

How can Canada's health systems improve care for people with chronic obstructive pulmonary disease?

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■ Cite as: *CMAJ* 2023 September 11;195:E1182-3. doi: 10.1503/cmaj.230998

See related article at www.cmaj.ca/lookup/doi/10.1503/cmaj.221051

New research in this issue of *CMAJ* draws attention to rising rates of hospital admissions for chronic obstructive pulmonary disease (COPD) in Canada, a finding that should raise alarm within health care systems.¹ Exacerbations of COPD are the second-leading cause of hospital admissions in Canada, second only to admissions for labour and delivery.² In Canada, COPD affects a striking 10% of the adult population and nearly 1 in 5 people older than 70 years.³ Furthermore, COPD remains substantially underdiagnosed, suggesting that its actual clinical and economic impact is even more profound.⁴

By evaluating a nationwide database of hospital discharges, Amegadzie and colleagues¹ found that the rate of COPD admissions across Canada increased by an average of 1.2% per year between 2002 and 2017, or 9.6% overall after standardization by age and sex, even while rates of all-cause hospital admissions decreased. Why are COPD admissions rising, even while all-cause hospital admissions have declined?

Despite decreasing smoking rates, the prevalence of COPD continues to rise in Canada. Particularly concerning is that the increasing prevalence is not solely driven by older adults with COPD living longer, but also by rising rates of COPD among younger adults.⁵ The decreasing in-hospital mortality observed by the authors of the related research suggests that new treatment strategies for patients with COPD may be prolonging life, thus allowing for recurrent admissions across the lifespan. As older adults with COPD age, they are at particular risk of developing additional comorbidities, which may also contribute to additional, multifactorial hospital presentations.⁶

Furthermore, risk factors beyond tobacco smoking — including undertreated asthma, recurrent respiratory infections and exposure to air pollution and biomass fuel — are increasingly understood to contribute to the growing burden of COPD.⁷ Although Canadian epidemiological data on COPD of people who have never smoked are sparse, global estimates suggest that 30% of cases of COPD occur among nonsmokers.⁸ With worsening climate change and consequent changes in air quality, rising asthma prevalence, and increasing global migration, it

Key points

- Hospital admissions for chronic obstructive pulmonary disease (COPD) have been rising across Canada for years, despite falling smoking rates and new treatment strategies.
- Risk factors such as undertreated asthma, recurrent respiratory infections, exposure to air pollution and biomass fuel, and other socioeconomic factors are increasingly understood to contribute to the rising burden of COPD and worse disease outcomes.
- Evidence suggests that when patients receive cohesive, longitudinal care by their primary care and specialist physicians, patients with COPD have improved health outcomes and decreased unplanned admissions to hospital, yet many patients lack access to optimal care.
- Solutions will require novel and multifactorial approaches to examining emerging risk factors for COPD, addressing disparities in gender and socioeconomic status, facilitating access to specialist care and investing resources in prevention and rehabilitation.

is possible that a growing burden of non-smoking-related COPD may also be contributing to this trend.

In analyzing their data by age and sex, Amegadzie and colleagues¹ gleaned important clues on who may be accounting for COPD admissions. Rates of admission to hospital were greater among females than males overall but increases were seen among younger (age < 65 yr) patients with COPD of both sexes, while admissions only increased for females among older patients. The prevalence of COPD in Canada is equivalent between males and females, despite a common perception that COPD is a disease of male smokers.⁹ Mounting evidence suggests that females are at greater risk of earlier-onset COPD,¹⁰ have more severe symptoms over the life course¹¹ and are less likely to receive the correct diagnosis or be referred to specialist care, which can contribute to undertreatment and inadequate symptom management.¹²

The importance of social determinants of health in the rising burden of COPD must not be overlooked. Data from the Canadian Institute for Health Information (CIHI) show that rates of hospital admission were 5.7 times higher for patients with COPD in the lowest income quintile than those in the highest income quintile in 2011–2015, a gap that is widening over time.¹³ Lower socioeconomic status has been associated with increased rates of hospital readmissions related to COPD.¹⁴ This may reflect differences related to smoking, occupational exposures, access to health care and costs of COPD therapies, as lower socioeconomic status has also been associated with fewer prescriptions for long-acting inhalers.¹⁵ Data also suggest that patients with limited English proficiency face barriers to adequate health care delivery, with a Canadian study finding that patients with COPD who had limited English proficiency were more likely to be readmitted to hospital.¹⁶ In short, when it comes to COPD care, Canada's health care systems are failing the most vulnerable members of society.

There is some good news; studies do suggest that when patients receive cohesive, longitudinal care by their primary care and specialist physicians, patients with COPD have improved health outcomes and decreased unplanned hospital use.¹⁷ Many patients, however, still lack a family physician or have difficulty receiving timely access to care. Moreover, a study of all patients with COPD in Ontario found that only 10% received a referral to a respirologist.¹⁸ In a subset of patients admitted to hospital for COPD, 70% still did not receive specialist consultation.

Lack of system-wide resources remains a barrier to delivering quality COPD care. Despite the recommendations of provincial health quality advisory boards, nonpharmacologic interventions definitively proven to improve quality of life and reduce readmission rates — including smoking cessation programs and pulmonary rehabilitation programs — are under-resourced to meet the demands of Canada's current patient population.

The findings of the related study are important. As the prevalence of COPD in Canada's populations rises, so too will the burden on hospitals if a radical change in COPD care is not implemented. Solutions will require novel and multifactorial approaches to examining emerging risk factors for COPD, addressing disparities in gender and socioeconomic status, facilitating access to specialist care and investing resources in prevention and rehabilitation. Without sustained and coordinated action, health systems will continue to fail patients with COPD in Canada.

References

- Amegadzie JE, Lee TY, Sadatsafavi M, et al. Trends in hospital admissions for chronic obstructive pulmonary disease over 16 years in Canada *CMAJ* 2023;195:1172-9.
- CIHI Snapshot: Inpatient hospitalization, surgery, newborn, alternate level of care and childbirth statistics, 2017–2018. Ottawa: Canadian Institute for Health Information (CIHI); 2019. Available: https://secure.cihi.ca/free_products/dad-hmdb-childbirth-quick-stats-2017-2018-snapshot-en-web.pdf (accessed 2023 Aug. 17).
- Report from the Canadian Chronic Disease Surveillance System: asthma and chronic obstructive pulmonary disease (COPD) in Canada, 2018. Ottawa: Public Health Agency of Canada; 2018.
- Gershon AS. Trends in chronic obstructive pulmonary disease prevalence, incidence, and mortality in Ontario, Canada, 1996 to 2007: a population-based study. *Arch Intern Med* 2010;170:560-5.
- Gershon AS, McGihon RE, Luo J, et al. Trends in chronic obstructive pulmonary disease prevalence, incidence, and health services use in younger adults in Ontario, Canada, 2006–2016. *Am J Respir Crit Care Med* 2021;203:1196-9.
- Faner R, Gutiérrez-Sacristán A, Castro-Acosta A, et al. Molecular and clinical disease of comorbidities in exacerbated COPD patients. *Eur Respir J* 2015;46:1001-10.
- Stolz D, Mkorombindo T, Schumann DM, et al. Towards the elimination of chronic obstructive pulmonary disease: a Lancet Commission. *Lancet* 2022; 400:921-72.
- Tan WC, Sin DD, Bourbeau J, et al. Characteristics of COPD in never-smokers and ever-smokers in the general population: results from the CanCOLD study. *Thorax* 2015;70:822-9.
- Gershon AS, Mecredy G, Ratnasingham S. Chronic obstructive pulmonary disease in Ontario: 1996/97 to 2014/15. Toronto: Institute for Clinical Evaluative Sciences; 2017. Available: <http://www.deslibris.ca/ID/10093209> (accessed 2019 Apr. 12).
- Foreman MG, Zhang L, Murphy J, et al. Early-onset chronic obstructive pulmonary disease is associated with female sex, maternal factors, and African American race in the COPDGene study. *Am J Respir Crit Care Med* 2011;184:414-20.
- DeMeo DL, Ramagopalan S, Kavati A, et al. Women manifest more severe COPD symptoms across the life course. *Int J Chron Obstruct Pulmon Dis* 2018; 13:3021-9.
- Chapman KR, Tashkin DP, Pye DJ. Gender bias in the diagnosis of COPD. *Chest* 2001;119:1691-5.
- Access data and reports [COPD]. Ottawa: Canadian Institute for Health Information. Available: <https://www.cihi.ca/en/access-data-reports/results?query=COPD&Search+Submit=> (accessed 2020 Aug. 13).
- Gershon AS, Thiruchelvam D, Aaron S, et al. Socioeconomic status (SES) and 30-day hospital readmissions for chronic obstructive pulmonary (COPD) disease: a population-based cohort study. *PLoS One* 2019;14:e0216741.
- Tavakoli H, Johnson KM, FitzGerald JM, et al. Trends in prescriptions and costs of inhaled medications in chronic obstructive pulmonary disease: a 19-year population-based study from Canada. *Int J Chron Obstruct Pulmon Dis* 2019; 14:2003-13.
- Rawal S, Srighanthan J, Vasantharoopan A, et al. Association between limited English proficiency and revisits and readmissions after hospitalization for patients with acute and chronic conditions in Toronto, Ontario, Canada. *JAMA* 2019;322:1605-7.
- Tranmer J, Rotter T, O'Donnell D, et al. Determining the influence of the primary and specialist network of care on patient and system outcomes among patients with a new diagnosis of chronic obstructive pulmonary disease (COPD). *BMC Health Serv Res* 2022;22:1210.
- Cho EE, Mecredy GC, Wong HH, et al. Which physicians are taking care of people with COPD? *Chest* 2019;155:771-7.

Competing interests: None declared.

This article was solicited and has not been peer reviewed.

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Contributors: Alina Blazer and Matthew Stanbrook contributed to the conception and design of the work. Alina Blazer drafted the manuscript. Both authors revised the manuscript critically for important intellectual content, gave final approval of the version to be published and agreed to be accountable for all aspects of the work.

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Disclaimer: Matthew Stanbrook is a deputy editor for *CMAJ* and was not involved in the editorial decision-making process for this article.

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