

BCM J

BC Medical Journal

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ON THE COVER

Many health care needs are not being sufficiently addressed within supportive housing sites. The authors explored health services in three sites in Kelowna, BC, to identify tenants' needs, determine if those needs were perceived as being met, and identify underserved areas. Article begins on page 116.

The *BCMJ* is published by Doctors of BC. The journal provides peer-reviewed clinical and review articles written primarily by BC physicians, for BC physicians, along with debate on medicine and medical politics in editorials, letters, and essays; BC medical news; career and CME listings; physician profiles; and regular columns.

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THE CLIMATE IMPACT OF INHALER THERAPY

in the Fraser Health region, 2016–2021

A retrospective longitudinal analysis of community-dispensed inhaler prescriptions was conducted and the resulting carbon footprint was calculated



1217
tCO₂e

Switching asthma patients (12 to 40 years of age) from a salbutamol pressurized metered-dose inhaler to a budesonide/formoterol dry powder inhaler would reduce emissions by 14% per year.

3776
tCO₂e

Switching patients between different formulations of pressurized metered-dose inhalers would result in a 44% reduction in emissions per year.

6607
tCO₂e

If patients older than 12 years of age were prescribed only dry powder inhalers, a 78% reduction in the annual inhaler emissions would be achieved.

Propellants used in pressurized metered-dose inhalers contain potent greenhouse gases that contribute to climate change. Dry powder inhalers and soft mist inhalers do not use propellants and have a lower carbon footprint.

Different prescribing scenarios for inhalers can eliminate 1217 to 6607 tCO₂e annually.

We modeled three scenarios for switching inhalers to lower-carbon alternatives.

In their article studying inhaler therapy in the Fraser Health region, the authors find that switching patients to low-carbon inhalers can reduce health care–associated carbon emissions and potentially improve respiratory care. Article begins on page 122.

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Our News section has moved online so that it can be more timely. Find it at bcmj.org/article-type/news.

One small step for Harry and Meghan, one giant leap backward for women

I am neither “Team Kate and William” nor “Team Meghan and Harry.” I used to be ambivalent about the media narrative surrounding Britain’s royal family. However, when I watched *Harry and Meghan* on Netflix, my fertility doctor brain could not help but revolt at the sixth episode. And when I learned that 28 million households had already viewed it (Netflix’s highest-viewed documentary ever), I was deeply saddened that the miscarriage-without-stigma movement had taken a huge step backward.^{1,2}

Rewind to 2020, before the Netflix series, when Meghan wrote an opinion piece in the *New York Times* titled “The losses we share.”³ She wrote about having a miscarriage after the first night in their new California home: “I felt a sharp cramp. . . . I knew, as I clutched my firstborn child, that I was losing my second.” The essay was widely praised as a brave and raw description of the pain and loneliness that women suffer when miscarriage occurs.⁴ In the piece, she also wrote about the collective grief of a nation mourning the losses of George Floyd and Breonna Taylor. I loved her essay and shared it widely, grateful that someone of her public status was talking openly about loss and calling for unity and support.

In their recollection of that same miscarriage for the Netflix series, however, the narrative changed. Meghan and Harry’s description was that the pregnancy loss occurred after Meghan “wasn’t really sleeping,” having just moved into a new house and enduring stress caused by tabloid papers.^{5,6} “I believe my wife suffered a miscarriage because of what the *Mail* did,” Harry said. “Now, do we absolutely know that the miscarriage was caused by that—’course we don’t. . . . But bearing in mind the stress

that caused, the lack of sleep, and the timing of the pregnancy—how many weeks in she was—I can say from what I saw, that miscarriage was created by what they were trying to do to her.”

Attributing her miscarriage to the media troubles me. It implies that miscarriages can be avoided, and worse, that someone is to blame. In most cases, this could not be further from the truth. I am obviously not Meghan’s doctor, nor do I have any details about her medical history, but as a fertility specialist I can say that, statistically, her chances of a clinical miscarriage around age 39 would have been 30% to 40%, purely based on age.^{7,8} The odds of any conception being chromosomally abnormal (aneuploid) at age 39 is even higher, at 50% to 60%, which is why many early miscarriages go unrecognized.⁹

I spend my days counseling patients in the most compassionate way that I know how, about the negative effects of age on eggs. I am continually trying to comfort and reassure my patients that miscarriage is not their fault. People cannot be blamed for a pregnancy loss because they went to work, took a walk, ate spicy food, had intercourse, missed a prenatal vitamin, swam in a pool, or lifted their toddler. In most cases, miscarriage is not pathological. To be clear, just because miscarriage is common does not mean it’s not heartbreaking, devastating, painful, and traumatic. Miscarriage can be all those things and still be a normal part of reproduction. I think that miscarriage, like any loss, can affect people differently. I encourage my patients who have endured a pregnancy loss to take time to process and to grieve. I encourage self-care, not self-doubt.

The sooner we accept that miscarriage can be normal, the faster we will reduce the

shame and stigma that people face when Mother Nature errs. My heart goes out to Meghan and Harry for their loss, and I hope they have since sought the healing and care that prospective parents deserve when faced with such a difficult part of life. ■

—Caitlin Dunne, MD, FRCSC

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Providing culturally competent care to Asian Canadians

May is Asian Heritage Month in Canada. Adopted in 2002, it is a way to recognize the contributions of Asian Canadians to our society. The diversity of our population is what makes Canada such a remarkable place and provides strength to the backbone of our country.

As an Asian Canadian physician, I view this as a time to reflect on the contributions Asian Canadians have made to the field of medicine and the steps we can take in the future. It is estimated that 20% of current medical students in Canada identify as being from Chinese or South Asian heritage.¹ We have come a long way since 1922, when Dr Victoria Chung became the first person of Asian heritage to graduate from the University of Toronto's Faculty of Medicine.² This was only 1 year before the Chinese Immigration Act in 1923, which barred Chinese people from entering Canada and essentially halted all immigration from China for 24 years. The huge strides that have been made should be celebrated by all Canadians, but at the same time, more work can be done to promote health equity among people from all racial and ethnic backgrounds.

As physicians, we have the important role of recognizing the unique health needs and concerns of Asian Canadians, one of the most significant health issues being the

high prevalence of chronic diseases such as diabetes and cardiovascular disease. More than 60% of the world's diabetic population comes from Asian countries.³ Asians may develop diabetes at a younger age because of their genetic predisposition; therefore, complications from diabetes may also develop

We have the important role of recognizing the unique health needs and concerns of Asian Canadians, one of the most significant health issues being the high prevalence of chronic diseases such as diabetes and cardiovascular disease.

earlier and are more common. There is also a high prevalence of hepatitis B among Asian populations, exposing them to higher risk of cirrhosis and liver cancer. These disparities can be due to genetic and environmental factors but can also be complicated by cultural and language barriers that can make it difficult to access care.

To address these disparities, it is imperative for us to provide culturally competent

care to Asian Canadian patients. This means understanding and respecting our patients' cultural beliefs, values, and practices, and working in a collaborative manner to provide effective treatment and care. In addition to addressing the health needs of Asian Canadians, it is important for us to be aware of the diversity and richness of Asian heritage. Asian Heritage Month provides a unique opportunity for us to learn about the history and contributions of Asian Canadians. We have the responsibility to advocate for the health and well-being of all Canadians, including Asian Canadians. By working collaboratively in a culturally competent way, we can help address health disparities and promote health equity for all. I invite you to take part in the various Asian Heritage Month activities taking place in your community. ■

—Yvonne Sin, MD

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Correction:

The Premise “Gender-affirming care for youth—separating evidence from controversy” [*BCM J* 2022;64:314-316] has been revised online. The author provided a new citation from Turban[22] postpublication, which provides a chronological summary of the research on gender-affirming medical care and mental health outcomes. The author apologizes for the oversight; this article was used as part of the search to identify relevant primary literature.



A culture of recognition, appreciation, and celebration

At times, medicine can feel like a thankless profession—long hours, life-altering decisions, counseling through difficult diagnoses, family support, patient advocacy, and the list goes on. There are moments when we save lives, navigate through cure, and feel as though we have made a significant difference in the lives of those we care for but don't encounter a simple thank you. Some patients who received routine care have given me amazing gifts to show their appreciation—handmade woodwork, signed books, even a vial of gold one of my octogenarian patients sluiced out of the river himself. Other patients I have spent countless hours with, whose families I have spent time with, and on whose behalf I have advocated have not offered any words of appreciation. I do not bemoan them, but it does give me pause to think about how I recognize people in my professional life. Am I someone who takes a lot and does not give recognition or appreciation back? Have I sufficiently celebrated my colleagues and their hard work, devotion, and sacrifice? Could I do better? Could we?

In the book *The Leadership Challenge*, by James Kouzes and Barry Posner, the fifth principle of leadership is to “encourage the heart.” This concept focuses on engaging your teams and colleagues on a personal level to create an environment where wins are celebrated, contributions are appreciated, and hard work is recognized. It takes thoughtfulness to do this in individual contexts. In medicine, we generally share a common commitment to our patients and have some level of satisfaction from a job well done. Yet, it is so powerful and

enriching to our colleagues when we show gratitude and appreciation in simple or significant ways.

One of the simplest and most effective ways is to say thank you. This may seem pedantic, but when I listen to the conversations around me in boardrooms, exam rooms, corridors, and meeting halls, only

Let us be the first to offer a simple thank you during a consultation, patient visit, or meeting with a colleague.

occasionally do I hear the civility and, subsequently, the “thank you” that matters. Ultimately, it is the little things that seem to matter the most.

On a larger scale, there are several avenues in our profession through which we recognize colleagues who have done exceptional things. Each health authority has an awards and recognition or “above and beyond” ceremony that shines light on teams and individuals who have done amazing things over the course of a year. Some of our respective colleges have processes for you to nominate individuals for specific activities, achievements, or awards. I think these larger-scale events are important to foster collective spirit through celebrations.

Then there are our awards—the Doctors of BC Awards. They recognize our colleagues who have made extraordinary contributions to medicine and/or their

community, those who have dedicated their careers to improving the welfare of British Columbians, and those who inspire others around them. Now more than ever we want to continue showcasing the amazing work and initiatives being done by doctors across the province.

May is Doctors of BC's first annual awards month, and I encourage you to nominate someone, whether a colleague or mentor who has made a difference; a medical student or resident who advocates for a stronger and better health care system through leadership and grassroots advocacy work; or an individual or group working to make our province a healthier, safer place to live. Let that person know you recognize and acknowledge their value and the value of their contributions. Find more information at www.doctorsofbc.ca/about-us/awards-scholarships.

Let us do what we can to make medicine a thankful profession by leading with a culture of recognition, appreciation, and celebration. Let us be the first to offer a simple thank you during a consultation, patient visit, or meeting with a colleague. And let us take every opportunity to celebrate one another and to recognize the outstanding work we see each day. It is important to our collective well-being. ■

—Joshua Greggain, MD
Doctors of BC President

Hannah Gibson, MBChB, Malcolm Evans, MPS, Kyler Woodmass, MPIA,
Stephanie Laing, MSW, John R. Graham, PhD

Health care in supportive housing facilities

Many health needs are not being sufficiently addressed within supportive housing sites.

ABSTRACT

Background: We explored health care services in three supportive housing sites in Kelowna, British Columbia, to identify tenants' health needs and determine whether their needs were perceived as being met, and, if their needs were perceived as not being met, which health areas were being underserved.

Methods: We invited all tenants and staff at the supportive housing sites to provide information on their health needs and related support. In-depth interviews were conducted between 1 August and 2 September 2020, including both closed-ended and open-ended questions.

Results: In total, 42 tenants (38%) and 30 staff members (75%) were interviewed. Seventy-two percent of tenants interviewed had unmet health needs; those with developmental disabilities experienced the highest percentage of unmet needs. Long-term conditions such as diabetes, high blood pressure, heart disease, and liver disease were also associated with unmet needs. Tenants were often unaware of available health care services or were unwilling or unable to access them. Both tenants and staff emphasized that stigma and discrimination within health services are a barrier to receiving care. Existing health services were also seen as ill-equipped to deal with concurrent conditions, such as mental health issues, substance use, and/or physical disability.

Conclusions: We recommend that further research be conducted on the needs of other populations in supportive housing across BC and that additional funding be provided to create a wide range of housing options to address the diverse health, social, and other needs of tenants.

Background

Experiencing homelessness can have a direct, adverse effect on an individual's health, which can include high levels of disease, mental health issues, and substance abuse disorders.¹⁻⁴ In a series of point-in-time counts conducted in British Columbia, high self-reported rates of addiction (67%), health concerns (66%), mental illness (51%), and physical disabilities (36%) were recorded among those experiencing

homelessness.⁵ People who are homeless also experience low levels of engagement with primary care, which reduces early treatment opportunities and increases the risk of disease progression to the point of hospitalization.⁶⁻⁷

The Wellesley Institute identifies housing as one of the most fundamental determinants of health due to its role in creating a stable living environment.⁸ One prominent framework for housing interventions has been "Housing First," a proven approach adopted by the Government of Canada.⁹ Canada's national At Home/Chez Soi study of Housing First presented an overview of a range of outcomes for more than 2000 participants across five cities, which included housing, service use and cost, and social and health outcomes;¹⁰ the study resulted in greater housing stability and other positive effects, such as the reduced use of emergency health services. Subsequent analyses identified a Housing First model as cost-effective compared with treatment as usual¹¹ and showed that overall health care expenditures for people who had been homeless were significantly lower after they moved into supportive housing.¹² Wilkins provided a detailed review of the evidence supporting permanent supportive housing as "an effective intervention for people with complex health and social needs . . . particularly for those who experience chronic homelessness" (page 66).¹³

While housing is an important determinant of health, many people remain at risk for adverse health effects, even after they obtain stable housing. Goering and colleagues' 2014 At Home/Chez Soi report noted that the

Dr Gibson is a resident physician with Kelowna Regional Family Medicine, University of British Columbia. Mr Evans is the systems planner for the Central Okanagan Journey Home Society. Mr Woodmass is the former associate research coordinator for the Kelowna Homelessness Research Collaborative, based out of UBC Okanagan. Mrs Laing is the director of operations for the Kelowna Homelessness Research Collaborative, based out of UBC Okanagan. Dr Graham is a professor with UBC Okanagan's School of Social Work and the primary investigator for the Kelowna Homelessness Research Collaborative, based out of UBC Okanagan.

This article has been peer reviewed.

intervention resulted in mental health and substance use outcomes that were similar to those of the control group.¹⁰ While case studies of BC permanent supportive housing sites, including reports from government¹⁴ and independent audits,¹⁵ confirm that many residents do experience positive health outcomes, detailed information is limited, and improvement is not ubiquitous. Bitter and colleagues also commented that “the quality of life of service users of housing services needs improvement, as even persons in the best-recovered subgroup have a lower quality of life than the average population.”¹⁶ The literature demonstrates that housing alone can be insufficient in supporting individuals with complex health needs, and effective service delivery can benefit from an understanding of clients, their needs, and their experiences in engaging with services.

The use of permanent supportive housing is widely implemented across BC. BC Housing provides a full list of its funded facilities on its Housing Listings web page;¹⁷ Figure 1 shows the locations of those sites. Access to supportive housing programs requires self-referral by eligible individuals (low income, homeless or at risk of homelessness, and in need of supports to live independently or to maintain housing) to BC Housing via a Supportive Housing Registry Application Form.¹⁸ Applicants must undergo an evaluation using a Vulnerability Assessment Tool before their file can be discussed at a local Coordinated Access Committee meeting to determine whether they can be considered for any local vacancies, including in Kelowna.¹⁹ This Coordinated Access process is common across Canada and is mandated for “designated communities” that have received federal Reaching Home funding since 31 March 2022.²⁰ Investment in this form of housing is supported by a range of evidence on both the social and economic value of supporting individuals who are experiencing or at risk of experiencing homelessness.²¹ Further inquiry can reinforce how these investments can more fully stabilize and support vulnerable community members—in this case, their health needs.

Objectives

Our goal was to identify and examine the health care needs of tenants in three supportive housing sites in Kelowna to (1) clarify the existing needs of tenants, including those that tenants and staff report as currently unmet; (2) ascertain, for each health category, whether tenants are aware of and have accessed services; (3) explore staff and tenants’ opinions on available and desired services; and (4) detect any barriers that exist for tenants related to accessing health care services. This builds on prior research on the needs of those seeking supportive housing²² to also gauge self-reported use of health services and a diverse range of perspectives.

Methods

We used a mixed method case study approach²³ that consisted of in-depth interviews, which were recorded, transcribed, and used to fully explore tenant and staff perspectives. Closed-ended questions were used to conduct a quantitative analysis, and open-ended questions were used to elicit perspectives that could be qualitatively analyzed and used to maximize the accuracy of our results in reflecting participants’ opinions. Participation was extended to all supportive housing tenants and all permanent staff and case managers connected to three permanent supportive housing sites in the Kelowna area, all operated by the same agency. Interviews were conducted between 1 August and 2 September 2020 [Table].

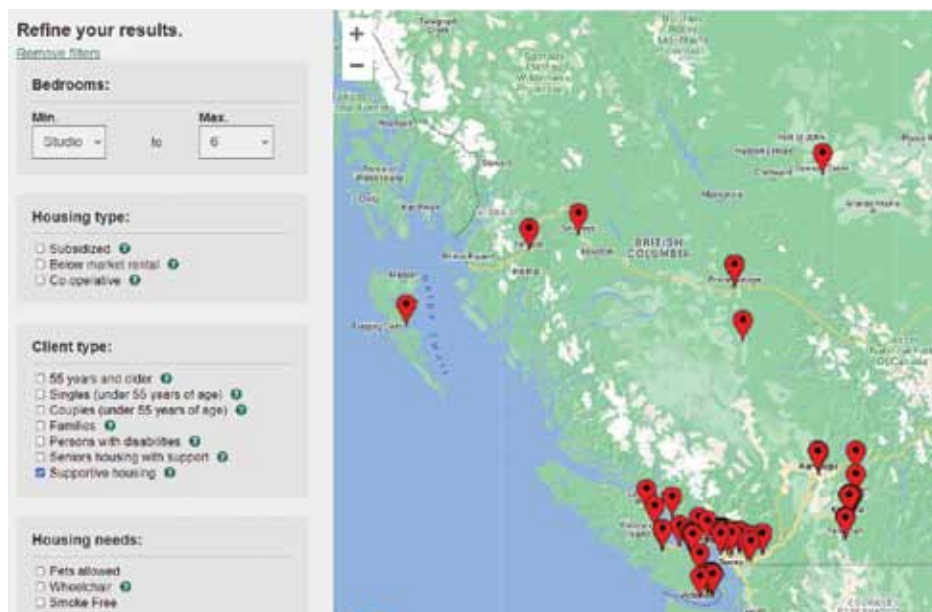


FIGURE 1. BC Housing supportive housing listings (23 December 2022). Source: www.bchousing.org/housing-assistance/rental-housing/housing-listings

TABLE. Participation across supportive housing sites in Kelowna, British Columbia.

	Site 1	Site 2	Site 3	Case managers	Total	Response rate (%)
Tenants invited	35	32	44	—	111	—
Tenants interviewed	10	12	20	—	42	38
Staff invited	10	10	12	8	40	—
Staff interviewed	5	8	10	7	30	75

Note: Those not interviewed either declined or were unable to be engaged by 2 September 2020.

Medical conditions were grouped into categories using the *International Statistical Classification of Diseases and Related Health Problems*, 10th revision.²⁴ Tenants were then asked to share their experience accessing services for identified conditions. Staff were asked about their experience accessing services on behalf of tenants and whether they felt the health care needs of their tenants were being met.

This study was submitted at an early stage to Research Ethics BC for an informal ethics review, and then to the UBC Okanagan Behavioural Research Ethics Board (certificate #H20-03383).

Data analysis

The interview questions were designed to allow for both quantitative and qualitative analysis. Once recorded, all answers were moved from the transcription software into a Microsoft Word document and were anonymized. A phenomenological approach was used to interpret the qualitative data to illuminate tenants’ perceptions of health care access within permanent supportive housing environments. Thematic analysis followed an inductive approach as common experiences detailed by the participants informed the selection of overarching themes. Quotations were then arranged according to these themes. Health conditions were not treated as mutually exclusive due to nuances in those conditions (e.g., depression lasting

more than 6 months was classified as both a psychiatric and chronic condition).

Results

Ninety-three percent of tenant respondents had a form of chronic disease [Figure 2]; 76% of them had two or more chronic diseases. Of the total number of tenant respondents, 72% felt that they had unmet health needs. Tenants with developmental disabilities experienced the highest percentage of unmet health needs. Other health conditions associated with self-identified unmet needs were long-term conditions such as diabetes, high blood pressure, heart disease, and liver disease.

Respondents stated that health was often not a primary focus for tenants, that pre-existing conditions deteriorated, and possible new concerns were not addressed as a result. For instance, one staff member described a tenant who was unable to manage his medications for chronic disease and did not know the extent of the issue until the nurse took his blood pressure. Other staff members described the need for qualified medical professionals to come in to check up on tenants one-on-one and to encourage healthy behavior.

Lack of awareness about services

Fifty-one percent of tenants said they were unaware of services that were available for treating chronic diseases, and only 36%

accessed services for their disease. One participant described the situation as being comparable to being on the street again: “I don’t know what the resources are, I don’t know what my options are or accessibility or anything like that. I feel like I’ve been housed and that was it. I guess I appear to be high functioning so they think I can do it on my own, but I’m having a lot of trouble. I just don’t even know how to start or where to start, what to do. It was a huge transition going from the shelter, where they pretty much wait on you hand and foot, ... to independent living, where you just got to do it all by yourself. I’m just losing my mind here. It feels like I’m on the street again, doesn’t feel like I got any help. I’m struggling, quite a bit.”

Barriers to maintaining health care appointments

Physical mobility was a common challenge for tenants in attending health care appointments because their supportive housing site was not located within walking distance of health services:

“I don’t mind biking around, but I mean I have COPD [chronic obstructive pulmonary disease] so I can’t go too far, sometimes I need to be transported around.” “The one thing I have been asking for years now is help, to get me from home to the doctor’s, when my back is hurting, and I can’t walk to the bus stop.”

In addition to transportation barriers, respondents described anxiety about traveling to and accessing health services.

Consequences of missed appointments

One staff member expressed concerns that missed appointments and subsequent sanctions were having a detrimental effect on tenant health: “The system is still designed in a way that punishes people for not making appointments . . . so if [tenants] miss three dentist appointments, [they are] cut off with the free clinic, for example. That is not super realistic for the folks that we work with. So that’s disappointing. I have had clients that have a regular GP, and if

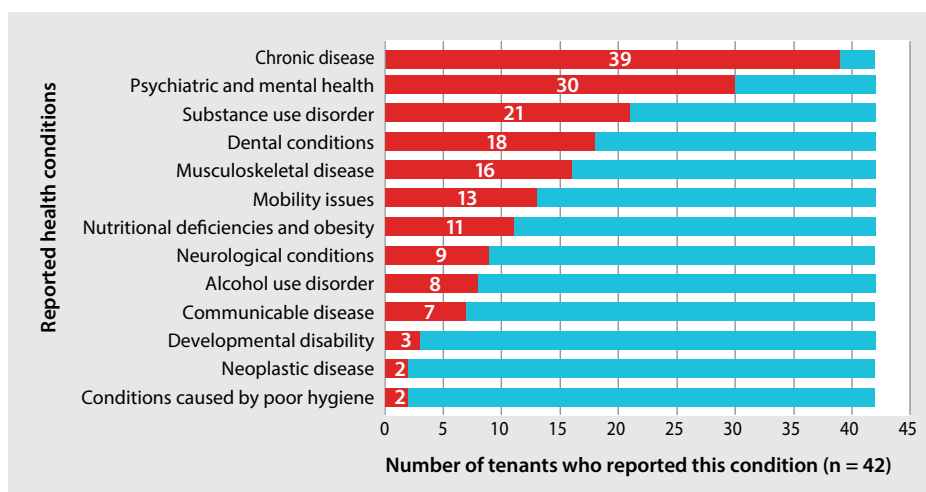


FIGURE 2. Tenants’ self-reported health conditions.

they miss an appointment, they're charged. You can't charge an \$80 cancellation fee to a person that's on a limited income and expect them to ever go back, but all their records are with you and they were comfortable with you, so that's problematic."

Stigma and discrimination

Many instances of stigma, discrimination, and mistreatment were mentioned during the interviews. Both tenants and staff emphasized that stigma and discrimination within health services are barriers to receiving care. Advocacy from staff was crucial in effectively supporting tenants: "I've been told by clients that their experience going into hospital is night and day whether I'm with them or not. So they're treated with not as much dignity or respect as, say, somebody else not struggling with substance use or not struggling with homelessness." Another staff member confirmed that having an advocate in the emergency room means residents are "more likely to get attention, much quicker, and be taken seriously." Both tenants and staff identified a need to educate medical staff on addiction and accommodating street-entrenched populations.

Lack of transparency between services

Confidentiality concerns also limit access to information for existing tenants, and staff expressed concerns that medical information that is relevant to supporting prospective tenants was not shared with the supportive housing site prior to tenancy.

Mental health and substance use and physical health needs

Mental health and substance use were identified as intricately linked to physical health. For example, a mental health issue may prevent a tenant from seeking medical attention for a physical ailment due to a lack of motivation or a lack of awareness about the physical issue. Existing health services were also seen as ill-equipped to deal with concurrent conditions. One staff member commented: "So, when people are experiencing a concurrent disorder, they are often turned away from one health service because

of the other concern. So, if you are having a mental health issue that could be substance use related, then you're turned away from actual support around your mental health until your substance use clears. So that's a problem for most of our residents."

We found that there is a niche group of tenants who have mental health and substance use issues, in addition to physical needs such as incontinence or frequent falls. Typically, this group is elderly or physically disabled and is unable to access regular home support services due to their mental health and substance use. Multiple staff members highlighted this issue. One identified a perceived misunderstanding "that you grow out of mental health and substance abuse. . . . I've definitely worked with many people 60, 70, 80 years old that are still actively using." One staff member noted that several tenants already require panic buttons to trigger support and that half a dozen more will require that level of support in the near future. There is a gap in housing that provides support for seniors with substance use issues, but also with physical conditions such as incontinence and aspects of end-of-life care: "I think for me the biggest gap is definitely end-of-life care and palliative care in home. I've definitely had experience over the years where people want to die at home, which is completely reasonable and understandable. But the services available to help that transition are lacking, [as is] general elderly care. When it comes to personal care, home support, that sort of thing, I think there's a huge barrier, especially if you have substance use or mental health barriers."

Traditionally, patients who need physical help with their activities of daily living, such as washing and dressing, can access home health care. This service offers a range of support from care aides who can assist with personal hygiene, nurses who provide medication management, specialists for issues such as diabetes and chronic obstructive pulmonary disease. However, home health care has refused service to tenants for being intoxicated, smoking cigarettes on the premises, or having substance use

paraphernalia in the unit: "There's been several situations where we've seen a tenant that has needed home health in their home and because of hard standards, they've refused to enter the home, or because of the multiple barriers that are put up, like the client being intoxicated or the client not having a regular schedule. I guess the biggest barrier and gap is just not having the right resources in town for individuals who suffer from mainly substance abuse. For me, the biggest one has been alcohol and incontinence, and really just not having a place to go, nor the resources to be able to support individuals in those situations."

An example of the shortcomings in the current system are detailed in a statement from a staff member: "Then our seniors' care facilities, which are totally competent in meeting health care needs and doing the bathing and feeding without falling and all that stuff, have no tolerance for substance use. So there's this big gap where I have a client who has, since I've worked with her, been through a scattered site, a supportive housing placement, and to seniors' homes, and she's facing an eviction and will likely end up spending months again in hospital because they don't know where to take her or what to do with her. So, there's just . . . no overlap between the ability to tolerate substance use and to tolerate some of those behavioral issues and the ability to manage somebody's complex health needs."

Substance use initiation after being housed

While many tenants with substance use felt their needs were being met, some raised concerns about substance use at supportive housing sites. Many tenants reported starting substance use since being housed within supportive housing due to the close proximity to other users and open substance use: "In all honesty, I never smoked [meth] before I moved here. What's the saying, if you sit in the barbershop long enough, eventually you're going to get a haircut."

Both staff and tenants spoke of challenges in preventing individuals from initiating drug use and supporting those who

are trying to stay clean while in supportive housing: “Wet houses and harm reduction. I understand the need for it, but it frustrates me. What I see is a very narrow group of people that I know and have worked with, [and] I don’t know anyone that comes out the other end clean or sober from that scenario. It’s frustrating.” “I think there needs to be more of a second stage house. I’m talking about alcoholism and recovery, mental health . . . to start off in the supportive housing units that we have. That’s great. But it would be nice for people to be able to grow and move into a space where there’s maybe more programming or assistance, maybe even working towards getting off of disability, which is also a huge problem. I mean, it’s a tremendous service, it’s needed, but once you’re on it, there’s no path off of disability. You kind of have to create that yourself, and I think everybody flounders in that space.”

Dental care

Forty-three percent of tenants reported having dental issues, and 67% stated that their needs were not being met. This was due largely to tenants being unaware of available or affordable services or experiencing challenges and delays in scheduling appointments through what can be rotating staff. The issue of affordable dentures is having a significant effect on the health of some tenants: one participant said they do not eat healthily because everything has to be soft.

Discussion

Our interviews provided valuable insights into the challenges in meeting health care needs within supportive housing facilities. Experiences of stigma, discrimination, and mistreatment are clearly a contributing factor to perceptions about meeting health care needs. Potential solutions are multifaceted and will require changes at the societal level. Attitudes toward mental health and substance use need to shift before we can expect better treatment of the people we serve. We believe that the best way of addressing this issue is to provide service providers with education and

training on mental health and substance use and on the unique challenges faced by street-entrenched populations. Tenants and staff suggested that solutions to this issue could include providing a mobile health care team, an on-site multidisciplinary team, or increased access (including evenings and weekends) to existing health care services.

Charges and penalties for missed appointments highlight issues with regular service providers who offer health care to a street-entrenched population. Although systems and infrastructure changes would help address these barriers, providing support in the current system is essential for ensuring that tenants are able to access health care and that their needs are assessed and managed appropriately. To address the lack of communication and transparency between housing and community health agencies, we recommend that supportive housing sites ask tenants for consent to release all information that is pertinent to their housing situation, including management plans, prognosis, and identified risks.

Local supportive housing facilities offer a range of services related to harm reduction. One facility has an overdose prevention site and provides harm reduction supplies, another facility provides harm reduction supplies but does not have an overdose prevention site, and another facility does not offer either service. In keeping with current best practice of the Housing First model, we believe that a range of support is appropriate. Although there is clear value in the harm reduction approach, we recommend that prospective tenants at Coordinated Access tables be matched to a housing site that is best suited to their needs, which will set them up for success in health and in their tenancy. Other supportive housing sites should have a lower tolerance for substance use and be able to offer “clean” units for clients who are returning from detox or are actively trying to abstain from substance use. The Kelowna Homelessness Research Collaborative found that housing itself can be a risk factor for homelessness when it comes with restrictive rules that

limit freedom or where there is a mismatch between those seeking recovery and those actively engaged in substance use.²⁵

Funding is needed for long-term care beds for individuals with substance use and mental health needs and concurrent physical needs, such as falls or incontinence, because the current system is ill-equipped to deal with this demographic. As the general population and the population at our supportive housing sites age, this issue will become increasingly prevalent. The concurrent experience of physical, mental, and/or substance use challenges supports the establishment of a dedicated long-term care facility for patients who have physical health needs in addition to mental health or substance use disorders. The Province has announced promising new investments in the form of complex care housing.²⁶ Ideally, this would expand beyond a focus on concurrent disorders to include complex challenges associated with aging and other factors.

The literature on permanent supportive housing models continues to identify efficacy in reducing homelessness and achieving housing stability, though again, evidence of improvement in other facets of well-being remains mixed.²⁷ Additional inquiries point to the importance of undertaking supplementary actions such as embedding primary care services in permanent supportive housing facilities²⁸ and highlight other factors such as the design of the built environment.²⁹ We should consider all opportunities to ensure that a system of care such as permanent supportive housing can best stabilize individuals in need of support and move them to a level of independence based on their own self-determination and their individual needs. Permanent supportive housing is a critical resource but is still worthy of continued evaluation and evolution.

Study limitations

While the study had high levels of participation, all participants either worked or resided in supportive housing without health care integration, and all were associated with the same organization. Despite offering prospective participants telephone

interviews, it is possible that some may have declined due to fear of transmission of COVID-19, and the pandemic may have also affected participants' perception of health care access. COVID-19 was frequently mentioned as a barrier to accessing services due to some services being closed or having reduced hours. Transportation was also affected by COVID-19 and included restrictions on staff in transporting clients.

Conclusions

Many health needs are not being sufficiently addressed within supportive housing sites. Additional funding is required to provide a wide range of housing options in keeping with the diverse health, social, and other needs of tenants. Further research needs to be undertaken to assess the needs of the populations in other supportive housing sites across Kelowna and BC to implement and evaluate recommended changes. ■

Acknowledgments

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Competing interests

The first two authors were employees of the facility operator at the time of the interview but no longer have any affiliation. The authors report no other conflicts of interest.

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Kevin E. Liang, MD, CCFP, Jiayun Angela Yao, PhD, Philip Hui, MD, FRCPC, Darryl Quantz, MFPH, MPH, MSc

Climate impact of inhaler therapy in the Fraser Health region, 2016–2021

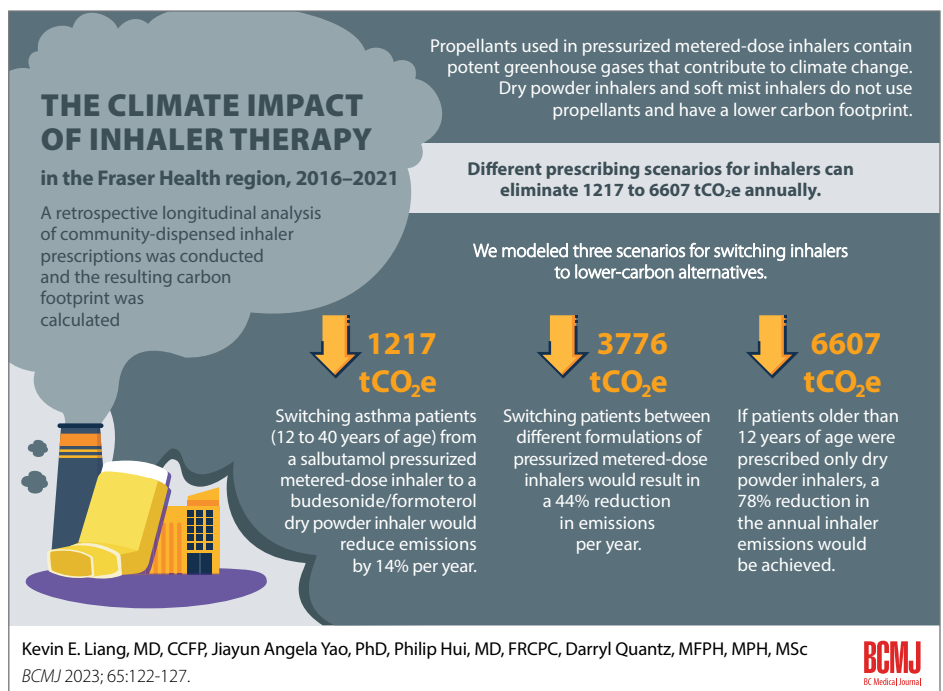
Switching away from pressurized metered-dose inhalers with high carbon footprints, when appropriate, would reduce the health care sector’s greenhouse gas emissions and could improve respiratory care.

ABSTRACT

Background: Inhaler therapy is a cornerstone treatment for asthma and chronic obstructive pulmonary disease. Propellants used in pressurized metered-dose inhalers contain potent greenhouse gases that contribute to climate change. Dry powder inhalers and soft mist inhalers do not use propellants and have a lower carbon footprint.

Methods: We conducted a retrospective longitudinal analysis of community-dispensed inhaler prescriptions in the Fraser Health region in British Columbia from 2016 to 2021 and calculated the resulting carbon footprint. We modeled three scenarios for switching inhalers to lower-carbon alternatives.

Results: The average annual carbon footprint of inhalers was 8478 tonnes of CO₂ equivalent



Dr Liang is a family physician and clinical instructor in the Department of Family Practice at the University of British Columbia. Dr Yao is a regional epidemiologist for the British Columbia Centre for Disease Control. Dr Hui is a respirologist and clinical assistant professor in the Division of Respiratory Medicine, Department of Medicine, UBC. Mr Quantz is a public health consultant for the Fraser Health Authority.

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(tCO₂e), which was 21.8% of the reported total emissions from Fraser Health facilities. Different prescribing scenarios for inhalers can eliminate 1217 to 6607 tCO₂e annually.

Conclusions: Encouraging switches to low-carbon inhalers offers an opportunity to reduce health care–associated carbon emissions and potentially improve respiratory care.

Background

Health care–related carbon emission is a significant contributor to climate change;

it is estimated to constitute 4.6% of the global carbon footprint.¹ When compared with the health care systems of 47 countries, the carbon footprint of the Canadian health care system is the third highest in the world on a per capita basis.^{2,3}

A group of medications called pressurized metered-dose inhalers, which are used for managing obstructive lung diseases such as asthma and chronic obstructive pulmonary disease, have an outsized carbon footprint. Because pressurized metered-dose inhalers use liquefied

gases called hydrofluoroalkanes (HFAs) as propellants to deliver medication to the lungs, they release potent greenhouse gases into the atmosphere on actuation and if disposed of improperly.⁴ Pressurized metered-dose inhalers account for 70% of inhalers prescribed in the United Kingdom and up to 4% of its health care carbon footprint.^{5,6}

Low-carbon alternatives to pressurized metered-dose inhalers are readily available in Canada. HFA-free dry powder inhaler and soft mist inhaler formulations have similar effects as those of pressurized metered-dose inhalers but with reduced climate impact.⁷

In this study, we reviewed the prescribing patterns for and calculated the climate impact of inhalers available in the Fraser Health region. Fraser Health is the most populous health region in British Columbia; it includes 20 communities from Burnaby to the Fraser Canyon and has an estimated population of 1.9 million.⁸ We also estimated the prevalence of overuse of short-acting β_2 -agonists, which results in significant greenhouse gas emissions and can be used independently to predict adverse respiratory health outcomes.⁹ Finally, we modeled three scenarios for reducing emissions with altered inhaler prescription patterns and discuss their indirect potential to improve respiratory care.

Methods

Ethics review and approval for this study were waived by the Fraser Health Research Ethics Board.

Data sources

PharmaNet

All prescriptions dispensed in community pharmacies in BC are recorded in the PharmaNet system. We requested PharmaNet data for Fraser Health region residents from 1 January 2016 to 31 December 2021 via the Health Data Platform BC.¹⁰ Dispensed inhalers were identified and categorized into pressurized metered-dose inhalers or dry powder inhalers/soft mist inhalers by their drug identification number. Information

on the date the inhaler was dispensed and the age of the individual who received the inhaler was obtained. Unique study subject identifications were also used.

Inhaler carbon footprint

We used the Health Canada Drug Product Database to determine the availability of inhalers in Canada and obtain their drug identification numbers. To calculate the carbon footprint of every inhaler available in the Fraser Health region, we took the following steps:

1. We used the manufacturer's footprint values that were certified by the Carbon Trust—a global organization that verifies the carbon footprint data supplied by various companies.⁷
2. When no manufacturer data were provided, we used values from PrescQIPP, a UK organization that generates carbon footprint data through a survey sent to pharmaceutical companies.¹¹ We ensured that the inhalers available in BC matched the dose, brand, ingredients, and mechanism of administration of the equivalent UK products.
3. For the remaining inhalers, we followed PrescQIPP's methods and estimated the carbon footprint of pressurized metered-dose inhalers by multiplying the inhaler's propellant weight by the propellant's global warming potential.

Fraser Health carbon footprint

Each year, Fraser Health releases its Climate Change Accountability Report, which summarizes the health authority's measured carbon footprint, including buildings (fuel combustion and electricity), mobile fleet combustion, and paper.¹² The total footprint excludes any prescription data. We obtained the annual total emissions from Fraser Health for 2016 to 2021.

Data analyses

Data cleaning, analysis, and visualization were conducted using R (Version 4.1.3) on the Health Data Platform BC secure virtual desktop environment.

Overuse of short-acting β_2 -agonists

We defined the rate of short-acting β_2 -agonists overuse as the number of individuals 12 to 40 years of age who were dispensed three or more short-acting β_2 -agonist inhalers in a calendar year, divided by the number of individuals 12 to 40 years of age who received at least one inhaler in the same year. This definition approximates the definition of overuse in the Global Initiative for Asthma guideline.^{9,13,14}

Scenario development

Three scenarios were developed to calculate the potential reduction in greenhouse gas emissions due to altered patterns of inhaler use. In the first scenario, we replaced each pressurized metered-dose inhaler that contained higher volumes of propellants with pressurized metered-dose inhalers that offered the same or similar medication but contained lower volumes of propellant. Teva-Salbutamol and Airomir deliver the same medication as all other salbutamol pressurized metered-dose inhaler preparations (i.e., Ventolin) but have a reduced amount of propellant and thus a lower carbon footprint.¹¹ In addition, Zenhale, a pressurized metered-dose inhaler that is available in BC, uses a type of propellant that has a much higher global warming potential (HFA-227) than all other available pressurized metered-dose inhalers (HFA-134a).¹¹ In the second scenario, we replaced pressurized metered-dose inhalers prescribed to patients 12 years of age and older with the available equivalent dry powder inhaler formulation that offered the same or similar medication at equivalent doses. In the third scenario, we followed the current evidence-based asthma guideline, which calls for patients who are 12 years of age and older and have mild and very mild asthma to use budesonide-formoterol (a dry powder inhaler) solely instead of the pressurized metered-dose inhaler short-acting β_2 -agonists as a rescue inhaler.^{13,14} We restricted this replacement to those between 12 and 40 years of age to prevent the inclusion of older patients with chronic obstructive pulmonary disease. The

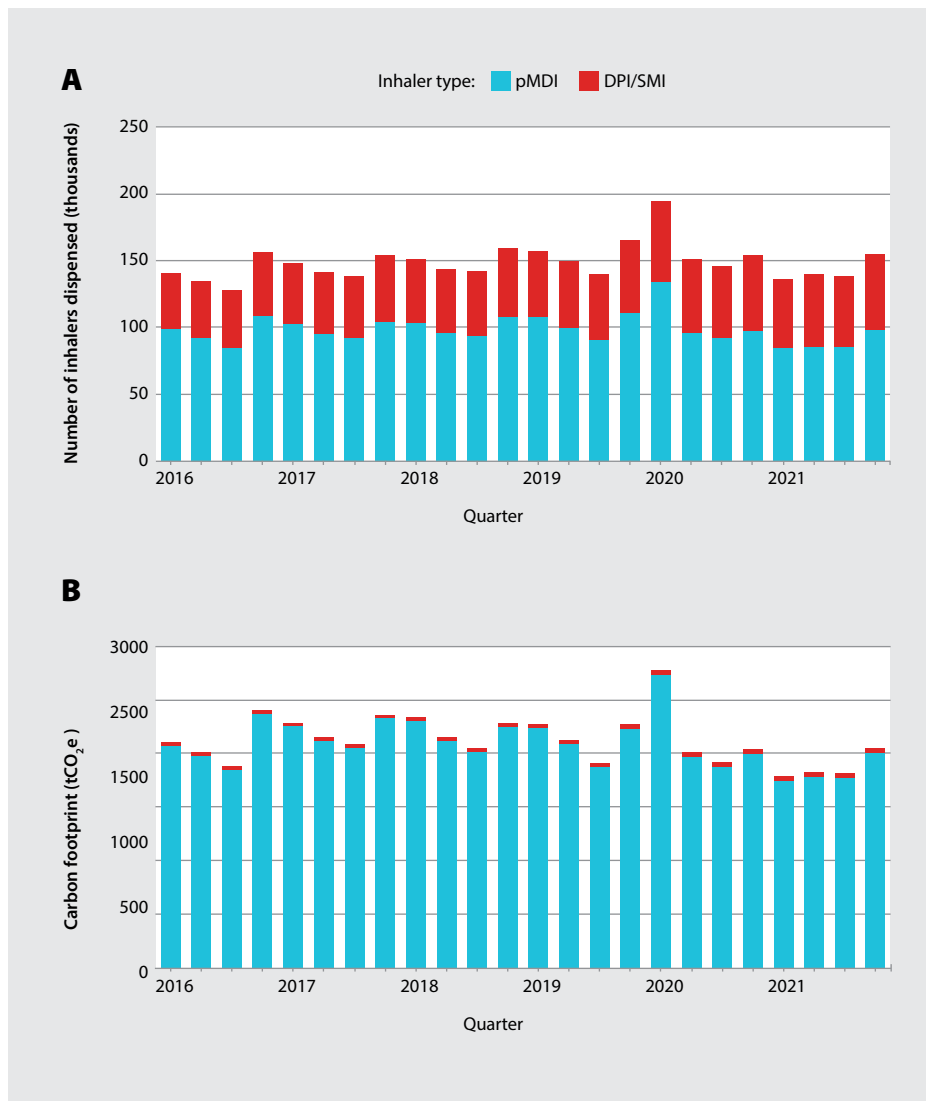


FIGURE 1. (A) Number of inhalers dispensed and **(B)** the carbon footprint from dispensed inhalers, shown quarterly, from 2016 to 2021, by type of inhaler.

DPI = dry powder inhaler; SMI = soft mist inhaler; pMDI = pressurized metered-dose inhaler

supplementary data (available online) list the inhaler switches undertaken in each scenario. Inhalers contain varying doses depending on the device type and medication. We used a dose-to-dose substitution to model inhaler switches and to calculate the carbon footprint reduction.

Results

From 2016 to 2021, 70 unique inhaler devices were commonly available in the Fraser Health region, primarily for treatment of asthma and chronic obstructive pulmonary disease: 20 were pressurized metered-dose inhalers, 47 were dry powder inhalers, and 3 were soft mist inhalers. In the Fraser Health region between 2016 to 2021, the carbon footprint of available pressurized metered-dose inhalers ranged from 9720 to 36 500 gCO₂e (grams of carbon dioxide equivalent) per inhaler; the range for dry powder inhalers/soft mist inhalers is 282 to 1700 gCO₂e per inhaler.

From 2016 to 2021, more than 3.56 million inhalers were prescribed for Fraser Health region residents; an average of 394 094 pressurized metered-dose inhalers and 199 536 dry powder inhalers/soft mist inhalers were dispensed per year [Table 1]. The resulting carbon footprint of inhalers was 8478 tCO₂e per year, and pressurized metered-dose inhalers accounted for more than 98% of the footprint [Figure 1]. To put this in context, the annual average measured emissions from the Fraser Health region,

TABLE 1. Number and type of inhalers dispensed in the Fraser Health region from 2016 to 2021 and the resulting carbon footprint.

Year	Number of pMDIs*	Number of DPIs [†] and SMIs [‡]	Total carbon footprint (tCO ₂ e) [§]	Percentage of footprint from pMDIs only	Fraser Health facilities carbon footprint (tCO ₂ e)	Percentage of Fraser Health facilities footprint
2016	384 700	174 852	8386	98.8	37 143	22.6
2017	395 345	186 152	8883	98.8	40 547	21.9
2018	400 543	194 578	8821	98.6	37 384	23.6
2019	409 073	201 828	8581	98.5	37 529	22.9
2020	420 199	225 421	8738	98.2	39 876	21.9
2021	354 704	214 383	7460	98.0	41 228	18.1
Annual average	394 094	199 536	8478	98.5	38 951	21.8

* pMDIs = pressurized metered-dose inhalers; [†] DPIs = dry powder inhalers; [‡] SMIs = soft mist inhalers; [§] tCO₂e = tonnes of CO₂ equivalent

which includes 174 buildings with 13 acute care hospitals in 2021, over the same 6-year period was 38 951 tCO₂e.¹²

Approximately 4.1% of patients between 0 and 9 years of age were prescribed at least one dry powder inhaler/soft mist inhaler. The proportion for patients 50 years of age and older increased to 41%, which illustrates a trend toward nonpressurized metered-dose inhaler use in older age groups. An average of 12.9% of patients between 12 and 40 years of age were prescribed three or more short-acting β 2-agonist inhalers per year during the 6-year period [Table 2].

The three scenarios for altered inhaler prescribing patterns resulted in significant emission reduction [Figure 2]:

1. Switching patients between different formulations of pressurized metered-dose inhalers would result in a reduction in emissions of 3776 tCO₂e (44%) per year.
2. If patients older than 12 years of age were prescribed only dry powder inhalers, a reduction in emissions of 6607 tCO₂e per year, or 78% of annual inhaler emissions, would be achieved.
3. Switching asthma patients who are between 12 and 40 years of age from a salbutamol pressurized metered-dose inhaler to a budesonide/formoterol dry powder inhaler would reduce emissions by 1217 tCO₂e (14%) per year.

Discussion

To our knowledge, this is the first study that has evaluated the climate impact of inhaler therapy in Canada based on prescription data. Our results show that pressurized metered-dose inhalers alone release approximately one-fifth of the emissions produced by Fraser Health facilities. Patients were prescribed a far greater proportion of pressurized metered-dose inhalers than lower-carbon alternatives that have similar expected efficacy. A method of reducing the inhaler footprint involves switching patients to a dry powder inhaler when clinically appropriate, which mirrors prescribing patterns used in Sweden, where only 13% of inhalers prescribed are pressurized metered-dose inhalers.⁵

TABLE 2. Number and percentage of individuals (12 to 40 years of age) who were dispensed short-acting β 2-agonist (SABA) inhalers each year from 2016 to 2021.

Year	Number of patients dispensed three or more SABA inhalers	Number of patients dispensed at least one inhaler	Overuse (%)
2016	4837	37 447	12.9
2017	4809	38 323	12.5
2018	4933	39 056	12.6
2019	4755	41 313	11.5
2020	5317	38 834	13.7
2021	4416	31 080	14.2
Average	4845	37 676	12.9

In addition to their outsized climate impact, pressurized metered-dose inhalers present various clinical concerns. Suboptimal inhaler technique is common with pressurized metered-dose inhalers used in the outpatient setting.¹⁵ Dry powder inhalers and soft mist inhalers, if used appropriately, can lead to greater medication deposition on the airways compared with pressurized metered-dose inhalers.¹⁶ In addition, due to a lack of dose counter on many pressurized metered-dose inhalers, patients often have trouble determining when their pressurized metered-dose inhalers are empty, which results in either inappropriate disposal of nonempty inhalers or, conversely, the continued use of empty inhalers.¹⁷ Finally, many dry powder inhalers and soft mist inhalers offer once-a-day dosing, which can reduce the respiratory “pill burden” and improve adherence.

Among all pressurized metered-dose inhalers, salbutamol remains the single largest source of carbon emissions from the Fraser Health region: it generates 5640 tCO₂e per year, or 67% of the total inhaler footprint. Many patients with asthma are commonly prescribed salbutamol or short-acting β 2-agonists-only treatment, but frequent, single-agent salbutamol use is associated with poor asthma control and increased exacerbations, hospitalization, and death.⁹ In our analysis, an annual average of 12.9% of patients between 12 and 40 years of age in the Fraser Health region are prescribed three or more short-acting β 2-agonist

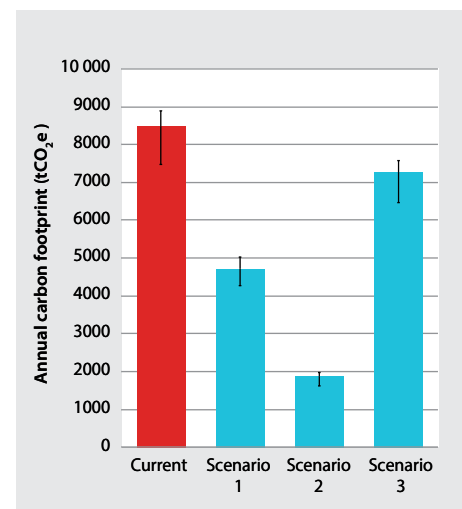


FIGURE 2. Estimated carbon emissions in the scenarios of altered pattern of inhaler prescription compared with current annual emissions.

The height of the bar is the average annual emission estimates; the black lines indicate the range between the maximum and the minimum year.

inhalers each year, an independent risk factor for asthma exacerbations leading to increased mortality and morbidity.^{13,14}

Although efforts are made to reduce the greenhouse gas emissions associated with inhalers, patient choice should be central to decision-making; changes ought to be made only when clinically advantageous. Children, older adults, and people with disabilities may not have the inspiratory flows required to use a dry powder inhaler.²⁰ Pressurized metered-dose inhalers have unique clinical applications for specific patient groups.

In instances where pressurized metered-dose inhalers are deemed necessary, lower greenhouse gas emission per inhaler actuation could be used in preference to larger greenhouse gas emission per actuation. Based on our modeling analysis, conversion of all patients from high-volume to low-volume salbutamol pressurized metered-dose inhalers would theoretically reduce emissions by 3776 tCO₂e (44%). A new propellant (HFA-152a) is currently in pharmaceutical development; it will reduce the carbon footprint of pressurized metered-dose inhalers by up to 90%, which will be equivalent to that of dry powder inhalers.¹⁹ However, it is not yet known when pressurized metered-dose inhalers containing this propellant type will become clinically available.¹⁹

Cost must also be addressed when considering switching inhalers. Some switches from pressurized metered-dose inhalers to dry powder inhalers/soft mist inhalers are associated with a higher per-dose cost. Alternatives to pressurized metered-dose inhalers may not be readily available in BC because they may not be covered under the province's PharmaCare program. However, the per-dose cost of pressurized metered-dose inhalers does not take into account the long-term cost of their climate impact and the associated health care costs due to poor respiratory control. Figure 3 shows the common pressurized metered-dose inhalers that are available in BC, along with their dry powder inhaler/soft mist inhaler counterpart, the PharmaCare coverage status, and the approximate cost of each inhaler.

Study limitations

Inhaler dispensing data may not reflect actual medication use. Patients may store inhalers for future use; thus, our calculation of overuse of short-acting β_2 -agonists is likely an overestimate. However, our study does not account for in-hospital data; thus, the inhaler carbon footprint is underestimated. Additionally, patients older than 40 years of age who had asthma were excluded from our analysis of overuse of short-acting β_2 -agonists. Finally, our scenarios

for switching inhalers to lower-carbon alternatives are inexact. Our calculation of dose-to-dose conversion presumes equivalent efficacy across medications under the same class, which could introduce errors.

Conclusions

Climate change presents severe health consequences for all British Columbians. Therefore, there is an urgent need for all sectors, including health care, to decarbonize. The propellants used in pressurized metered-dose inhalers are potent greenhouse gases. With widely available alternatives for the management of asthma and chronic obstructive pulmonary disease, switching away from pressurized metered-dose inhalers with high carbon footprints, when appropriate, would be a positive step toward a meaningful reduction in greenhouse gas emissions by the health care sector. ■

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Competing interests

None declared.

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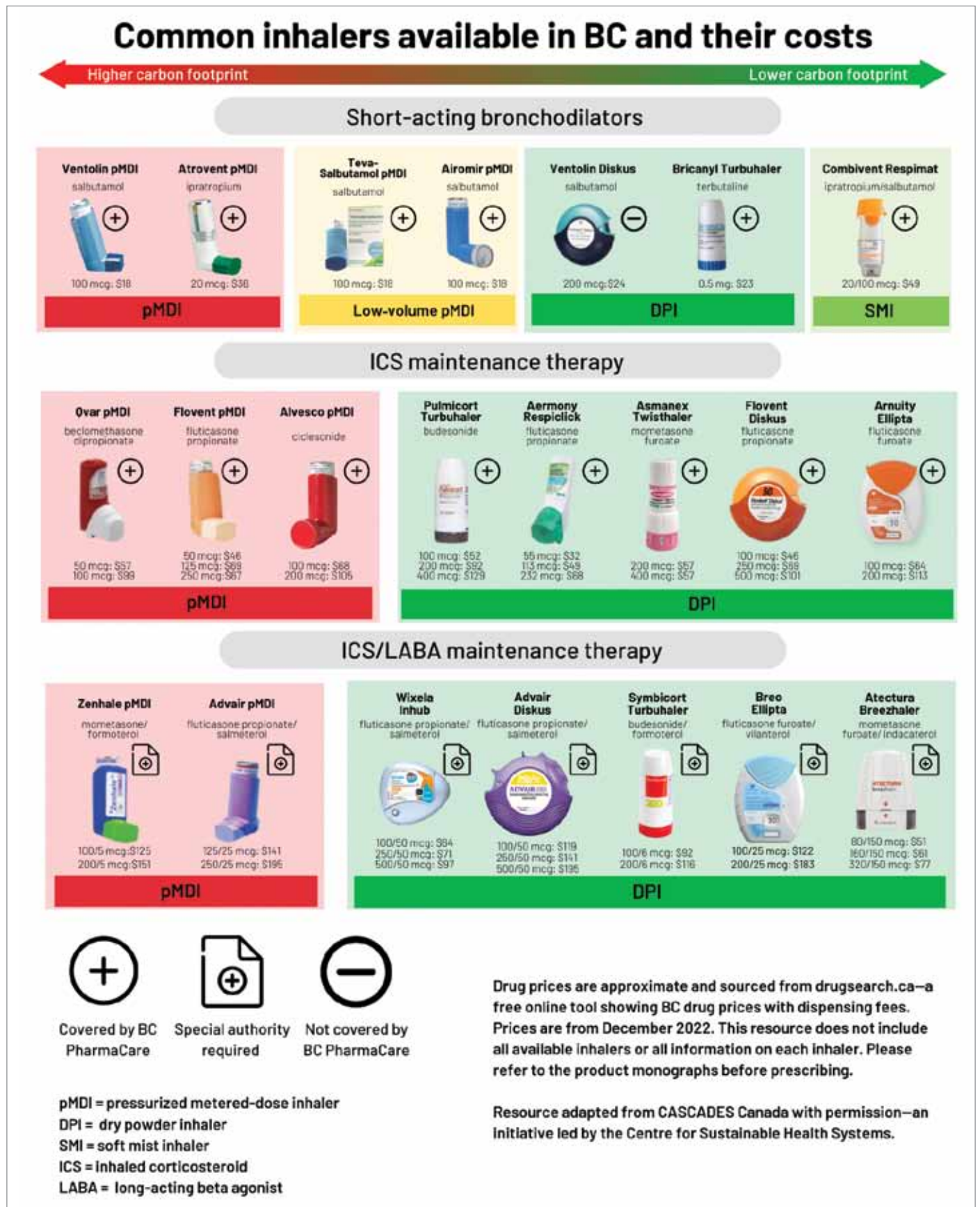


FIGURE 3. Common inhalers available in British Columbia and their costs.

Adapted from Cascades Canada.

Carol-Anne Vallée, MD, Ana Clara Sosa Cazales, MD, Brian Fitzsimmons, MD,
Wendy V. Norman, MD, MHSc

Abortion care in BC: Evolving practice and next steps

Abortion care improved dramatically in Canada with the introduction of mifepristone in 2017. To continue to improve access to abortion in BC, more practitioners are needed, and they should be listed on confidential services. Legislative change is required to allow midwives to provide abortion care, and Ministry of Education and Child Care funding is needed to support training in surgical abortion.

ABSTRACT: Abortion has been legal in Canada since 1969 and is governed as usual reproductive health care. Before the medical abortion pill mifepristone became available in British Columbia in 2017, more than 90% of

abortions in the province were provided in purpose-specific high-volume clinics located in densely populated urban areas. The availability of mifepristone increased the potential for primary care providers to offer abortion care because provision of this medication is a safe, simple service that is easily managed in a routine primary care visit. Since 1997, the BC Women's Hospital and Health Centre's Pregnancy Options Service has supported BC physicians who provide abortion care by confidentially connecting patients who are seeking abortion to their closest appropriate provider. Similar services are also provided by Options for Sexual Health BC. Family physicians are the main providers of medical abortion. Primary care physicians, nurse practitioners, and gynecologists offer service in rural and urban areas, in person or by telemedicine. Providing accessible abortion care currently has three challenges: (1) more practitioners are needed to reduce travel and wait times for services, (2) to assist people seeking an abortion to find a service provider, practitioners who provide abortions should become listed with a confidential abortion service directory, and (3) enhanced training and distribution of services for second-trimester surgical abortion are needed. The time for a small handful of health care workers to provide all aspects of abortion care is over.

Dr Vallée is a clinical instructor and fellow in the Division of Gynaecologic Specialties, Department of Obstetrics and Gynaecology, at the University of British Columbia and a co-investigator with the Contraception and Abortion Research Team in the Department of Family Practice at UBC. Dr Sosa Cazales is a resident in the Department of Obstetrics and Gynaecology at UBC. Dr Fitzsimmons is a clinical professor in the Department of Obstetrics and Gynaecology at UBC and the family planning fellowship director at UBC. Dr Norman is the founder and a co-director with the Contraception and Abortion Research Team in the Department of Family Practice at UBC, a professor and chair of family planning public health research in the Department of Family Practice at UBC, and an honorary associate professor in the Faculty of Public Health and Policy at the London School of Hygiene and Tropical Medicine.

This article has been peer reviewed.

Abortion has been legal, safe, and common in Canada since 1969. Since Canada became one of the first countries to completely decriminalize abortion in 1988, abortion has been regulated as a normal health service through standards set by clinical guidelines, facility accreditation, and health professional licensing. Abortion is a normal component of usual reproductive health care and is a publicly funded service. It is a common procedure undergone by nearly one-third of Canadian women during their reproductive years. Due to the introduction of the medical abortion pill mifepristone in 2017, most abortion providers are now family physicians, who typically offer medical abortion within a wide range of primary care services. Approximately 95% of abortion care is delivered during the first trimester, but there is an ongoing need for second-trimester abortion for both fetal and maternal indications.

Evolution of abortion services in British Columbia

Before 1969, abortion in Canada was illegal, underreported, and a high cause of morbidity and mortality in women of reproductive age. In BC, between 1963 and 1970, up to 27% of direct obstetric deaths were related to unsafe abortion.¹⁻³ In 1969, the Criminal Code was amended to make contraception

legal, and to make abortion legal if provided in hospital under certain conditions. Due to a 1988 Supreme Court decision, Canada became one of the first countries in the world to completely decriminalize abortion.⁴ Over the years, there have been several political attempts to recriminalize abortion care, but all have been unsuccessful.⁵ The Society of Obstetricians and Gynaecologists of Canada and the Canadian Medical Association are strong supporters of reproductive choice and high-quality abortion for all people in Canada.^{6,7}

From 1969 to 1988, abortion care was legally restricted to provision in a hospital setting and required approval of a committee.⁸ These restrictions were removed in 1988, and over the following 30 years, the provision of abortion shifted away from hospitals to mainly purpose-specific high-volume clinics, which are typically available in the most densely populated urban areas.^{5,9} In 2010, a BC study noted that urban abortion care was offered by seven purpose-specific clinics.¹⁰ Since 1997, BC Women's Hospital and Health Centre in Vancouver has provided provincial leadership in supporting rural abortion services by integrating a network of care through the Pregnancy Options Service.¹¹ This confidential provincial database of abortion care providers offers a toll-free phone line to help people in BC who are seeking abortion care connect with their closest appropriate provider.¹¹ More recently, a similar service has been provided by Options for Sexual Health through its Sex Sense line.

In BC, prior to 2017, only physicians were licensed to provide abortion; approximately half were specialists and half were family physicians.¹² Most abortions were surgical, and more than 90% were conducted during the first trimester.^{12,13}

Before 2017, outside of large urban areas in BC, abortion services were available in 17 hospitals, and a small proportion of medical abortion services were available from rural physicians, who used methotrexate and misoprostol.^{10,12} However, these operating room-based and medical abortions accounted for less than 10%

of all BC abortions, even though 43% of reproductive-aged women lived in rural areas.¹⁰ Most patients living outside of major cities had to travel unreasonable distances to access abortion care and faced multiple barriers, such as justifying absence from work, time and costs related to travel, and replacing their caregiver or work responsibilities at home.^{14,15} BC rural providers also faced challenges related to providing abortion

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services in the hospital operating rooms of their communities.^{10,16} From 1998 to 2010, the rural abortion workforce declined by more than 60%.^{10,17} These challenges to providing abortion care in rural areas were reflected across Canada.¹² The provision of highly effective first-trimester mifepristone medical abortion in primary care settings was postulated as a possible solution to increase equity in access to abortion.¹⁸

Importance of primary care providers

In 2017, mifepristone, the gold standard for medical abortion, became available in Canada.¹⁹⁻²¹ This primary care-supportable practice of providing medical abortion has not been associated with any increase in the overall rate of abortion or related complications, but the proportion of abortion care provided as medical abortion has increased compared with surgical abortion.²² The availability of mifepristone as a regular prescription has also been associated with an increase in the number of providers, particularly in rural areas, and the distribution of providers.²³ According to a national qualitative study conducted in 2020, many family physicians became motivated to provide mifepristone after one of their patients requested an abortion, or after

hearing a colleague's highly positive experience of prescribing the medication.^{24,25} Many potential new or inexperienced medical abortion providers sought support or mentorship after mifepristone was introduced. The Society of Obstetricians and Gynaecologists of Canada, College of Family Physicians of Canada, Canadian Nurses Association, and Canadian Pharmacists Association provided expert advice to Canada's Contraception and Abortion Research Team²⁶ to create the Canadian Abortion Providers Support virtual community of practice site (<https://caps-cpa.ubc.ca>).²⁷ This secure resource platform provides access to information, practice and patient resources, clinical support such as the popular "10-minute checklist" for a mifepristone clinical encounter (downloaded more than 2000 times), and discussion forums on mifepristone abortion.²⁷ Polls of community of practice members in 2018 engaged interested clinicians from all regions of the country.^{27,28} Seventy percent were primary care providers, 55% practised outside of metropolitan areas, 35% had no prior abortion experience before registration, and 6.8% practised in regions that had no abortion services before mifepristone became available.²⁷ A 2019 national survey showed there had been a shift in the disciplines and locations of the workforce that provided abortion care: primary care providers now provided 71% of the reported first-trimester medical abortions.²⁴ Responses to that survey indicated that 61% of medical abortion providers had less than 5 years' experience, and 67% practised outside of hospital.²⁹ As a result, approximately 30% more communities had local abortion services than prior to mifepristone release.²⁹ Most survey respondents, in both rural and urban areas, provided a low volume of abortions per survey respondent.²⁹ Similar results were found in a health administrative data study conducted in Ontario between 2017 and 2020, which showed that the number of abortion providers tripled after mifepristone was available, but most providers individually provided fewer than 10

abortions per year (i.e., offering abortion care as part of a wide range of services in primary care practice).²³

Improved confidentiality and privacy

Medical abortion is becoming widely available across the country in a variety of health care settings. While rural communities initially reported a proportion of staff and physicians who would avoid participating in surgical abortion cases due to conflict of personal values, the shift to medical abortion increases the potential for confidentiality and equitable access and decreases reliance on an extended interdisciplinary team to provide each procedure. Similarly, this shift reduces both the potential for patients and primary care providers to face interactions with protesters and the potential for logistical and stigma barriers, as previously reported by abortion providers working in operating room settings. Physicians and nurse practitioners can now competently and safely treat patients who are seeking abortion with confidentiality in a usual office visit setting. The Society of Obstetricians and Gynaecologists of Canada's Sexual Health and Reproductive Equity committee recently released guidance on providing abortion care via telemedicine and access to abortion care during the pandemic [Box 1].¹⁹ According to these guidelines, medical abortion may be provided by telemedicine, with limited or no laboratory or imaging visits required.³⁰ This new guidance enables primary care providers to assess and manage abortion care for their patients more easily. Also, this

care option is now available to those seeking abortion in rural or remote areas that have access to pharmacy services but that previously had no local abortion care. In 2020, 90% of Canadian practitioner respondents to a national poll indicated that they provided some components of abortion care via telemedicine.³¹

The demand for second-trimester abortion and highly skilled care is increasing due to . . . increases in maternal age, multimorbidity, and their associated risks.

Skills training

In Canada, family physicians and general obstetricians and gynecologists have the required skills to provide first-trimester surgical or medical abortion. Routine training in abortion care is variably offered by Canadian family medicine residency programs.³² Medical abortion may also be provided by nurse practitioners and, in Quebec, also by midwives. Since 2017 in BC, nurse practitioners have been authorized to provide first-trimester medical abortion, for which training programs have been launched.³³⁻³⁶ Better access to abortion care could also safely and effectively be supported by a range of primary care providers, including midwives.^{37,38} In many jurisdictions, the provision of medical and surgical abortion by allied health professionals has been

associated with high-quality care and high patient satisfaction.³⁷ Provision of this urgently needed update to midwifery health professional licensing legislation has the potential to improve access to abortion in BC.

As medical abortion increasingly becomes the first-choice method for first-trimester abortion, BC must consider the ongoing and perhaps even more pressing need to maintain surgical skills to ensure a trained workforce is available and capable of providing second-trimester surgical abortion. Training for procedures such as cervical dilation and uterine evacuation under sedation in outpatient settings can easily be integrated into standard obstetrics/gynecology residencies. This skill is an asset not only for managing severe and fatal fetal anomalies, which is increasingly in demand as maternal age at delivery is increasing in BC, but also when delivering a person who is presenting with other complications of pregnancy, such as preventable rupture of membranes with infection or with a placental abruption with hemorrhage, either of which presents potential harm to the mother's health. Currently, our pregnant population is facing increasing challenges due to a greater chance of genetic diagnosis and to comorbidities such as high body mass index, diabetes, hypertension, and prior cardiac surgeries. The demand for second-trimester abortion and highly skilled care is increasing due to these increases in maternal age, multimorbidity, and their associated risks. To build and maintain the skills needed to perform these complex and advanced procedures, Ministry of Education and Child Care funding and education support are required to ensure surgical skill training programs are available within family practice and obstetrics/gynecology residencies and to create expertise through advanced training in family planning for fellows in obstetrics and gynecology.¹³

Finding an abortion provider

The switch toward medical abortion offered by primary care providers allows patients to manage their abortion in their own home at their convenience, which reduces wait

BOX 1. Resources for primary care providers who wish to provide abortions.

Society of Obstetricians and Gynaecologists of Canada guidelines
<https://sogc.org/en/en/content/guidelines-jogc/guidelines-and-jogc-new.aspx>

Canadian Abortion Providers Support virtual community of practice
www.caps-cpca.ubc.ca, including links to the:

- **Medical Abortion Prescriber Checklist Resource Guide**
https://caps-cpca.ubc.ca/index.php/File:Medical_Abortion_Prescriber_Checklist_Resource_Guide.pdf
- **Medical Abortion Prescriber Checklist**
https://caps-cpca.ubc.ca/index.php/File:Medical_Abortion_Prescriber_Checklist.pdf

times, the need for referrals and travel, and the potential of facing protestors at an urban facility. In Canada and throughout BC, people who are seeking abortion may have difficulty finding a provider. Many primary care providers are now offering abortion care; however, few are listed in any of the services that patients can access to find their nearest provider. In BC, these services have had confidential lists of abortion providers for more than three decades, including the BC Women's Hospital and Health Centre's Pregnancy Options Service and the Options for Sexual Health Sex Sense line [Box 2]. To assist British Columbians who are seeking abortion, those who offer surgical and medical abortion are urged to list with BC's confidential abortion provider services. **Box 1** lists resources for primary care providers who wish to provide abortions or refer for abortion service. Identification of community allies will strengthen referrals for those who do not provide abortion directly but will facilitate their patient's care and support their colleagues who provide abortions.

Conclusions

Canada decriminalized abortion in 1988, and the rate of abortion has remained stable since then, although access to abortion care, particularly in rural areas and for second-trimester care, remains a concern in BC. Mifepristone medical abortion has had a rapid uptake in primary care since its introduction in 2017 and appears to offer a solution to urban-rural abortion access disparities. We hope that the need to provide medical abortion may convince more

BOX 2. Where primary care providers can be listed as providers of abortion in BC.

BC Women's Hospital and Health Centre Pregnancy Options Service

- 1 888 875-3163
- www.bcwomens.ca/health-professionals/professional-resources/abortion-contraception-resources

Options for Sexual Health Sex Sense line

- 1 800 739-7367
- www.optionsforsexualhealth.org/sex-sense

family physicians to incorporate the use of mifepristone as a small part of their standard practice.

Legislative change to approve the provision of midwifery abortion care and Ministry of Education and Child Care funding and infrastructure to ensure training in medical abortion care is included in training programs for midwives, nurse

Family physicians and general obstetricians and gynecologists have the required skills to provide first-trimester surgical or medical abortion.

practitioners, and family physicians have the potential to improve access to essential abortion services in BC. The time for a minority of health care workers to provide all aspects of abortion care is over. Now is the time for nurse practitioners, family physicians, and obstetricians/gynecologists to consider meeting the needs of their patients for abortion care.

Primary care providers should talk with their patients and colleagues and consider what service they could offer to improve access to abortion care in BC. An important next step will be to improve and ensure equitably distributed access to second-trimester abortion. The key missing piece is Ministry of Education and Child Care funding to support surgical abortion training in both family practice and obstetrics/gynecology residencies and to support training for complex care through the advanced training fellowship. Equitably accessible abortion care in BC requires our provincial government and health professionals to take these next steps. ■

Competing interests

In the past 36 months Dr Norman has held a number of federal grants to conduct a program of abortion health policy and services research highly related to the content of this article. As well, she received payment for ex-

pert testimony and consultancy advice to the Ontario Government, Office of the Attorney General, in a case related to access to abortion care. She has also served as a member of the Board of Directors of the Society of Family Planning, a professional academic organization for health care and research professionals engaged in abortion care provision, training, and research.

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Paula B. Gordon, OC, OBC, MD, FRCPC, FSBI

Breast cancer screening in BC: What we should be proud of and how to make it even better

Women in BC are welcome to self-refer for breast cancer screening starting at age 40; however, many family doctors do not know this because of the Canadian Task Force on Preventive Health Care guidelines.

ABSTRACT: Optimal screening for women at average risk of breast cancer consists of annual mammograms starting at age 40, continuing for as long as women are in good health and have a life expectancy of another 10 years. Additionally, women with dense breasts should have supplemental screening with ultrasound, MRI, or other emerging technologies.

Breast cancer is the second-leading cause of cancer death in women in Canada. Screening is done to find cancers early to reduce mortality and to allow for successful treatment with less aggressive therapy. There is a wealth of data on mammography screening dating to randomized controlled trials conducted from the 1960s through the early 1990s. These proved the efficacy of mammography in reducing mortality for women aged 40 to 74 years.¹ The trials were conducted in the era of X-ray film mammography, which is no longer used, having been replaced by a high-resolution digital format. The therapies available at the time of the trials were primitive compared with current treatments. For these reasons, the randomized

controlled trials vastly underestimate the current potential for mortality reduction. Moreover, the only benefit studied in the trials was mortality reduction. The other benefits of early detection² that improve quality of life for women with breast cancer—less invasive breast and axillary surgery, and less aggressive (or no) chemotherapy—were not measured in the trials.

All randomized controlled trials underestimate benefits because of noncompliance and contamination, but the two performed in Canada, collectively known as the Canadian National Breast Screening Studies (CNBSS), were outliers. Not only did they not show mortality reduction; they showed mortality excess in women in the mammography study groups. When the results of the studies were first published in 1992, it was suspected that poor study design had resulted in women being assigned to the study or control group nonrandomly: the imbalance in the numbers of advanced cancers and deaths in the study and control groups was statistically significant³ and was unlikely to have occurred by chance.⁴ This has now been verified⁵ by former staff⁶ from the study sites.⁷

Because relatively few women aged 40 to 49 years were enrolled in most of the earlier randomized controlled trials, CNBSS-1 was planned to enroll 50 000 women aged 40 to 49 years. Because this study involved the greatest number of women in this age group,

it continues to have significant influence on the meta-analyses of screening mammography that inform screening guidelines globally. With inclusion of the CNBSS, meta-analysis shows mortality reduction of only 15% to 20%. Although the studies have now been discredited, CNBSS-1 is still the basis for screening recommendations for women aged 40 to 49 years in Canada⁸ and many other countries. The tainted data from the study, which exaggerated the harms and understated the benefits, was used to create the decision tool⁹ supplied to family physicians and nurse practitioners across Canada to facilitate shared decision making.

Observational studies conducted after the randomized controlled trials provide a better measure of the magnitude of mortality reduction associated with the use of digital mammography and contemporary therapies, as well as proof that excellent outcomes can be achieved with less invasive treatment² when cancer is found early, especially before it has spread beyond the breast. The largest observational study was conducted in Canada.¹⁰ It included 2.8 million women and showed mortality reduction of 40% overall and 44% in women aged 40 to 49 years. A long-term follow-up study of women aged 40 to 69 years in Sweden who died of breast cancer showed that women who had screening were 60% less likely to die of their cancer in the first 10 years after diagnosis and 47% less likely to die in the

Dr Gordon is a clinical professor at the University of British Columbia and a staff radiologist at Dr Linda Warren and Associates (Vancouver Breast Centre).

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20 years after diagnosis than women who did not have screening.¹¹ It is now widely acknowledged, even by organizations that do not recommend it, that annual mammography screening beginning at age 40 saves the most lives.¹²

In Canada, the Canadian Task Force on Preventive Health Care issues breast cancer screening guidelines for women at average risk. The Task Force is a volunteer panel of primarily family physicians who receive funding from Health Canada via the Public Health Agency of Canada. Patients and experts on breast cancer were excluded from the guidelines panel in 2011,¹³ and again in 2018.⁸ In 2019, the Minister of Health stated that “[the Task Force’s] guidelines are not official government guidelines.”¹⁴

In 2011, the Task Force claimed to have considered the “harms” of screening, claimed that the harms outweighed the “benefits” for women aged 40 to 49 years, and recommended that these women not be routinely screened. The Task Force allowed only randomized controlled trials to be used to determine the benefits but allowed much less robust research to determine the harms. Since the Task Force continued to reject all observational data in 2018 and the randomized controlled trial outcomes had not changed, the recommendations made in 2018 were the same as those made in 2011,

with the addition that “women should be supported to make an informed choice on screening that is congruent with their own values and preferences.”⁸

In a follow-up interview with CTV News in 2018, vice-chair of the Task Force, Dr Ainsley Moore, said, “The new guidelines are intended for an empowered position, which puts the decision making in the hands of the individual woman in terms of what she prioritizes.”¹⁵ This is not always done, however. Even in BC, where self-referral is permitted, some women do not attend because their physician has discouraged them based on a misunderstanding of the Task Force’s guidelines. As Dr Moore stated, “I think there was in the past a lot of confusion about how the recommendations were interpreted.”¹⁵

Unsurprisingly, there is variation among provincial and territorial screening programs regarding what age to start screening, how often to screen, and whether to inform women about their breast density.¹⁶

Breast cancer risk increases with increasing age. Many provinces allow women to self-refer only until age 74, because that is the age studied in the randomized controlled trials. The American Cancer Society recommends that screening continue as long as a woman is in good health and is expected to live at least 10 more years.¹⁷ In Canada, the average life expectancy for

a woman aged 75 is 13 years. At age 80, it is 10 years.¹⁸

Significance of breast density

Mammography reduces breast cancer mortality but does not work equally well in all women. Mammography sensitivity decreases as breast density increases. Breast density describes the ratio of normal breast tissue (which appears radiodense/white on a mammogram) to fat (which appears radiolucent/black on a mammogram). Radiologists classify breast density into four categories: A through D [Figure 1].

Approximately 13% of women have category A density: almost entirely fatty; 43% have category B: scattered areas of fibroglandular density; 36% have category C: heterogeneously dense, which may obscure small masses; and 7% have category D: extremely dense, which reduces the sensitivity of mammography. Categories C and D are regarded as dense, so 43% of women aged 40 to 74 years have dense breasts.¹⁹ Because cancers are also white on mammograms, they are more easily seen in non-dense breasts and can be masked in dense tissue²⁰ [Figures 2–4]. Cancers containing calcifications can be seen in dense tissue, but approximately 45% of invasive cancers are noncalcified²¹ and can be masked on mammograms in women with dense breasts.

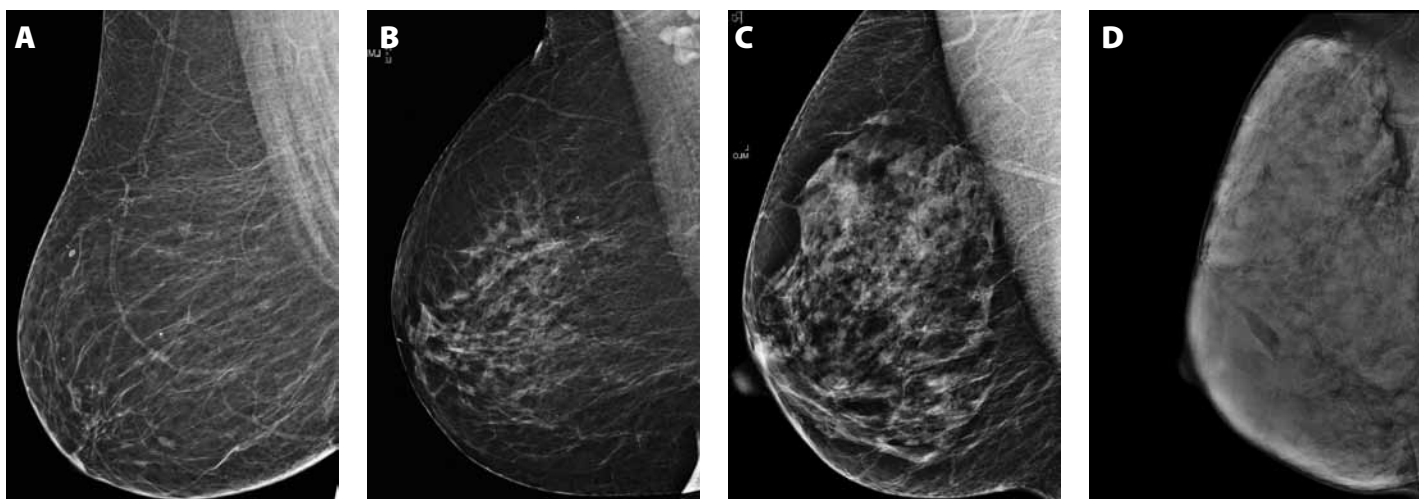


FIGURE 1. Right mediolateral oblique views from mammograms of four women, showing the four density categories: **A:** almost entirely fatty; **B:** scattered fibroglandular densities; **C:** heterogeneously dense, which may obscure small masses; **D:** extremely dense, which limits the sensitivity of mammography.

Cancers not seen on mammograms continue to grow and potentially spread; they may present weeks to years after a normal screening mammogram, usually as a lump. They are referred to as interval cancers, which tend to be larger than screen-detected cancer, are more often higher grade, and more often spread to lymph nodes and beyond. They have a poorer prognosis than screen-detected cancers.²² Interval cancers are 13 to 18 times^{20,23} more common in women with category D breast density than category A. An important goal of screening is to detect more cancers earlier, before they become interval cancers, when they can be treated with less aggressive therapy and have better outcomes.²⁴

Most Canadian screening programs screen average-risk women biennially; some screen women annually if they have dense breasts. Seely and colleagues compared the interval cancer rates in jurisdictions with a policy of annual screening versus those with biennial screening for women with dense breasts. In provinces that conducted biennial screening for women with dense breasts, interval cancer rates were 63% higher than in jurisdictions that screened annually.²⁵

When mammography alone is used for breast cancer screening, mortality reduction is significantly less for women with dense breasts. Van der Waal and colleagues showed a 41% mortality reduction in women with category A breast density but only a 13% reduction in women with categories B, C, and D density.²⁶ Chiu and colleagues showed that women with dense breasts had almost double the breast cancer mortality after adjusting for other risk factors.²⁷

Modalities such as screening ultrasound²⁸ and MRI²⁹ have been shown to detect cancers missed on mammograms and to reduce interval cancers. And most of those cancers are small, invasive, and node negative.

In addition to the risk of masking cancer, dense breasts are an independent risk factor for developing breast cancer. Risk increases as density increases: women in category D have approximately a 5 times higher risk than women in category A.²⁰ Since only 13% of women have category

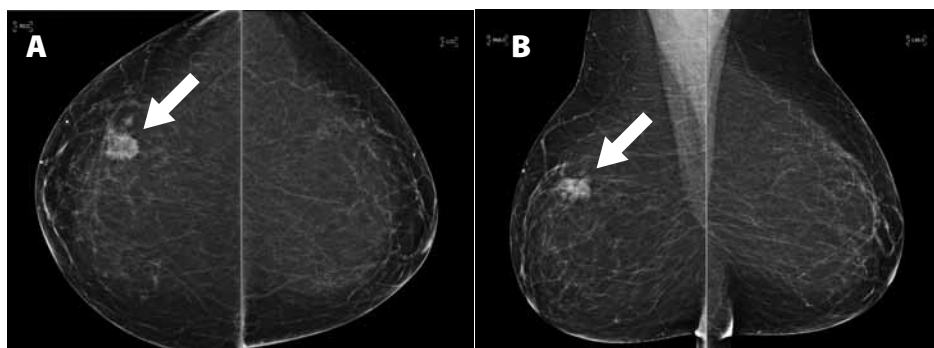


FIGURE 2. Screening mammogram in a woman aged 57 years. Right and left craniocaudal (A) and mediolateral (B) views. The small cancer (arrows) in the right upper outer quadrant is easily seen in her category A density breast tissue.

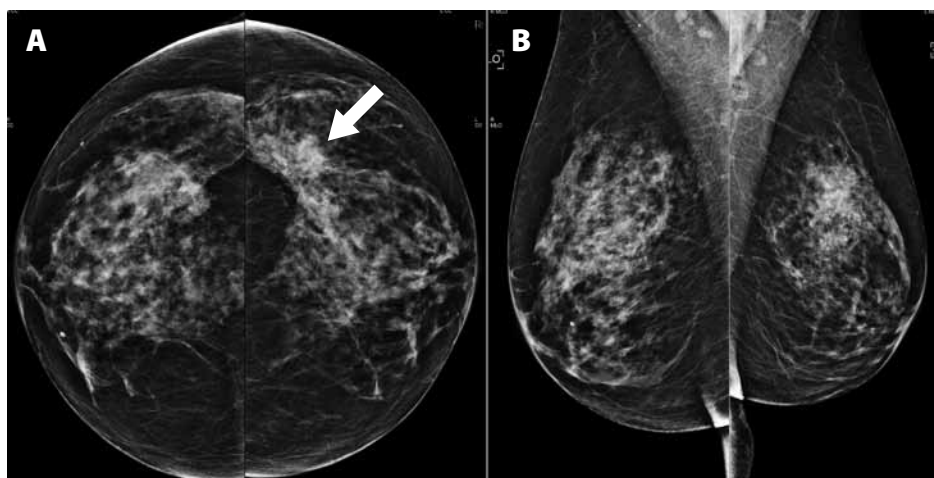


FIGURE 3. Screening mammogram in a woman aged 62 years. Right and left craniocaudal (A) and mediolateral (B) views. The 1.5 cm cancer (arrow) in the left upper outer quadrant is subtle but visible on the craniocaudal view because its anterior margin is adjacent to fat, but it is masked on the mediolateral view because it is surrounded by normal dense tissue in her category C density breast tissue.

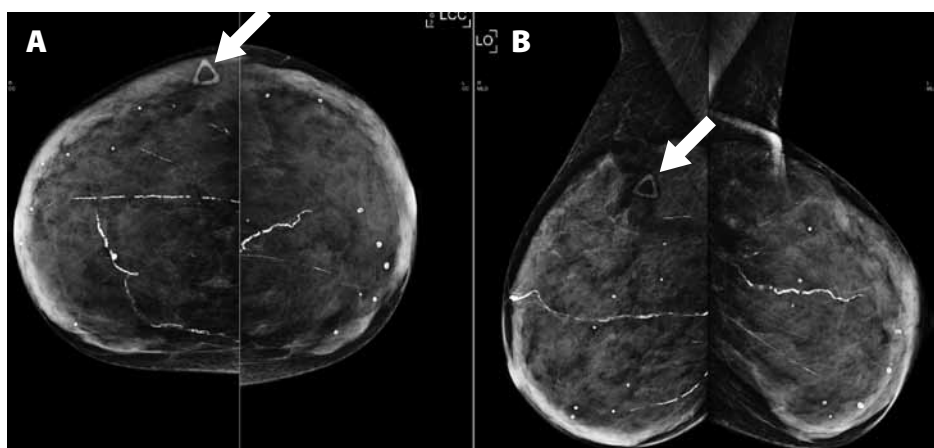


FIGURE 4. Diagnostic mammogram in a woman aged 78 years who presented with a palpable lump in her right upper outer quadrant. Right and left craniocaudal (A) and mediolateral (B) views. The technologist taped a radiopaque triangular skin marker over the site of the palpable lump (arrows), but the 1.3 cm cancer is not seen; it is completely masked in her category D density breast tissue. Up to 50% of cancers are missed on mammograms in women with category D breast tissue.

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A breast density, risks have also been calculated relative to women with category B density, who are more “average.” Women with heterogeneously dense breasts (category C) have a 1.2 to 1.5 times higher risk than women with scattered densities (category B), and women with extremely dense breasts (category D) have a 2.1 to 2.3 times higher risk.³⁰

Because of the two risks associated with breast density, in Austria and France, screening breast ultrasound is offered to all women with categories C and D breast density.³¹ Women in the United States began being notified of their breast density and the associated risks in 2009. Supplemental screening with ultrasound or MRI (depending on a woman’s calculated risk) is now increasingly used and is covered by health insurance in many states.³² The European Society of Breast Imaging now recommends that all women aged 50 to 70 years with category D breast density have screening breast MRI every 2 to 3 years, but no less often than every 4 years. The Society states that mammography and ultrasound may be used if MRI is not available and acknowledges that MRI might also be valuable for women with less dense breast tissue but that more research is needed.³³

Mammograms find approximately 5 cancers per 1000 screens. Ultrasound is reported to find an additional 2 to 7 cancers per 1000 (cancers missed on mammograms). MRI finds an additional 16 cancers per 1000.

Breast cancer screening in BC

BC had the first organized mammography screening program in North America. Thanks to the foresight of its founder, Dr Linda Warren, the Screening Mammography Program of BC accepted its first patient in 1988. From the beginning, women were able to self-refer starting at age 40, and initially all women could attend annually. This is the ideal, because it is known to be associated with earlier stage of diagnosis, fewer interval cancers, and the most lives saved.¹² In BC, women may continue to self-refer after age 75.³⁴

Although breast cancer is less common

in younger women and increases in incidence with increasing age, it grows faster in younger, premenopausal women because of the presence of ovarian hormones. This also applies to hormone receptor–positive cancers in postmenopausal women on hormone therapy.³⁵ This explains why 27% of years lost to breast cancer occur in women diagnosed at ages 40 to 49 years.³⁶ Moreover, 85% of women diagnosed with breast cancer have no family history or other known risk factors.³⁷

In 1997, the screening interval was changed: women aged 40 to 49 years could still attend annually, but women aged 50 to 74 years could attend only biennially unless they had a first-degree family history of breast cancer. Interval cancers are much more common when screening is biennial (2.1 cancers per 1000 screens) rather than annual (0.8 cancers per 1000 screens).^{38,39} In 2015, the screening interval for women aged 40 to 49 years was also increased to biennial unless they had a first-degree family history of breast cancer.

BC is one of only four provinces that allow women to self-refer for screening mammography starting at age 40. A recent review by Wilkinson and colleagues, in conjunction with Statistics Canada, showed the negative consequences of not screening women until age 50, as is the case in most other Canadian jurisdictions.⁴⁰ The authors compared the stage of diagnosis of breast cancer in women aged 40 to 49 years and 50 to 59 years in provinces that allow screening starting at age 40 with that in provinces that do not screen until age 50. Women aged 40 to 49 years in provinces that do not screen that age group had higher proportions of cancers diagnosed at stages II, III, and IV than those in provinces that do screen that age group. Women aged 50 to 59 years in provinces that do not screen women aged 40 to 49 years had higher proportions of cancers diagnosed at stages II and III than those in provinces that do screen women aged 40 to 49 years. Hence, screening women aged 40 to 49 years benefits women from age 40 to 59 years. Given that only 25% of eligible women aged 40 to 49 years attend

screening in BC,⁴¹ these results probably underestimate the benefits of screening women in this age group.

In October 2018, BC became the first province in Canada to notify all women of their breast density; in early 2019, supplemental breast ultrasound became covered by MSP for women with categories C and D breast density, but it requires a requisition and is not widely available. In the first year that supplemental breast ultrasound was covered, an audit of a Vancouver practice showed that 7 cancers were detected per 1000 screens.⁴² These had been missed on the mammograms. Notably, 40% were in women with no family history of breast cancer, and 60% were in women with category C breast density. Screening breast ultrasound has shown a low specificity, but when radiologists and technologists receive adequate training and gain experience, recall and biopsy rates decrease, and the positive predictive value of biopsies increases.⁴³ In the Vancouver study, the average tumor size was 9 mm, all were node negative, the biopsy rate was 1.3%, and the positive predictive value was 42%.⁴²

Women at high risk, generally with at least a calculated lifetime risk of 20% to 25%, may be eligible for screening with MRI. Typically, these are women with genetic mutations such as *BRCA* or those who had mantle radiation for lymphoma prior to age 30. Many risk calculators are available online.

Potential future directions

Mammograms are not 100% sensitive or specific. Digital breast tomosynthesis was approved by Health Canada in 2012, and several sites in BC acquired the technology. It is quasi-3-D but is often described as 3-D mammography. It increases sensitivity (finds more cancers) and specificity (reduces false alarms). However, the technology is expensive to purchase, the large file sizes are expensive to archive, and the exams take twice as long to read compared with standard 2-D mammograms. It is widely used for screening in the United States. As of March 2022, 82% of American facilities had

digital breast tomosynthesis units, and 45% of all accredited units were digital breast tomosynthesis.⁴⁴ Although digital breast tomosynthesis is available at multiple screening sites in Alberta, it is not used by any Canadian screening program other than those participating in a National Institutes of Health-sponsored randomized trial, one of which is in Vancouver. Although digital breast tomosynthesis finds more cancers than 2-D mammography, it does not obviate the need for supplemental screening for women with dense breasts. Ultrasound finds 5 times as many additional cancers as digital breast tomosynthesis, compared with 2-D mammography.⁴⁵

MRI is the most sensitive screening test for breast cancer. It requires IV contrast and may be contraindicated in women with pacemakers or other metallic implants. The conventional scan takes approximately 45 minutes and may not be tolerated by women with claustrophobia. MRI is by far the most expensive modality. In Canada, it is used only for screening women at very high risk of breast cancer, such as those with *BRCA* and other genetic mutations or women who had mantle radiation for Hodgkin lymphoma. The European Society of Breast Imaging now recommends that all women aged 50 to 70 years with category D breast density undergo MRI no less than every 4 years, but ideally every 2 to 3 years.³³ An abbreviated MRI protocol that takes approximately 10 minutes in the magnet is showing accuracy almost equal to that of the longer scan, which will reduce the cost and make it more tolerable for women with claustrophobia.⁴⁶

Like MRI, contrast-enhanced dual-energy mammography is a functional modality that exploits the visibility of abnormal “leaky” neovessels in cancers. It gives results similar to those of MRI but uses iodinated contrast (as in CT scans) rather than gadolinium-based contrast (as in MRI). It is done on a modified mammogram machine, so claustrophobia is not an issue, and it is a fraction of the cost of MRI. However, it is not yet widely available in BC.⁴⁷

Molecular breast imaging is a nuclear

medicine test that uses radioactive IV contrast. It also shows promise in screening dense breast tissue, but the dose is to the whole body (unlike mammography, where the dose is just to the breast), and it uses a higher dose than that used in mammography.⁴⁸ This test is not available anywhere in Canada.

Artificial intelligence

Artificial intelligence will inevitably play a significant role in breast cancer screening. It has shown tremendous promise in mammography and digital breast tomosynthesis; studies have shown that it could be used to pre-read screening mammograms and would be reliable at discerning those that do not need to be seen by a radiologist (i.e., mammograms that are reliably negative).^{49,50} The remaining mammograms would be triaged by artificial intelligence to prioritize faster interpretation of the most suspicious cases by the radiologist. Artificial intelligence can also be used to determine risk and to objectively determine breast density. Artificial intelligence applications in ultrasound have been shown to improve inter-reader agreement and diagnostic accuracy and specificity, particularly for inexperienced readers, and to reduce interpretation time for automated examinations.⁵¹ Artificial intelligence is also used in MRI.⁵²

Summary

Breast cancer screening reduces morbidity and mortality by finding cancers early, ideally when cancer is confined to the breast. All women are at risk, risk increases with age, and 85% of women who develop breast cancer have no family history or other known risk factors, so all women should be screened.

Annual mammograms starting at age 40 save the most lives. In BC, women can self-refer starting at age 40. Although the incidence of interval cancers is much higher in programs that screen biennially, women in BC may get screened annually only if they have a first-degree family history or previous atypical ductal hyperplasia or lobular neoplasia. Overall, only 50% of eligible women in BC participate in the provincial

mammography screening program, and participation is only 25% in women aged 40 to 49 years, who potentially have the most years of life to lose.⁴⁰ It is important that family doctors encourage women to have screening mammograms because seeing a family doctor in the past 12 months more than doubles the odds of having had a screening mammogram in the past 2 years.⁵³

Women with dense breast tissue deserve the same opportunity for early detection of breast cancer as women with nondense breasts. They should be encouraged to have supplemental screening, usually with ultrasound. As with mammography, they should be informed, in advance, that false alarms are common (i.e., women are recalled for more tests to determine whether a finding is suspicious), especially on a woman's first visit when no priors are available.

Competing interests

Dr Gordon is a practising breast radiologist in Vancouver and works in a practice that offers screening and diagnostic breast imaging and ultrasound-guided breast needle biopsies.

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Sick note or fit note?

A simple approach to restrictions and limitations

The health benefits of a timely and safe return to work after an injury or illness are well known.^{1,2} Community family physicians are in a unique position to facilitate their patients' recovery, and one way to do this is to use a fit note instead of a sick note.

A sick note usually states: "My patient is not able to work." Unfortunately, a broad statement of inability to work can be discouraging and may become a barrier to recovery. In contrast, describing retained abilities in a fit note is recovery focused and useful for considering modified duties. It helps the physician speak to medical concepts and allows those with return-to-work expertise to do the rest.

A fit note can be structured around the concepts of risk, capacity, and tolerance. These concepts are reviewed in *AMA Guides to the Evaluation of Work Ability and Return to Work*,³ and physicians can formulate them into restrictions and limitations.

A simple approach to thinking about restrictions and limitations can go a long way. We propose the following three-step approach: first, advise on the risk of harm; second, state what you can measure; and third, document retained abilities.

Advise on the risk of harm

First, consider activities that pose a substantive risk of harm to the worker or others. The risk can be of sudden incapacitation, performance decrement, or further injury.

Restrictions may be permanent or temporary. Examples are "not able to operate machinery" due to medication side effects or "not able to bear weight" while an unstable fracture heals.

Describing retained abilities in a fit note is recovery focused and useful for considering modified duties.

Restrictions are especially important if your patient works in a safety-sensitive or safety-critical occupation such as a driver, pilot, or police officer. The Canadian Medical Association's *Driver's Guide: Determining Medical Fitness to Operate Motor Vehicles* provides a good approach to restrictions for drivers,⁴ which could potentially be applied to other workers. Sometimes it is hard to know if there is a risk that should result in a restriction. If your patient is seeing a specialist, they may be able to help. If your patient has a WorkSafeBC claim, you can also reach out to a WorkSafeBC medical advisor.

State what you can measure

Second, consider the patient's capacity. Is there something your patient cannot do no matter how hard they try? For example, despite good effort, a patient with a frozen shoulder may not be able to fully abduct the shoulder. In this case, an objective limitation might be "not able to reach above shoulder height with the affected arm."

Document retained abilities

Third, document your patient's individual tolerance to certain types of tasks or activities. Tolerance varies between people and over time for the same person, reflecting biological, psychological, workplace, and social circumstances. One patient with lumbar degenerative disc disease may be asymptomatic and able to perform all work and recreational activities, while another patient with similar lumbar degenerative disc disease may struggle with household chores.

By communicating retained abilities in a positive way, physicians can facilitate recovery. For example, rather than stating that a person with low back pain is "unable to work as a construction laborer," the physician might state that the person is "able to perform tasks that do not require repetitive flexion of the lumbar spine or lifting more than 5 kg." While both statements are true, the latter signals options and hopefulness to both the worker and the employer.

One way to gauge retained abilities is to inquire about nonwork activities such as hobbies, home life, and recreation. For example, being able to watch a movie implies sitting tolerance of 2 hours. Likewise, being able to do dishes or mow the lawn offers useful clues about retained abilities at work. Independence in home and community tasks implies a potential for graduated and modified return to work.

Completing the journey of recovery: Return to work

Matching abilities to available workplace accommodations is the role of a return-to-work coordinator. While physicians are often asked to assume this role in

Continued on page 142

Withstanding the storm: On resilience

A hidden curriculum is introduced in the first week of medicine. There are well-intentioned lectures on how to receive feedback, how to report maltreatment, and how to practise self-care and recognize burnout. Why do we expect greater physical stamina of ourselves than we would ever recommend to patients?

Madeline McKenzie, BA

Modern medical education has a strong infatuation with the concept of resilience. It is the quality du jour, evidenced by resilience modules, chipper speeches on building resilience, and even residency program descriptions that ask applicants to address personal examples of resilience. It is not much of a leap to see where the impulse comes from—our culture is reiterating the messaging heard throughout society at large. And while there is immense pressure on physicians and the health care system to stand up against crushing pressures that now come with a frequency comically pronounced, there is no tinge of irony to edicts to extend hours, work harder, and be better.

I wonder how my conception of resilience measures up. My mental picture is

of a brutal wind lashing at my statuesque, immobile body. While it is an evocative image, I feel deflated by the sensation of being an object accepting what comes; my resilience has no association with agency or pride. Instead, I am reminded of our sick patients who are told they are brave in their perseverance—watery, polite smiles are frequently the response. The grace of these moments, at times provoked by me (why do I act this way when I know?), is embarrassing, the commentaries stunning for their cowardice and lack of insight, or perhaps, in a kinder light, their naivete. Bravery assumes a choice, or perhaps it prescribes it—part of an unspoken agreement between victims of hardship and society, wherein the former soothes the anxieties of the latter, separating themselves as uniquely suited for hardship.

I have a close acquaintance in our class, maybe just a person to joke with, who is unflappable. Every bad preceptor experience he has is slightly hilarious to him. He is light as air. I gave him the very, very short version of how I had to move out and become independent at 18. He didn't get it. "But did you *have* to move out, or could you have, like, negotiated? Could you have offered to, like, pay some of the bills or something?" I have affection for this classmate and gently tried to explain how if you have to manipulate someone into letting you stay, the cost is going to be too high, trying to balance my truth with the knowledge that the whole truth is too much, my pain easier

to flatten than to risk making someone else uncomfortable.

I am not grateful for the lashing of the wind, for what it teaches me, and I am not grateful for my resilience. I am sensitive to the suggestion that mental breakdowns in medicine or academic malfunctioning can be remedied with resilience. I am troubled that training programs are asking learners to be resilient instead of creating environments built around developing healthy stress responses or, better still, recognizing the humanity of learners, the simple fact that we are organisms whose mental well-being is strongly impacted by the withholding of basic biological needs. When we expect greater physical stamina of ourselves than we would ever recommend to patients, that is cruel. When we codify this stamina, normalize it, we entrench that those who suffer under sleep or food deprivation are weak. A case provided in one resilience-based resource for residents includes the following, apparently to describe warning signs for depression in residents:

"John has been having a harder time getting out to social activities. He feels tired all of the time, and does not feel motivated to go out. Instead, he stays home and tries to study. However, John is finding it hard to concentrate and focus on his reading. He beats himself up for wasting time, and that makes him feel worse."

It is hardly cutting-edge medicine to say that lack of sleep can lead to feeling tired

Ms McKenzie is a fourth-year medical student at the University of British Columbia. Prior to this, she had a brief career in start-up operations management after finishing her bachelor of arts in English literature and theatre. She is in the process of developing an autoethnography project on medical student learner wellness and intends to continue integrating humanities principles into her practice, research, and teaching through residency and beyond.

This article has been peer reviewed.

all the time, and that the stakes are high enough in medicine that skipping social events to study is both ethical and the best way to avoid the misery of ignorance and the professional consequences that result from falling behind. Using this hypothetical resident as an example of depression, for me, smacks of a cognitive dissonance of training programs—that we can be meaningfully compared to other work environments, that John’s problems are his alone to manage, that he is defective, and that he has to fix himself.

I wonder who is left out when programs ask for resilient applicants, and whether being a work-in-progress, so to speak, is unacceptable. I question whether those advocating for resilience in medical learners understand that, too often, the twin sister of resilience is grief. Residency programs state that they seek resilient residents, and while I am aware that I qualify, I feel an uneasiness, the tightrope between my truth and the discomfort of others, my desire to spare them the “ick,” my desire to remain professional. I want to disclose; I don’t want to disclose. Even the concept of resilience as a trait across different domains is problematic. I would like to know how the translation works, how resilience in one area may determine my reaction to new situations. Part of the issue is a lack of agreement, a slipperiness in what exactly this thing is, the *resilience* that we celebrate and ask for in others. A resilient child, according to the Organisation for Economic Co-operation and Development, is one who is in the bottom quarter of students socioeconomically but performs in the top quarter of students academically. Yes. I am this, or I was this. I am resilient—this definition has metrics. But there are other descriptions that use the words “adapt,” “overcome,” and “withstand.” I am not sure if resilience is a character trait, a power, or simply a description of the chronology of certain unpleasant events. Those who emerge from adversity or tragedy with a self that is acceptable to others are, perhaps, the nucleus of resilience, a reflection of us taking pleasure in those who walk through fire without burning.

What does it mean that our medical community’s new favorite character trait is being able to withstand anything? *Should* we withstand anything? Resilience is the distant cousin of agency and determination, which are much closer to the gifts I want to practise in my daily life. I am mostly uninterested in resilience. I am uninterested in learning from being abused or mistreated. To put it another way, it feels so good when the lighter is taken away from your hand, but first the burn hurts, and then you have the scar. There is a hollowness to resilience in practice, at least for me. I have profound sadness when tragedy or adversity strikes my life, and I immediately feel myself managing it. I don’t want to manage it.

It is ironic to have the idea of a hidden curriculum introduced to us in our first week of medicine. I know that, at 28, soft alarm bells went off during those well-intentioned lectures, which also included lectures on how to receive feedback, how to report maltreatment, and how to practise self-care and recognize burnout. The irony is that the lectures are adrift, shapeless, with no associations, like lecturing to kindergarteners about taxes. They start medical education *in medias res* to poor effect. We are warned against abuse as we are primed for it. We are told to report our abusers while it is imparted that our responsibility is to receive feedback earnestly, completely poised and grateful. We are told that potential abusers will be taken for a coffee to have an informal chat. I recognize the safety this gives my future self, as I cannot pretend to have confidence that I will never hurt a learner, that I am one of the good ones. We are told that we must put our names on the report to have this chat happen.

In November 2020, Twitter erupted after a sample reference letter for family medicine was posted to the official CaRMS (Canadian Resident Matching Service) website. Screenshots are all that remain of this document, but the crucial line that caused the uproar was “Have you observed any of the following? . . . A lapse in composure (e.g., anger, tearfulness, defensiveness).” Many of the responses to the

main Tweet were doctors narrating times they cried over patients. Only a few doctors, Dr Brian Goldman being one of them, said they had cried or been defensive in less flattering lights as well. I am already one of those who can admit true lapses in composure, tears for myself, not for a patient, defensiveness on my own behalf, not on another’s. Perhaps it’s a bad start. Perhaps resilience has an expiry date.

The biggest breaths of fresh air I experienced during my third year were when two first-year students shadowed general surgery while I was on my core rotation at St. Paul’s Hospital. On two separate days, I had coffee with a student who thought I had something to know while I was just emerging from a sad period of feeling like I knew nothing at all. It was so easy to find the right words to say, to anticipate their insecurities, to reassure them that they were doing great, that it was a pleasure to have them in the operating room. Selfishly, of course, it was a break from being the most ignorant in the room. But that’s not it, not really. I have opportunities to at least create a good day, a safe day, for someone else. I am as uninterested in these students’ resilience as I am in my own.

I want to be clear: I think strength, tenacity, and, yes, even resilience, have value. There is some responsibility on the individual to embrace their own determination, to set themselves up for success. Railing against the system is pointless for triage: I do understand this. However, institutions pushing resilience as more than a triage tool are not meeting the minimum effort. If resilience is focused on each learner having agency, assessing what we can do in a program, then the logical conclusion should be that the institution should focus on what *it* can do. The institution’s power is far greater than that of those who live under the culture of the institution. An institution cannot determine how resilient an individual is; it can only determine how to create fail-safes. I believe these fail-safes are rooted in culture, so that is where institutions should devote energy and resources.

Resilience is solitary, a drive toward

individual responsibility, a turning away from collective care. Doctors are known for our intelligence and persistence in problem-solving, especially with problems that we have no blame for, such as illness. I refuse to believe that our institutions are immune to creativity and revision. It is only impossible until it is done. We can strive to be interdependent and have the courage to accept our humanity, and accept those in our profession who are struggling, irrespective of whether their resilience has taken a pause or is nascent. Let us build resilient systems, architecture with storm-proofing, not rely on individuals to carry the load. We are each other's community. Like water, we are more magnificent in our interactions than in our constituent parts. We should encourage people both to give and to take; both are essential aspects of a collective care model, a linking of hands, a lean-to built in a windstorm. ■

Continued from page 139

the community, for your WorkSafeBC patients, case managers and return-to-work specialists at WorkSafeBC can take on this role. An ability-focused fit note lays the foundation for appropriate accommodations. If required, you may speak directly with the employer or with WorkSafeBC about return-to-work plans (there are fee codes for this).⁵

Returning to work is a healthy and important step in recovering from a work injury or illness. Worklessness not only affects a person's livelihood but is also associated with significant health risk.^{6,7} Helping patients return to work is an important role for physicians.⁸ Tolerance-related limitations may delay return to work. By describing tolerance in a positive, ability-focused fashion, physicians can help promote recovery. A fit note will have more impact than a sick note on your patient's livelihood and health.

If you have questions, contact a medical advisor at WorkSafeBC via the RACE app or call 604 696-2131 or 1 877 696-2131 toll-free. ■

—Tung Siu, MD, CCFP, ACBOM
**Medical Advisor, Medical Services,
 WorkSafeBC**

—Peter Zeindler, MD, CCFP, FCFP, CCBOM
**Medical Advisor, Medical Services,
 WorkSafeBC**

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Practising environmentally sustainable health care every day

There is growing awareness that human activity is leading to environmental degradation and global climate change. We are witnessing the symptoms of an increasingly unhealthy planet as wildfires, droughts, floods, and other extreme weather events take their toll on human health. As health care providers, we contribute to this problem both as private citizens of a consumer society and as part of a health care system that contributes approximately 5% of the total greenhouse gases causing climate change. Thinking about climate change can be overwhelming, but small, positive actions can be empowering. As individual physicians, we all have an opportunity to make changes in our practices every day through our clinical decisions, leading to multiple co-benefits [Box].¹

New way of thinking: Garbage we see versus hidden waste

Traditionally, our approach to environmental action has focused on saving energy and recycling physical waste. However, in health care, these things account for only about 20% of our total greenhouse gas emissions [Figure]. The other 80% comes from what most of us never think about because we can't see it: the upstream waste generated on our behalf every day from the medications we prescribe, the tests we order, and the vast amount of energy and resources needed when patients require higher levels of intense medical interventions like surgeries and hospitalization.² Consider

the resources and energy needed to produce the materials required for even one lab test (syringe, needle, tube, label, arm band, gloves, chemicals, etc.) or medication (wood, oil, minerals). Additionally, its packaging must be extracted, processed, manufactured, transported, and ultimately disposed of.

Framework for environmentally sustainable health care

The UK Centre for Sustainable Healthcare has identified four main principles to help clinicians reduce environmental impacts while still providing high-quality care:³

Avoid overuse. Approximately 30% of the tests and treatments we order are unnecessary⁴ and place burdens on patients, providers, and the health care system. This overuse wastes resources, extends wait times, and can lead to cascades of additional testing and treatment. Eliminating overuse could dramatically reduce the environmental impact of the health care system and improve patient care. Review the Choosing Wisely Canada recommendations⁵ for your specialty to identify frequently overused tests and treatments.

Co-benefits of environmentally sustainable health care:

- Improve patient care
- Save money
- Provide more equitable care
- Reduce workload

Engage patients. In a UK study, only half of patients surveyed felt they were involved in shared decision making. When properly informed about true benefits and risks of an intervention, many wanted less rather than more care.⁶ Asking patients “What matters to you?” and having serious illness conversations near the end of life can also reduce unwanted care. Empowering patients to become more involved in their own care can also reduce reliance on providers and avoid unnecessary visits and hospitalizations.

Choose environmental alternatives. There are many examples, such as prescribing dry powder instead of metered-dose inhalers, where simple choices can reduce our carbon footprint. Other examples include switching from single-use disposable to reusable

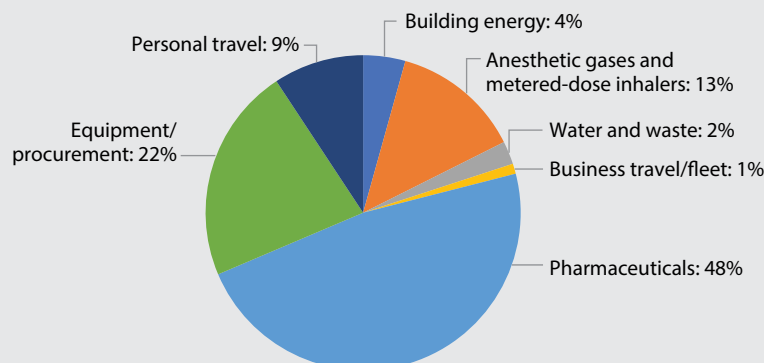


FIGURE. Greenhouse gas emissions from primary care.

This article is the opinion of the authors and not necessarily the Council on Health Promotion or Doctors of BC. This article has not been peer reviewed by the BCMJ Editorial Board.

products, which have lower life cycle environmental impacts, using nonsterile gloves (or no gloves) when possible, choosing oral over parenteral medications, switching to desflurane or IV anesthetics, and using the least toxic alcohol-based cleaning agents.

Promote health. Shifting our focus from resource-intensive curative medicine toward actions that prioritize health promotion and disease prevention will naturally reduce the impact of care. Timely and appropriate screening interventions can prevent advanced disease and complications of chronic illness. Supporting active transport, plant-based diets, smoking cessation, and moderate alcohol use have health as well as environmental benefits.

Many of these actions can be facilitated by embracing the principles of slow medicine. Taking more time with patients, communicating more carefully with colleagues, and calming our daily frenzy can reduce waste and improve patient care, provider well-being, and planetary health. ■

—Ilona Hale, MD, FCFPC
Council on Health Promotion Member
 —Katharine McKeen, MD, MBA, FCFP
Council on Health Promotion Member


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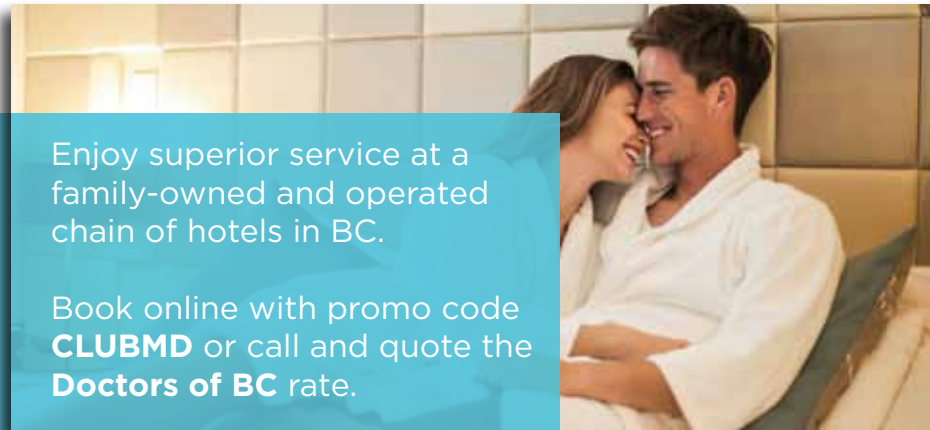
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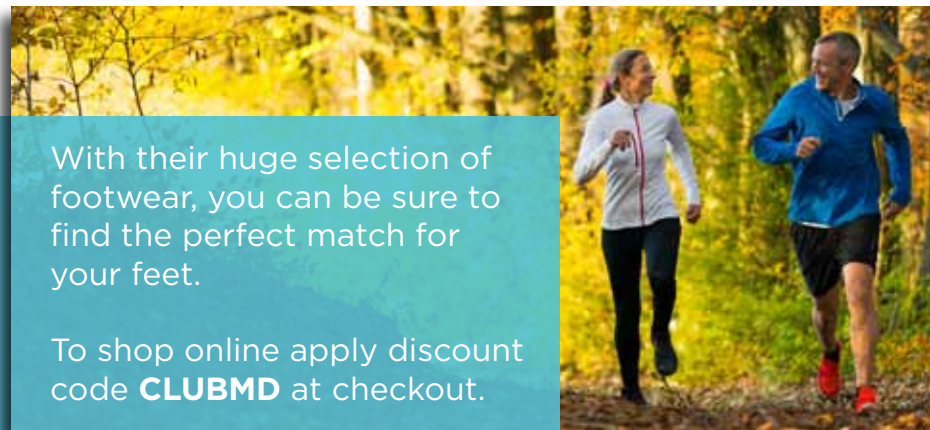
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