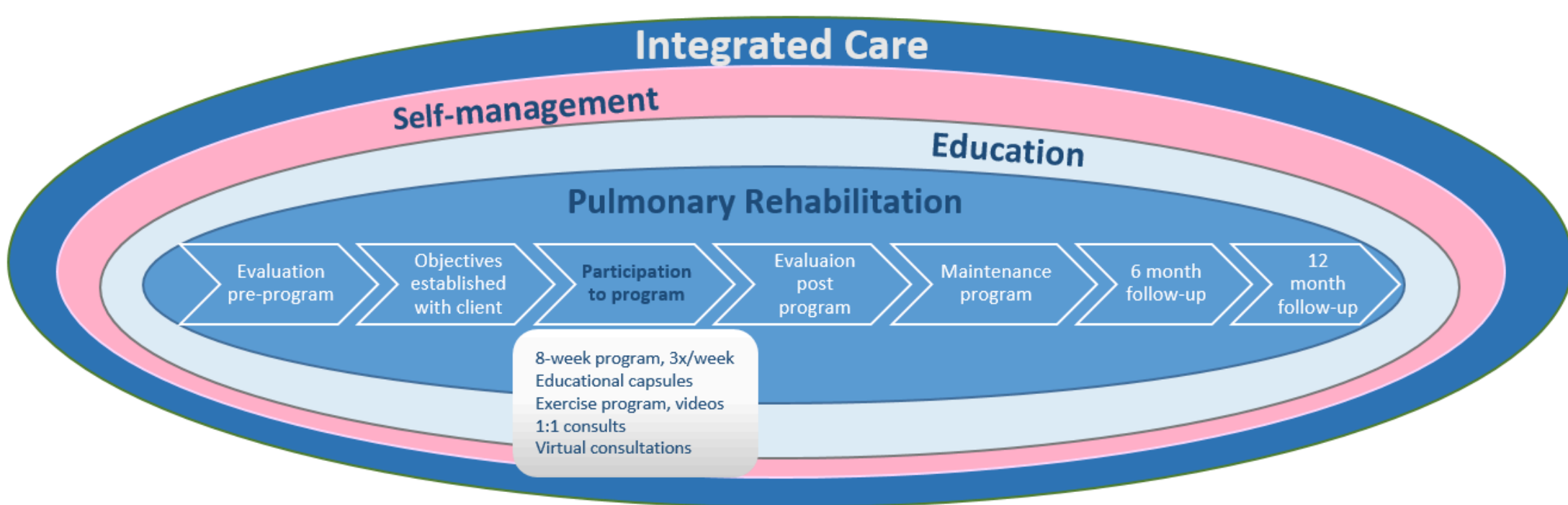
## OBJECTIVE

The objective of the program was to improve accessibility to pulmonary rehabilitation and measure the impact of a new delivery approach on patients using patient-reported outcomes (PROs) and patient-reported experience (PREs). Until the creation of the Tele-Pulmonary Rehabilitation program, this service was offered mainly in four (4) tertiary centers across Quebec. Using a patient-centered and an integrated care model with community-based teams, we aimed at standardizing the service offer to ensure equitable access to a specialized pulmonary rehabilitation team, regardless of the user's home territory, while respecting local initiatives and reducing waiting times, which can reach more than a year for an assessment for a PR program. While incorporating the VBHC concepts, a systematic measurement of patient outcomes and experiences enabled the program for continuous quality improvement, while creating personalized care pathways with our community-based partners in the delivery of PR. Finally, it aims to support primary care teams and family doctors by giving them access to a Respiriologist, as well as to health professionals specialized in pulmonary diseases.

## METHODS

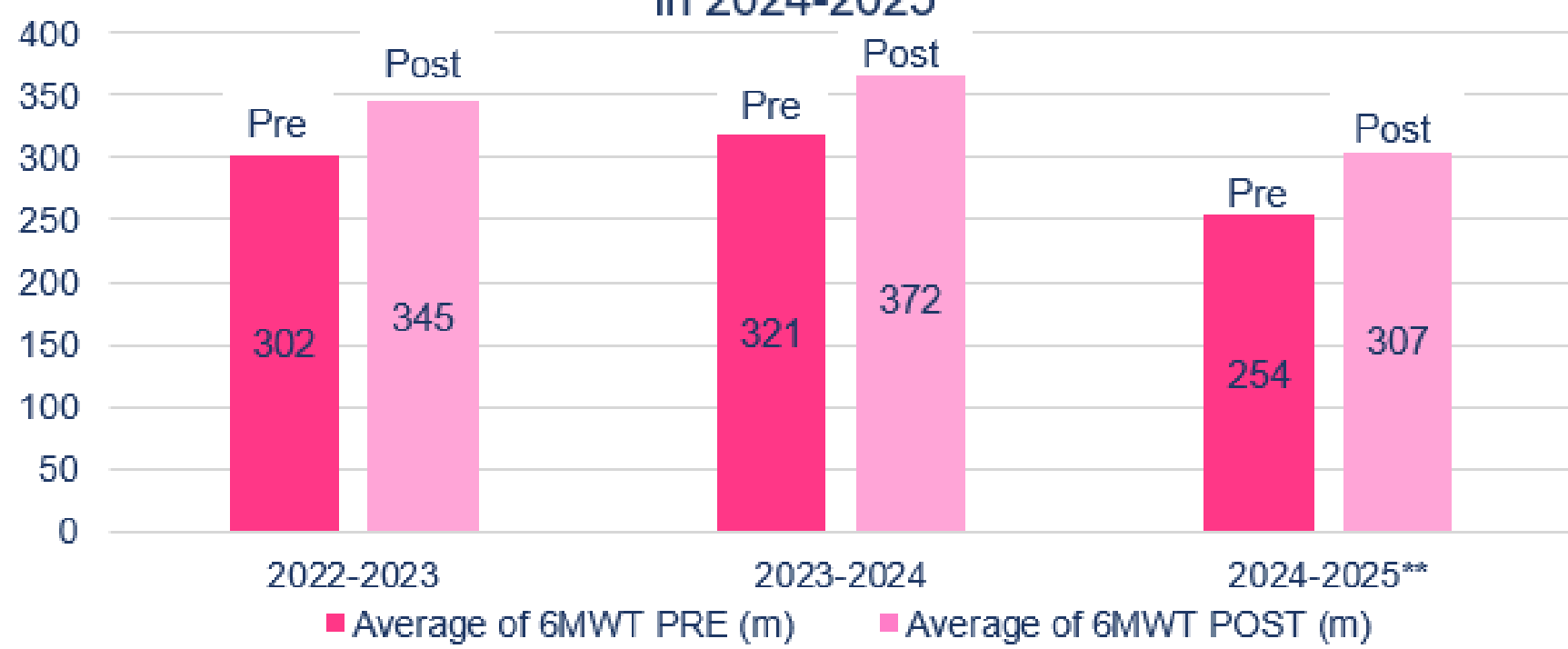
- Aims to reach all users with chronic respiratory diseases, such as COPD or interstitial diseases, improving access to specialized pulmonary rehabilitation services.
- Developed with a philosophy of community-based and integrated care by offering a quality service close to home and adapted to users' needs.
- Based on Canadian recommendations for optimal pulmonary rehabilitation which includes a comprehensive assessment, individualized therapy that includes teaching self-management and disease/symptom management techniques, an exercise program and the promotion of behavioral changes.
- Created to include a specialised interdisciplinary team made up of : Respirologist, nurse, respiratory therapist, occupational therapist, social worker, kinesiologist, dietician, physiotherapist and administrative officer.
- Model includes services offered from Mount Sinai hospital in Montreal and delivered virtually either directly to the patient's home or to our partner sites, where a healthcare professional supervises users during exercises and provides care.
- There is a 2-tiered approach to our care model:
  - the development of a centralized "guichet d'accès" to facilitate referrals and accessibility to pulmonary rehabilitation specialists by primary care physicians and other specialists in areas where pulmonary rehabilitation is not available
  - the development of a standardised tele-pulmonary rehabilitate program deployed in collaboration with primary care physicians

**Clinical indicators include:** Patient experience surveys, COPD Assessment Test (CAT), the 6-minute walk test (6MWT) and the Patient Health Questionnaire (PHQ-9). To measure access to the program, the number of partner sites, completion rates and the number of users per fiscal year tracked.



6-minute Walking Test

Average improvement by 51m\* in 2023-2024 and by 53m\* in 2024-2025



\*Significant improvement >30m

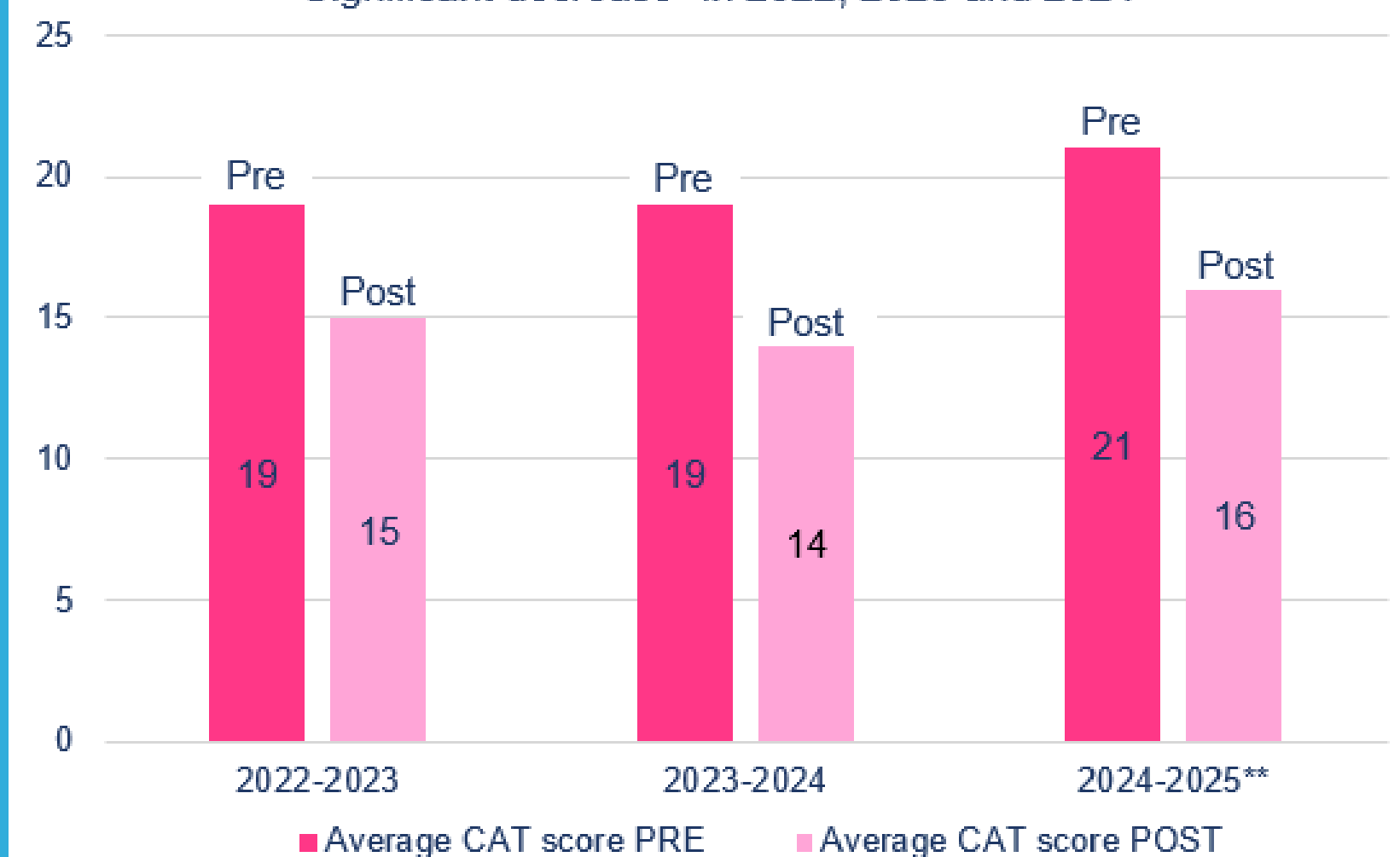
\*\*4 groups completed in 2024-2025; 5 groups for the other years

## RESULTS

At its inception in 2017, 2 sites were participating in the program. In 2022-2023, we currently have 15 sites in 10 CISSS/CIUSSS across the province. By creating corridors with 1st and 2nd line community services, local workers are better equipped to offer services tailored to the population they serve. Users benefit from a high-quality, personalized services close to home, which has reduced access barriers related to transport and the lack of motivation to travel. As the program is offered via tele-consultation, family caregivers can participate in theoretical courses to better understand their loved ones' illness and be in a better position to support them. What's more, by offering a virtual program, this increases access to Pulmonary rehabilitation, without having to increase the number of specialized healthcare providers.

Improved patient outcomes were noted. 48% of users who participated in the program in 2023 have significantly improved their COPD Assessment Test (CAT) score, moving from a high impact level (21-30 points) to a medium impact level (10-20 points). Users improved their walking endurance significantly (> 30m). An average improvement of 39m was observed between the pre-program and post-program test results. Similar results were observed in 2022. Furthermore, among our success indicators, 88% of our 2022-2023 participants completed the program. Patient experience surveys showed the highly beneficial effects of the program for users, particularly in terms of self-confidence in managing their disease, better overall quality of life, increased endurance for exercise, and a clear reduction in anxiety levels, mainly through self-management of breathlessness. Finally, 93-96% of our participants rated the quality of the program as "more than satisfactory". To improve accessibility to patient outcomes, as well as enhancing the follow-up with homecare users, a partnership with Greybox - TakeCare, was implemented further improving the patient experience. Lastly, the established care trajectory to improve accessibility to pulmonary rehabilitation across the Quebec network showed a reduction of 20% in costs when comparing 2017 to 2023, with an increase of 200% in access to care.

COPD Assessment TEST Score  
 Significant decrease\* in 2022, 2023 and 2024



\*Significant when decrease by 2 pts or more

\*\*4 groups completed in 2024-2025; 5 groups for the other years.

## CONCLUSION

The Telehealth Pulmonary Rehabilitation Program was recently recognized by the Quebec Ministry of health and social services as the recipient of the Prix Hippocrate, which recognizes innovative interdisciplinary initiatives that create value for users, caregivers, families, healthcare professionals, institutions and their partners. Our personalized care pathways with our partner sites and users as well as the use of technologies such as tele-auscultation, tele-spirometry, the TEAM application for individual tele-consultations and the TakeCare application make it possible to offer a quality service that is easily accessible to a large number of participants. This enables users to start the PR program within the timeframes recommended in current guidelines, thus avoiding the physical deconditioning so harmful to this population. This innovative VBHC program produces improved patient outcomes, minimizes deterioration of their condition and ultimately improves the quality of life of users with pulmonary disease by empowering and supporting them through the use of a Pulmonary Rehabilitation Care network.