



# Home-Based Management of Chronic Diseases: The Power of Public–Private Partnerships

Lesly Deuchar, MN, Innovation Manager, Edmonton Zone Virtual Hospital, Alberta Health Services, Edmonton

Farid Foroud, MBT, Director, Health & Life Sciences, Western Canada, Global Public Affairs, Edmonton

Jacqueline Andersen, BA, Director of Strategic Partnerships, University of Alberta Hospital Foundation, Edmonton

Lana Solberg, BSW, Healthcare Solutions & Partnerships, Boehringer Ingelheim, Edmonton

Michael K. Stickland, PhD, Professor, Division of Pulmonary Medicine, Faculty of Medicine and Dentistry, University of Alberta; Director, G.F. MacDonald Centre for Lung Health, Covenant Health; Scientific Director, Respiratory Section, Medicine Strategic Clinical Network, Alberta Health Services, Edmonton

## ABSTRACT

Alberta's Institute of Health Economics estimates that the management of chronic obstructive pulmonary disease (COPD) costs the provincial government CAD\$254 million per year. To address the unmet needs of patients and reduce the financial burden of COPD in Alberta and throughout Canada, two novel collaborations have been implemented in recent years: the INSPIRED Collaborative and the Alberta Boehringer Ingelheim Collaboration (ABIC) Fund. A total of 794 patients with COPD from 19 sites across 10 Canadian provinces were included in the INSPIRED Collaborative, a hospital-to-home model of care supported by the Canadian Foundation for Healthcare Improvement, providing home visits and telephone support for patients with COPD following hospital discharge. In Alberta, the INSPIRED program resulted in a decrease in emergency department utilization, acute care admissions, and length of hospital stay for individuals 6 months post- versus pre-enrolment, and findings from caregiver surveys showed good satisfaction with the model. In 2019, following the success of INSPIRED, the public–private philanthropic ABIC Fund was established to facilitate patient-centred health innovations, with a focus on respiratory disorders. The 2020 ABIC Fund recipients were Dr. Michael Stickland, for the project *'Breathe Easy Pulmonary Rehabilitation: Scale, Spread and Sustain'*, which aims to address challenges in access to pulmonary rehabilitation, and Dr. Heather Sharpe, for the project *'Identifying early COPD using health administrative data'*, which aims to identify trends in healthcare use by individuals newly diagnosed with COPD. Further opportunities for applicants will be generated in Pillar 2 (in progress) and Pillar 3 (fall 2021).

SUBMITTED: July 22, 2021 | PUBLISHED: August 23, 2021

DISCLOSURES: Medical writing assistance, provided by Olive Denny of MediTech Media, was funded by Boehringer Ingelheim. Lesly Deuchar, Farid Foroud, Jacqueline Andersen and Michael K. Stickland have nothing to disclose. Lana Solberg is an employee of Boehringer Ingelheim.

CITATION: Deuchar, L *et al* (2021). Home-Based Management of Chronic Diseases: The Power of Public–Private Partnerships. *Canadian Health Policy*, August 2021. ISSN 2562-9492 [www.canadianhealthpolicy.com](http://www.canadianhealthpolicy.com)

## INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a progressive, life-threatening disease of the lungs that causes airflow limitation, and respiratory symptoms such as breathlessness, cough, and sputum production.<sup>1</sup> COPD is associated with substantial healthcare costs, both direct and indirect.<sup>2</sup> Most of these costs are concentrated at the severe end of the disease spectrum, and are linked with significant health service utilization

due to more frequent acute exacerbations (otherwise known as 'flare-ups').

Based on 2019–2020 data from the Canadian Institute for Health Information, COPD is the number-one cause of hospitalization in Canada after childbirth, with hospital admissions for COPD exacerbations averaging 7.1 days per stay.<sup>3</sup> In Alberta, it is estimated that almost 1 in 10 adults has a diagnosis of COPD,<sup>4</sup> while Alberta's Institute of Health Economics estimates that the management of COPD costs the provincial government

CAD\$254 million per year.<sup>5</sup> This expenditure is highly skewed towards services associated with higher-severity, advanced-stage COPD, most notably hospitalization (CAD\$131 million), emergency department visits (CAD\$19 million), and home oxygen therapy (CAD\$27 million), with advanced-stage costs comprising 75% of the total identified COPD costs (based on 2013–2014 data).<sup>5</sup> (FIGURE 1) Additionally, a significant amount of COPD-related healthcare spending is driven by factors such as non-adherence to medication.<sup>6</sup>

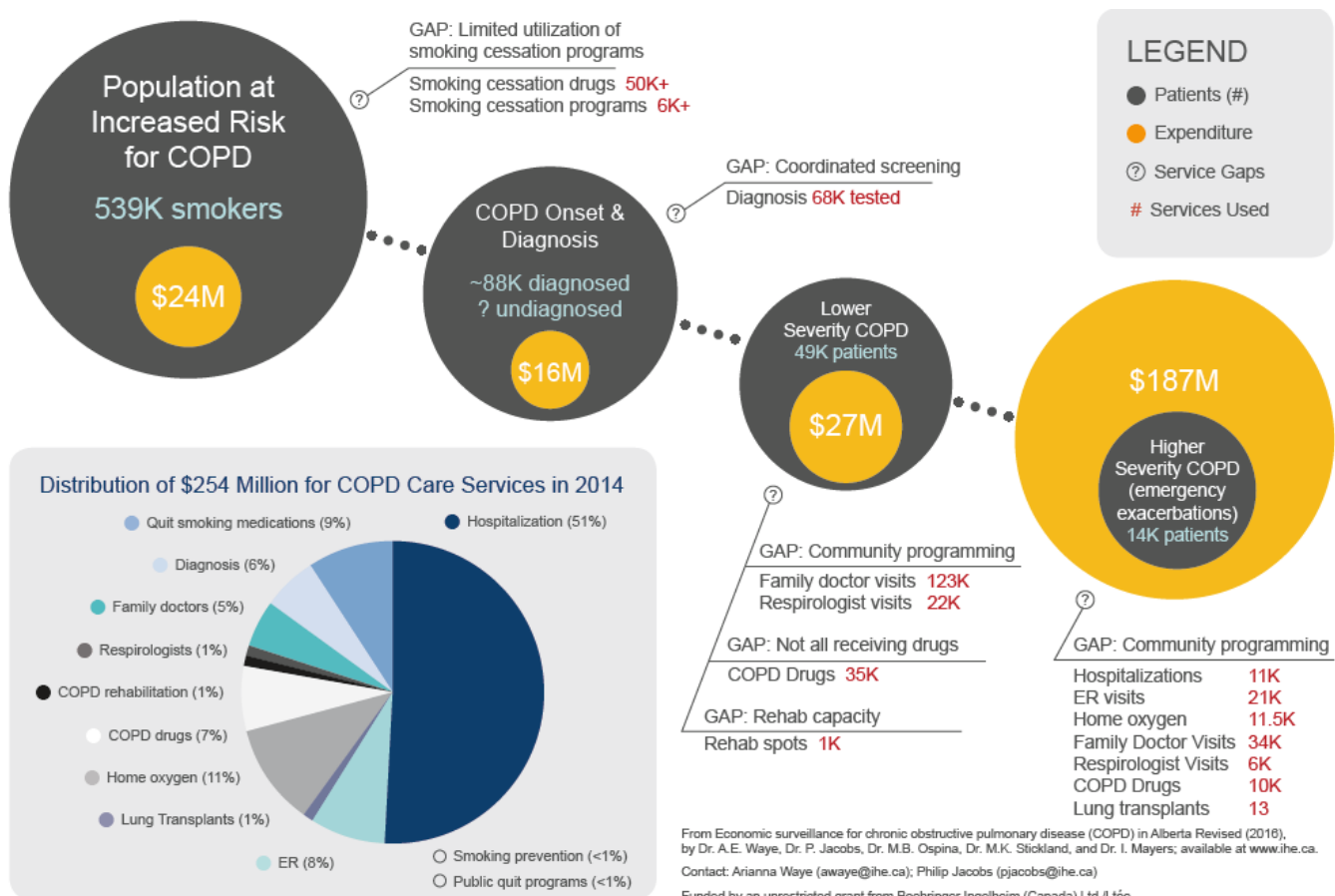
As in many countries, cost-effective delivery of optimal healthcare is high on the governmental agenda in Canada. To address the unmet needs of patients, reduce the financial burden of COPD and other chronic diseases, and advance public health practice in Canada, two novel collaborations have been implemented in recent years: the INSPIRED Collaborative and the Alberta Boehringer

Ingelheim Collaboration (ABIC) Fund. In this article, we discuss the benefits of these public–private collaborations, which reflect the voices of multiple stakeholders, including policymakers, patients, healthcare teams, researchers, and industry.

### What is INSPIRED?

INSPIRED (Implementing a Novel and Supportive Program of Individualized care for patients and families living with Respiratory Disease)<sup>7</sup> is a hospital-to-home model of care that provides home visits and telephone support for patients with COPD following hospital discharge.<sup>8–10</sup> Following the successful implementation of a pilot program – the INSPIRED COPD Outreach Program™ – led by Dr. Graeme Rocker in Halifax, Nova Scotia, in 2010, the Canadian Foundation for Healthcare Improvement (CFHI) supported the creation of the INSPIRED Collaborative in 2014, designed to expand the

Figure 1. Alberta COPD Economic Surveillance



Source: Waye AE, Jacobs P, Ospina MB, Stickland MK, Mayers I. *Economic surveillance for chronic obstructive pulmonary disease (COPD) in Alberta*. Edmonton (AB): Institute of Health Economics; 2016. <https://www.ihe.ca/advanced-search/economic-surveillance-for-chronic-obstructive-pulmonary-disease-copd-in-alberta>. Reproduced with permission from the Institute of Health Economics.

initiative to 19 teams in 10 Canadian provinces.<sup>10</sup> An evaluation framework measured the success of the collaboration based on a combination of quantitative data, project team reports, and individual surveys, which included multiple-choice options, Likert scale ratings, and open-ended questions. The qualitative aspect of the evaluation was comprised of key interviews and focus groups, which were held between February and April 2016.<sup>10</sup> The selected process and outcome measures were evidence-based, simple to collect, relevant to local context, and related to four domains: 1) patient- and family-centeredness, 2) coordination, 3) efficiency, and 4) appropriateness.<sup>8</sup>

## Outcomes of INSPIRED

A total of 794 patients with COPD from 19 sites across 10 provinces (Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Quebec, and Saskatchewan) were included in the INSPIRED Collaborative (1164 patients when including the Halifax pilot).<sup>8</sup> As previously reported by Verma *et al*, teams stated that the program helped bring focus to a much-needed, often overlooked area, facilitating the spread of healthcare innovation.<sup>10</sup> Unanticipated changes to working practices and culture were reported, and teams gained new skills in quality improvement (QI) and evidence-based care, showing progress in their ability to measure and implement COPD care improvements. Furthermore, teams reported that networking with other teams across the country, working towards a common solution, as well as learning from clinical innovators, were all critical to their success. A number of factors impacted the sustainability of the program, including local leadership support, engagement of frontline clinicians, and sharing of key milestones to motivate continued QI.<sup>10,11</sup> Although the 19 participating teams differed in their readiness to implement a new program in their jurisdiction, most teams experienced and/or were responsible for positive changes in local attitudes and expertise, e.g. identifying gaps and important care-related issues for patients living with complex chronic conditions.

Alberta Health Services (AHS), the authority responsible for planning and delivering health services to the residents of Alberta, participated in the INSPIRED Collaborative program as one of the initial 19 teams. The AHS team enrolled more than 80 patients from the Edmonton Zone (EZ) into the INSPIRED pathway, training

28 COPD educators during the process.<sup>12</sup> The program implemented by AHS was the only community-driven project in the initial INSPIRED Collaborative, and included respiratory therapy case management through home care, individualized COPD action plans, patient and caregiver education, collaboration between specialty care providers, family practice and other community providers, and advanced planning for patients' end of life care (**FIGURE 2**). The AHS EZ team gathered data from 50 individuals in the original INSPIRED cohort at 6 months pre- and post-enrolment.<sup>13</sup> Of these, 10 individuals died during the 6-month post-enrolment period (owing to the advanced state of their COPD), meaning that 6-month data were available for 40 individuals.<sup>13</sup> The results of the Alberta program demonstrated a decrease in emergency department utilization, acute care admissions, and acute care length of stay for individuals 6 months post- versus pre-involvement. Findings from the pre- and post-patient and caregiver surveys demonstrated increased satisfaction with the INSPIRED COPD care model in Alberta.<sup>13</sup>

In addition to improving outcomes for AHS EZ INSPIRED patients, the program brought about changes in the strategic organization of services for this population, which have sustained improvements in care. The most notable of these changes was the development of the EZ Integrated Respiratory Care Steering Committee (EZIRCSC), a collaborative group of leaders from acute and community care, primary and specialty practice, and local and provincial stakeholders, supported by academic leaders to continue the planning and implementation of integrated services for individuals living with COPD in the AHS EZ. In terms of overall cost-effectiveness, CFHI partnered with the economic analysis group Riskanalytica to conduct an independent report based on the INSPIRED 1.0 pan-Canadian data from the 19 teams in 10 provinces. The unpublished report suggests a 9–10% reduction in healthcare costs.

In 2017, INSPIRED 2.0 was launched to scale and spread the success of INSPIRED across six teams in Canada. AHS's EZ was one of the teams that continued their QI journey through participation in INSPIRED 2.0, which continues to provide numerous benefits to the healthcare ecosystem, specifically for the population living with COPD. The guidance and leadership for the INSPIRED 2.0 project in the AHS EZ was provided by the EZIRCSC. The focus of this second version of the INSPIRED work was to further partnerships and service integration across the EZ. Building on the successes and structures

established during the original INSPIRED Collaborative, and further integrating service delivery teams, allowed a whole-system approach to emerge for the care of individuals with advanced COPD.

## Alberta Boehringer Ingelheim Collaboration

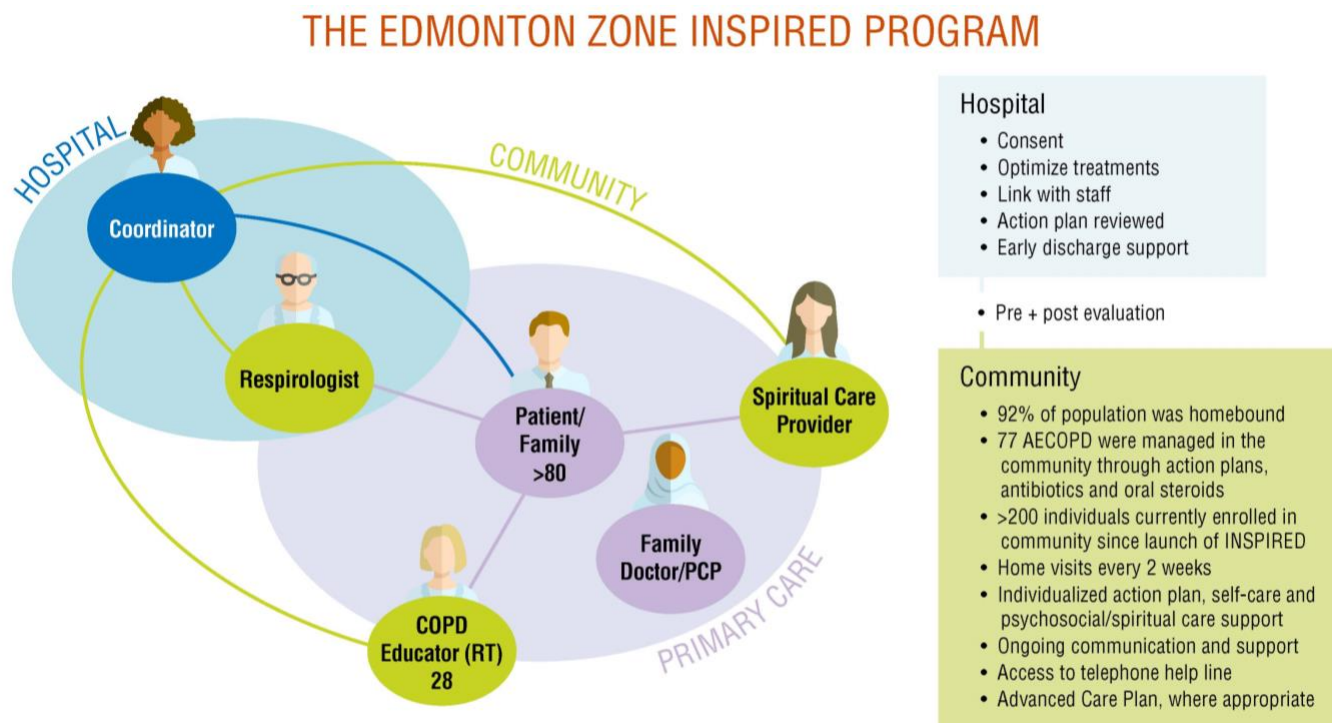
In 2019, following the success of INSPIRED 1.0 and 2.0 Collaboratives, an exciting public–private philanthropic partnership was established between Boehringer Ingelheim (Canada) Ltd, the Government of Alberta’s Ministry of Economic Development and Trade (now the Ministry of Jobs, Economy and Innovation), and the University Hospital Foundation (UHF) in Edmonton, Alberta. The ABIC is an alliance of equal partners converging to create various channels of opportunity between Alberta’s public health institutions and life sciences sector, supported by Boehringer Ingelheim’s ambition to deliver healthcare system improvement for patients living with chronic diseases such as COPD.<sup>14</sup> The ultimate goal of the fund is to facilitate the advancement of patient-centred health innovation projects with a focus on developing solutions to address treatment gaps

in the area of respiratory disorders, in particular COPD and its associated comorbidities, as well as addressing care gaps for Alberta’s most vulnerable, and specifically indigenous populations. Through ABIC, a total of CAD\$1.51 million and CAD\$500,000 of in-kind support over a period of 3 years will be spent on mutually acceptable initiatives identified within Alberta.<sup>14</sup>

The selected recipients of the ABIC Fund must be focused on identifying, developing, and implementing effective solutions across the COPD care pathway, from early diagnosis to end of life in people with respiratory disorders, addressing one of three identified healthcare pillars:

- Prevention of disease progression for patients living with COPD.
- Management of COPD-related comorbidities (diabetes and heart failure) while keeping patients safely cared for in their communities.
- Improvement in care for individuals living with COPD, specifically for patients within Alberta’s

Figure 2. Edmonton Zone INSPIRED Program



AECOPD, acute exacerbation of COPD; COPD, chronic obstructive pulmonary disease; PCP, primary care provider; RT, respiratory therapist. Source: INSPIRED COPD Outreach Program™ for patients with advanced COPD and their families. Reproduced with permission from the Alberta Health Service.



vulnerable populations, and design of innovations to address these health challenges.

Within the AHS EZ, the opportunity for continued improvements in COPD care aligned well with the ABIC opportunity. The need for improvement had previously been highlighted in regard to pulmonary rehabilitation (PR). With <1% of those living with COPD in Canada having ready access to evidence-based PR programs,<sup>15</sup> the ABIC opportunity has the potential to support the scale-up and spread of the EZ PR program across the five AHS zones, thereby increasing access to this program for all Albertans.

### ABIC Fund Recipients for Pillar 1

The first recipient of the 2020 ABIC Fund was Dr. Michael Stickland, with the project: *'Breathe Easy Pulmonary Rehabilitation: Scale, Spread and Sustain'*. Collaborating with national colleagues and the Canadian Thoracic Society, the Canadian Standardized Pulmonary Rehabilitation Program has been developed. This project aims to address challenges in access to best-evidence PR by scaling and spreading the program at the G. F. MacDonald Centre for Lung Health in the EZ, through all five AHS zones. To address sustainability, it will undertake the strategic planning steps necessary (environmental scan of current programs and opportunities, a pilot program for home-based PR, and a business case for AHS operational funding) to inform a strategy ensuring every Albertan that would benefit from PR has access.<sup>16</sup>

The second recipient of the 2020 ABIC Fund was Dr. Heather Sharpe, with the project: *'Identifying early COPD using health administrative data.'* Using health administrative data and machine learning, this project will identify trends in healthcare use by individuals newly diagnosed with COPD, and will assess their healthcare use prior to their diagnosis relating to doctors' visits, emergency department visits, hospital stays, and medications. These data will be used to better understand what happens to people before they are diagnosed, and to find out if risk factors for COPD diagnosis can be identified, thereby developing a mechanism of predicting those at risk of COPD.<sup>17</sup>

Further opportunities for applicants will be generated in Pillar 2, which is focused on the management of COPD and its related comorbidities (specifically diabetes and heart failure) and on keeping patients in their communities.<sup>18</sup> Pillar 2 was launched on April 12, 2021,

and letters of intent were submitted before May 31, 2021. Pillar 3 will launch in the fall of 2021, with a focus on improving care for individuals living with COPD, specifically patients within Alberta's vulnerable populations, and the design of innovations to address these health challenges.

A key enabler of the integration work undertaken by the EZ was the partnership with the Respiratory Section of the Alberta Health Services Medicine Strategic Clinical Network®. Alberta's Strategic Clinical Networks (SCNs) support multidisciplinary teams pursuing innovative strategies to improve patient outcomes, patient and provider experience, and value for Alberta's healthcare system.<sup>19</sup> The Respiratory Section has a specific mission to facilitate optimal respiratory health through implementation of innovative, patient-centered, evidence-informed, and coordinated services.<sup>20</sup> The SCN, supporting the EZIRCSC, helped in bringing together patients, clinicians, and researchers to facilitate and implement this improvement work. The Scientific Office of the SCN operationalized standardized COPD case definitions<sup>21</sup> for administrative data so that the tracking of COPD outcomes could be consistently reported across the province and across projects.

### CONCLUSION

Building on previous successes, Boehringer Ingelheim (Canada) Ltd, together with the Government of Alberta and the UHF, are collaborating with health system leaders to continue the journey in healthcare system improvement for patients with chronic diseases such as COPD. The effective management of COPD is costly in terms of healthcare resource utilization and societal impact, and thus cost-effective mechanisms and innovative programs to improve healthcare deserve the support of stakeholders across the public sector in Canada. Programs such as INSPIRED, INSPIRED 2.0, and the recently created ABIC Fund highlight what can be achieved when the public and private sectors work in synergy, having shared goals, and pooling together complementary skills and resources to co-develop and co-deliver patient-centred solutions. Through these partnerships, the power of collaboration between private industry and the public/philanthropic sectors translates into tangible value that will enable policymakers and healthcare organizations to make major changes in how they battle chronic diseases and enable Canadians to live better lives.

## REFERENCES

1. World Health Organization. *Chronic obstructive pulmonary disease (COPD)*, <<http://www.who.int/mediacentre/factsheets/fs315/en/>> (2017).
2. Guarascio, A. J., Ray, S. M., Finch, C. K. & Self, T. H. The clinical and economic burden of chronic obstructive pulmonary disease in the USA. *Clinicoecon. Outcomes Res.* 5, 235-245, doi:10.2147/CEOR.S34321 (2013).
3. Canadian Institute for Health Information. *Hospital stays in Canada*, <<https://www.cihi.ca/en/hospital-stays-in-canada>> (2021).
4. Sharpe, H. *et al.* Asthma and COPD prevalence, incidence and mortality in Alberta and Ontario, Canada. *Am. J. Respir. Crit. Care Med.* 199, A3017, doi:10.1164/ajrccm-conference.2019.199.1\_MeetingAbstracts.A3017 (2019).
5. Wayne, A. E., Jacobs, P., Ospina, M. B., Stickland, M. K. & Mayers, I. Economic surveillance for chronic obstructive pulmonary disease (COPD) in Alberta. (Institute of Health Economics, Edmonton, AB, 2016).
6. van Boven, J. F. *et al.* Clinical and economic impact of non-adherence in COPD: a systematic review. *Respir. Med.* 108, 103-113, doi:10.1016/j.rmed.2013.08.044 (2014).
7. Canadian Foundation for Healthcare Improvement. *INSPIRED COPD scale collaborative*, <<https://www.cfhi-fcass.ca/what-we-do/spread-and-scale-proven-innovations/inspired-copd>> (2021).
8. Rocker, G. M., Amar, C., Laframboise, W. L., Burns, J. & Verma, J. Y. Spreading improvements for advanced COPD care through a Canadian Collaborative. *Int. J. Chron. Obstruct. Pulmon. Dis.* 12, 2157-2164, doi:10.2147/copd.S140043 (2017).
9. Gillis, D., Demmons, J. & Rocker, G. Expanding the INSPIRED COPD Outreach Program™ to the emergency department: A feasibility assessment. *Int. J. Chron. Obstruct. Pulmon. Dis.* 12, 1597-1604, doi:10.2147/copd.S136183 (2017).
10. Verma, J. Y., Amar, C., Sibbald, S. & Rocker, G. M. Improving care for advanced COPD through practice change: Experiences of participation in a Canadian spread collaborative. *Chron. Respir. Dis.* 15, 5-18, doi:10.1177/1479972317712720 (2018).
11. Rocker, G. M. & Cook, D. 'INSPIRED' approaches to better care for patients with advanced COPD. *Clin. Invest. Med.* 36, E114-120, doi:10.25011/cim.v36i3.19721 (2013).
12. Canadian Foundation for Healthcare Improvement. *Spreading an inspired approach to COPD care*. (Canadian Foundation for Healthcare Improvement, Ottawa, Canada, 2016).
13. Canadian Foundation for Healthcare Improvement. *Home is where the health is: Scaling up INSPIRED approaches to COPD care*. (Canadian Foundation for Healthcare Improvement, Ottawa, 2017).
14. University Hospital Foundation, Alberta Government & Boehringer Ingelheim (Canada) Ltd. *Alberta Boehringer Ingelheim collaboration: Terms of reference* (University Hospital Foundation, Ottawa, 2019).
15. Camp, P. G. *et al.* Pulmonary rehabilitation in Canada: A report from the Canadian Thoracic Society COPD Clinical Assembly. *Can. Respir. J.* 22, 147-152, doi:10.1155/2015/369851 (2015).
16. University Hospital Foundation. *Research funding final report: Breathe easy PR: Scale, spread and sustain*. (2019).
17. Stickland, M., Sharpe, H. & Atwood, C. *University Hospital Foundation strategic partnerships proposal* (University Hospital Foundation, Ottawa, 2019).
18. University Hospital Foundation. *Alberta Boehringer Ingelheim Collaboration (ABIC)*, <<https://givetouhf.ca/abic/>> (2021).
19. Noseworthy, T., Wasylak, T. & O'Neill, B. Strategic clinical networks in Alberta: Structures, processes, and early outcomes. *Healthc. Manage. Forum* 28, 262-264, doi:10.1177/0840470415600130 (2015).
20. Stickland, M. K., Sharpe, H. & Respiratory Health Strategic Clinical Network. Respiratory Health Strategic Clinical Network: Five years of innovation in respiratory care. *Can. Med. Assoc. J.* 191, S30-S32, doi:10.1503/cmaj.190582 (2019).
21. Gershon, A. S. *et al.* Identifying individuals with physician diagnosed COPD in health administrative databases. *COPD* 6, 388-394, doi:10.1080/15412550903140865 (2009).