

Canada's largest purpose-built public day-care surgery centre:

A retrospective audit of patients requiring transfer to an inpatient hospital



IN THIS ISSUE

Opioid prescribing patterns in British Columbia from 2013 to 2017: A population-based study

Two-Eyed Seeing: Current approaches, and discussion of medical applications

5th Annual Reproductive Medicine Symposium

- **COVID-19 Vaccine & Pregnancy**

- *Dr. Deborah Money*

- **Managing Menopause - New 2021 Guidelines**

- *Dr. Tim Rowe*

- **Male Infertility**

- *Dr. Phil Bach*

- **Infertility & Recurrent Miscarriage for the Community Physician**

- *Dr. Jeff Roberts*

- **PCOS & Obesity**

- *Dr. Tina Liang*

- **Elective Egg Freezing**

- *Dr. Caitlin Dunne*

- **Interpreting Laboratory Investigations for Fertility**

- *Carole Lawrence*

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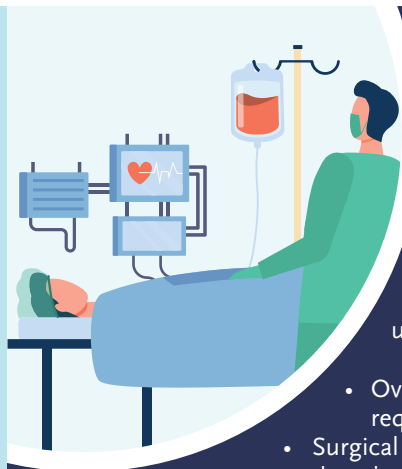
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CANADA'S LARGEST PURPOSE-BUILT PUBLIC DAY-CARE SURGERY CENTRE:

A retrospective audit of patients requiring transfer to an inpatient hospital

The low rate of unplanned patient transfers from an outpatient surgical centre to a tertiary care hospital indicates that a publicly funded outpatient surgery program can be successfully operated in Canada under full control of a provincial health authority.

- Over 2 years, 11 728 cases were performed; 140 (1.19%) required unplanned admission to the local tertiary care hospital.
- Surgical and anesthetic factors were responsible for more than 80% of the admitted cases.

MOST LIKELY SOURCES OF COMPLICATIONS:



Anesthesia
(44.3%, 62/140)



Surgical
(37.9% 52/140)



Institutional issues
7.9% (11/140)



Medical
5.7% (8/140)



Patient selection
4.3% (6/140)

Visual abstract summarizing key findings of the article beginning on page 330.

317 Editorials

- Contemplating legacies
David R. Richardson, MD
- Passport to post-pandemia
David B. Chapman, MBChB

319 President's Comment

Physician health and wellness is about to get a whole lot more robust
Matthew C. Chow, MD

321 BCMD2B

Two-Eyed Seeing: Current approaches, and discussion of medical applications, Tristan Jeffery, BSc, Donna L.M. Kurtz, PhD, Charlotte Ann Jones, MD

326 Specialist Services Committee

Collaboration transforms delivery of care for surgical patients, Kelly Mayson, MD, Thomas Wallace, MD

327 News

- Optimizing your disability and professional expense insurance
Julie Kwan
- BC Lymphedema Association: Updated professional resource directory
- Website to connect people with mental health, substance-use supports
- Innovative coating for blood vessels reduces rejection of transplanted organs
- Spoken interpretation services available to community specialists

CLINICAL

330 Canada's largest purpose-built public day-care surgery centre: A retrospective audit of patients requiring transfer to an inpatient hospital, Paul Oxley, MD, Rizwan Mian, MD, Carly McNeely, Yousef Mian, David McNeely, MD

336 Opioid prescribing patterns in British Columbia from 2013 to 2017: A population-based study, L.S. Yefet, MD, J.N. Bone, MSc, R. Courtemanche, MSc, G. Lauder, MBBCh, D. J. Courtemanche, MD

Contents continued on page 316

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ON THE COVER

The low rate of unplanned patient transfers from an outpatient surgical centre to a tertiary care hospital indicates that a publicly funded outpatient surgery program can be successfully operated in Canada under full control of a provincial health authority. Article begins on page 330.

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Two-Eyed Seeing is an approach of inquiry and solutions in which people come together to view the world through an Indigenous lens with one eye, while the other eye sees through a Western lens. Article begins on page 321.

Contents continued from page 315

345 Council on Health Promotion

Disaster preparedness in medical training needs to be a part of the new normal, **Derek C. Chang, MD, Graham Dodd, MD**

346 WorkSafeBC

WorkSafeBC's Hand Therapy Program, **Linda Calvert, BScPT**

347 CME Calendar

349 Obituaries

Dr Madeline Huang Chung

350 Classifieds

354 Back Page

Bridging the 6-foot gap
Holly Cherniwchan, BHSc

Contemplating legacies

I remember once asking one of my retired patients what he had done for a living. When I found out he had been a college professor, I asked him what he taught. After a pensive pause, where he reflected on his teaching life, he looked at me sadly and answered, "In retrospect, not a heck of a lot."

After some 30 years as a family doctor, I often wonder what my legacy will be. Have I made a difference in my patients' lives? I must admit that I am often rushed and spend less time with patients than I would like. This is complicated by my incessant need to be on time, which is one symptom of my obsessive-compulsive personality. I also get irritable at times and have a hard time hiding this fact. So, do I help people, or do they stay with me because they don't really have another choice? Is there some way of measuring a career as a family physician?

There are websites such as Rate Your MD, but most individuals only post there if they have strong feelings one way or the other. As a rule, since there is no court of appeal, I don't visit these sites. However, my patients and family members will tell me what people have posted: one guy gave me terrible scores in all categories except for punctuality. He had to admit that even though I am a terrible physician I am usually on time.

So back to my question: how do most of my patients feel about me and the service I provide? I have taken care of many of them and their families for decades, but maybe they don't have another choice due to the shortage of family

physicians. I think of many of them as my friends and care deeply about their health and happiness, but I wonder if this shows? Do they realize how much their life issues affect me? Is this caring reciprocated?

The answers to these questions came to light recently due to my wife's illness and my sudden absence from my practice. Initially my patients were told I was away for personal reasons, but as

time went on, I gave the okay for my staff to let them know that my wife is unwell. My colleagues have been exceptional and have covered most of my office shifts, but I have had to work some days because vacations were scheduled and locums already spoken for.

Is there some way of measuring a career as a family physician?

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The outpouring of support and genuine caring that I received during these times has brought me to tears on more than one occasion. Some of my patients have also had tears in their eyes while relating how sorry they are to hear about my wife's situation. Cards, flowers, and casseroles have appeared on a regular basis. The love and caring I have felt has filled and sustained me when I have been close to empty and overcome by sadness.

Many of my patients shared that they've never forgotten how much my caring meant to them when they were faced with adversity and life's challenges. They wanted to give a little something back as a sign of appreciation for the job I have done and the relationship we have built. This is a legacy I can live with. ■

—David R. Richardson, MD

Passport to post-pandemia

(2 August 2021)

At this moment in time, it feels like we are over the worst of it. I say that with more than a modicum of caution. It feels that way, at least, as we enjoy the brief but beautiful summer that we are experiencing in BC this year. (You will be reading this as the rain and wind howl at your window, with the summer of 2021 in your proverbial rearview mirror.) This summer felt better to me than the one we had last year. It wasn't only the blue skies and warm temperatures, or the absence of rain (a side note: emigrating to Canada from a warmer climate precludes me from ever complaining about the heat here). It wasn't only my recently found insouciance (another side note: I recently discovered that word; you francophones will know that it means free from worry). It isn't only thanks to having some special people in my life. I believe that many of us are starting to feel that we have more freedom.

Following our *Annus* (and a half) *horribilis*, we are carefully making social contact with one another again and starting to do the things that we used to take for granted. This weekend, my family, friends, and I attended a beautiful wedding, which is something I have not done in a long time. My partner and I have booked tickets to see a Broadway show toward the middle of next year. I am looking forward to seeing my brother and his wife, both of whom are double vaccinated, who are visiting this month from outside of Canada.

Therein lies the crux of the issue. Double vaccination. It would be preferable for everyone on the planet to be double vaccinated sooner rather than later. I ask all my patients about their vaccination status and debate the

issue patiently with those who have chosen to remain unvaccinated. I accept that vaccination remains a choice but am nevertheless frustrated, like the rest of you, that some people are choosing to remain unvaccinated. We have all heard the made-up fearmongering myths that they choose to believe. Eye roll, please. While working at a vaccine clinic

recently, I reassured some people, tongue in cheek, that the vaccine they were receiving did not in fact have microchips in it.

I firmly believe that all governments need to agree on the concept of vaccine passports. It would be preferable for people who wish to travel across

provincial and national borders to be required to show proof of their double vaccination status. The only exception to that would be children who are too young to be vaccinated, and the very few people who have a valid medical reason to remain unvaccinated. The vaccine passports need to be secure in order to prevent fraud, and private to prevent tracking. I have heard the argument from the privacy camp, who believe that a vaccine passport is an invasion of their privacy. I assume those same people use cellphones, which already track everything about them. The cellphone companies, Internet providers, and smartphone app providers already know a lot about us. Although we don't like it, that is the reality of the world in which we live.

And privacy is not absolute. Many of us have had calls from Public Health after a patient tested positive for a reportable communicable disease. The appropriate people are mobilized to gather that patient's private information in order to protect others from

I ask all my patients about their vaccination status and debate the issue patiently with those who have chosen to remain unvaccinated.

Continued on page 320

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Physician health and wellness is about to get a whole lot more robust

I made a private commitment to myself as I took on the Doctors of BC presidency in the middle of the pandemic: I wanted to do everything in my power to make sure that every one of us saw it through safely to the end. My main fear was not casualties from COVID-19; instead, I feared burnout, fatigue, mental health issues, and substance use would take their toll.

Even before the COVID-19 pandemic, physician wellness was an issue requiring attention and support. With the added stressors on physicians and their families during the past 18 months, the need has increased exponentially. Since 2019, BC's Physician Health Program (PHP) has seen a 58% increase in the number of physicians seeking help and a 37% increase in case complexity. In a recent sample of acute care physicians in BC, colleague Dr Nadia Khan found burnout rates as high as 71% in women and 64% in men. And a recent Ontario Medical Association survey found that 74% of physicians and trainees are experiencing at least some degree of burnout.

In October 2020, the Canadian Medical Association announced the Physician Wellness+ Initiative, which directs funds to address the health and wellness needs of physicians and medical trainees across the country. Included in this distribution of funds, Doctors of BC's PHP was allocated \$1 million over 4 years to identify gaps in existing wellness services, to enhance or develop new services and programs to address those gaps, and to ensure future needs are met. The PHP, in partnership with and with additional funding from the Joint Collaborative Committees, will focus on physician health and wellness and develop a number of programs to assist BC's doctors at local, regional, and provincial levels.

Physician wellness network

We know that reducing burnout and supporting physician wellness are essential, so the physician wellness network will offer ongoing opportunities for communication, networking, and collaborative gatherings for doctors involved with MSAs, divisions, public health, and UBC's resident doctors, among others, to share ideas, successes, and challenges, and to strategically align activities that support physician wellness.

**Since 2019, BC's
Physician Health
Program has seen a
58% increase in the
number of physicians
seeking help**

Cognitive-behavioral therapy (CBT) skills training

So that physicians can better support their patients with mild to moderate mental health issues and use CBT skills for self-care and to communicate with colleagues and within teams, the Shared Care Committee will be offering a CBT skills training program over a period of 8 weeks plus 2 half-days. When the PHP piloted a physician-specific cohort in the fall of 2020, it was so popular that more than 170 physicians expressed interest, despite there being only 15 spots available.

Physician peer support network

Given the abundance of literature that shows the effectiveness of physician peer support to foster a caring medical community and culture where physicians feel at ease seeking and offering help, the PHP will be training physicians across the province to deliver one-to-one emotional peer support. A consultation with local divisions, MSAs, and other physician organizations is taking place to help determine the best approach.

Expansion of PHP family doctor connection service

It's not just our patients who deserve their own family doctor; physicians do as well. The PHP will be engaging with divisions of family practice to increase the capacity to attach physicians to their own personal primary care provider.

The CBT and peer support programs are in the early stages of planning and development, and prototyping is intended to start this fall.

I will not pretend that these initiatives on their own will restore our health and wellness. I have heard from many colleagues about the systemic problems, under-resourcing, understaffing, increasing complexity, and heavy burdens placed upon you. I experience these too.

However, by making physician health and wellness a top priority, we shine a light on an important issue, we make systemic changes possible, and we start to tackle intangibles such as toxic workplace cultures that contribute to burnout, fatigue, and distress. By putting a greater emphasis on our own wellness needs, we also set an example for our patients and society.

And what of my commitment that we all make it through to the end? We have indeed lost some colleagues along the way, though none

PRESIDENT'S COMMENT

were physicians who contracted COVID-19 in the line of duty. The factors contributing to these losses are complex, but I would like to think they also galvanize us to make things better. I am bolstered by the news that we have welcomed many new colleagues into our profession; the number of BC doctors has actually grown during the pandemic. People have joined us from different provinces and different countries; they are from different backgrounds and have many different experiences. They bring with them valuable ideas, innovations, and an abundance of energy that can only contribute to the value of our BC physician community. ■

—Matthew C. Chow, MD
Doctors of BC President

EDITORIALS

Continued from page 318

the spread of that communicable disease. When other people's lives and health are at stake, personal privacy needs to take second place to public safety.

A person can choose to live off the grid and lose out on the conveniences afforded to those of us who choose to use cellphones and the Internet. Likewise, a person can choose to remain unvaccinated, but then they should lose out on certain freedoms (such as cross-border travel) that should be afforded only to those of us who have chosen to be vaccinated. ■

—David B. Chapman, MBChB



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e-Prescribing is just what the doctor ordered to streamline the prescription process and improve quality of care for Canadians

Dr. Rashaad Bhyat, Clinician Leader at Canada Health Infoway, shares his perspective on how e-prescribing modernizes the prescription process and enhances patient safety, benefiting patients, physicians and pharmacists alike.

What is one of the most common issues brought on by handwritten prescriptions that can hinder the prescription process?

One of the main challenges with handwritten prescriptions is a notion that many physicians, pharmacists and patients will be familiar with, given it is firmly embedded in popular culture: handwritten prescriptions can lend themselves to misinterpretations due to illegible handwriting. Given their demanding schedules, physicians have to write prescriptions as swiftly as possible, which can sometimes lead to an indecipherable scrawl. This can result in considerable back and forth between physicians and pharmacists to determine the intent of the prescription, culminating in delays for patients to receive the medication and care they need.

How can e-prescribing factor into improving quality of care for patients?

In our daily lives, we benefit from doing so many

things digitally, be it our shopping, our banking or our work. Meanwhile, interacting with the health care system in a digital way has not always been so straightforward for patients, physicians and pharmacists alike. e-Prescribing services like PrescribeIT® modernize the prescription process by enabling physicians to electronically transmit a prescription directly from an Electronic Medical Record (EMR) to the pharmacy management system of a patient's pharmacy of choice. This reduces the risk of illegible prescriptions, transcription errors, and back and forth between physicians and pharmacists, streamlining the prescription process and making medication available to patients in a safer and more timely manner.

What role does e-prescribing play in improving efficiencies for physicians and pharmacists to enhance patient safety?

The biggest risk to patient safety as it relates to prescriptions often comes down to communication. Streamlining communications within a patient's circle of care is vital to ensure patient safety and also creates efficiencies for both physicians and pharmacists. PrescribeIT® offers the ability for physicians and pharmacists to send secure clinical communication to each other

through an integrated messaging tool, permitting them to quickly align on an appropriate course of action and provide the best medication options for their patients.

For instance, during a recent interaction with one of my patients, I created a prescription that was sent to a pharmacy without PrescribeIT®. The pharmacy subsequently left me a voicemail flagging a drug-drug interaction: a conflict between the medication I had prescribed and another one of the patients' prescriptions, that could cause the medication to be less effective. By the time I had listened to the voicemail, the pharmacy had closed for the evening. While I was able to connect with the pharmacy the following morning and adjust the prescription in time, this back and forth could have been avoided with the simple push of a button using PrescribeIT®'s integrated messaging tool, allowing the patient to receive the medication they needed even sooner.

What value does e-prescribing with services like PrescribeIT® offer during COVID-19?

With in-person interactions carrying a much higher risk over the course of the pandemic, e-prescribing has proved itself not only to be convenient, but essential. e-Prescribing can be a significant asset when in-person visits with health care professionals are not possible or not recommended. e-Prescribing enables vulnerable populations to limit their time outside, thereby reducing their risk of infection, and prescribers who have been working remotely throughout the pandemic have also seen the value of e-prescribing, as many don't have fax machines in their homes.

Beyond the pandemic, do you think e-prescribing is here to stay for the long-term?

Absolutely. Over the course of the pandemic, we have seen a rapid and essential shift towards digital health solutions and virtual care, which constitutes any interaction between a patient and a health care provider that doesn't involve direct contact, such as video or phone appointments. According to a Canada Health Infoway survey, 51 per cent of patient-reported visits are now virtual, which is over double pre-pandemic levels. In tandem, we have passed an adoption tipping point for e-prescribing, with a critical mass of Canadian pharmacies and EMRs now on board, laying the foundation for a vast increase in use of the service. In Canada, PrescribeIT® now serves an estimated nine million patients across the country, with exciting plans to expand into British Columbia.

The digital transformation occurring in the realm of health care is focused on improving safety, efficiency, convenience and quality of care for patients and physicians, and e-prescribing is a great example of exactly this. As we look beyond the pandemic, I think that this e-prescribing service will continue to play an essential role in modernizing how Canadians give and receive care. You might even say it is just what the doctor ordered.

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Two-Eyed Seeing: Current approaches, and discussion of medical applications

A review of which Indigenous health care themes are present in Western medical literature.

Tristan Jeffery, BSc, Donna L.M. Kurtz, RN, PhD, Charlotte Ann Jones, PhD, MD, FRCPC

ABSTRACT: Two-Eyed Seeing is an approach of inquiry and solutions in which people come together to view the world through an Indigenous lens with one eye (perspective), while the other eye sees through a Western lens. It has been used in a variety of Indigenous-partnered research projects, but little information exists about Two-Eyed Seeing approaches in medical research. A focused narrative review of peer-reviewed Western literature was conducted to identify principles of Two-Eyed Seeing applications. Medline, Web of Science, and CAB Direct were searched and papers that described Two-Eyed Seeing approaches in Indigenous-partnered research projects were selected for review. Relationship building, community control, collaborative data analysis, and results that fostered change were recognized as common principles for successful application of Two-Eyed Seeing. Medical researchers must be aware of relational and community-involved processes while conducting research with Indigenous communities.

Background

Indigenous knowledge is shaped by the environment and land. Emotional, spiritual, and physical relationships with the natural world influence traditions and customs.¹ Ties to the

natural world also influence perspectives on research. There are multiple Indigenous perspectives on research, often relational, being inclusive of people's experiences, spirituality, and culture. Western perspectives about research focus on interpretation of concrete facts and understanding the world, with little attention to emotional or spiritual realms.¹

Two-Eyed Seeing developed from the teachings of Chief Charles Labrador of Acadia First Nation, but Mi'kmaq Elder Albert Marshall of the Eskasoni First Nation was the first to apply the concept of Two-Eyed Seeing in a Western setting.² Specifically, Two-Eyed Seeing "refers to learning to see from one eye with the strengths of Indigenous knowledges and ways of knowing, and from the other eye with the strengths of Western knowledges and ways of knowing, and to use both of these eyes together for the benefit of all."² Elder Albert Marshall emphasizes that Two-Eyed Seeing requires groups to weave between each respective way of knowing, as Indigenous knowledge may be more applicable than Western in certain situations and vice versa.² It brings together two ways of knowing to allow a diverse group of people to use all understandings to improve the world.

Originally developed as a grassroots program to encourage Mi'kmaq postsecondary students to pursue science education,² Two-Eyed Seeing has since been used in research projects with Indigenous people across a variety of disciplines, but applications vary between groups. Further, there is little information about Two-Eyed Seeing approaches in medical research. The aim of this article is to discover and review which Indigenous health care themes are present in Western medical literature.

Methods

We performed a focused narrative review of peer-reviewed literature using the following key concepts, as decided by consensus among the three authors: Indigenous people, implementation science, and the Two-Eyed Seeing approach. Each key concept was a combination of search and MeSH terms to create search strings. (Refer to the **Box** on the following page for complete search strategies.) All searches had no restrictions on publication country or language. Sources used for this narrative review included Medline, Web of Science, and CAB Direct. Hand searches of the references of retrieved literature were also conducted.

Eight themes were identified from the literature:

- The need to declare author positionality.
- Communication of group interpretations and guiding principles.
- Relationship building.
- Inclusion of Indigenous advisory committees and Knowledge Holders.
- Continued community guidance.
- Use of traditional knowledge gathering techniques.
- Collaborative community-involved data analysis and interpretation.
- Making meaningful and lasting relationships.

Themes were described if the paper referenced Two-Eyed Seeing, Indigenous methodologies, or community-based research in the abstract or title and the theme was presented in at least two papers identified in our search. We excluded all randomized control trials and studies with youth or children.

Mr Jeffery is a student in the Faculty of Medicine at the University of British Columbia (class of 2023). Dr Kurtz is an associate professor in the UBC School of Nursing and an Indigenous liaison in the Faculty of Health and Social Development at UBC's Okanagan campus. Dr Jones is an associate professor of medicine in the Southern Medical Program at UBC's Okanagan campus.

This article has been peer reviewed.

Key concepts

Indigenous people

Search terms: Indigenous, Aboriginal, Native American, Native Indian, First Nations, Métis, Inuit, Torres Strait Islander, Māori.
MeSH terms: Indigenous Peoples/, American Indian/, Indigenous Canadians/, Inuits/, Oceanic Ancestry Group/, American Native Continental Ancestry Group/.

Implementation science

Search terms: design, plan, create, implement.
MeSH terms: N/A

Two-Eyed Seeing approach

Search terms: Traditional medicine, Two-Eyed Seeing, culturally appropriate, Indigenous ways of knowing, Indigenous research methods, culture-based approaches.

MeSH terms: Complex interventions/, Medicine, traditional/.
(All search terms and MeSH terms were combined with the Boolean operator “or” to create key concept-specific search strings.)

Results and discussion

Author positionality

Author positionality statements are common practice for researchers working with Indigenous communities.³⁻¹¹ Author positionality statements are brief descriptions of a researcher’s ancestry, who they are, and where they came from. They outline intent and situatedness. Researchers create a space for introductions and provide indications of the influence that the author’s epistemology has on the study.^{10,12} Author positionality can be described as the idea of “research in relation”:¹² researchers need to define their work in terms of personal experiences, families, and communities. It is the first step to building relationships and forming trust; the community will be able to understand the researcher’s world view, beliefs, and values.

Group interpretations and guiding principles

When working with an Indigenous community, research groups described their interpretation of Two-Eyed Seeing.^{3-6,8-11,13-16} One group’s interpretations led to the creation of principles that guided their Two-Eyed Seeing approach. The first authors from two studies used knowledge from their Indigenous ancestry to apply Two-Eyed Seeing.^{8,9} For example, *Anishinaabe Mino-Bimaadiziwin* (“Relationships tie us to everything”) guided the study design and procedures for an Indigenous researcher conducting research with a First Nation community in Ontario.⁸ Non-Indigenous authors also described their epistemology and how it influenced their interpretation of Two-Eyed Seeing.^{3,4} For example, one team defined the research group’s collective understanding of the need for research, that colonialism is an underlying cause of problematic substance abuse in Indigenous people, and that traditional culture is key to healing.⁴

The concept of the four Rs was discussed as a guiding principle in their application of Two-Eyed Seeing.^{5,8,10,11} The four Rs are respect, relevance, reciprocity, and responsibility; together, they are ethical considerations for research groups who work with Indigenous peoples.¹⁷ Respect reflects how researchers must create an environment where research is mutually empowering of both Indigenous and Western perspectives. Relevance describes research being in line with the beliefs and priorities of the partnered community. Reciprocity is research that benefits both the Indigenous community and the research group. Responsibility is the necessity to privilege Indigenous voices and be supportive of Indigenous people’s rights to self-determination.¹⁷

Relationship building

It is essential for research groups to establish relationships with partnering communities during the inception of a study.^{3-11,15,16} Participants from Indigenous health organizations in Ontario found that building trusting relationships and promoting respect for local knowledge were crucial steps in any successful partnership.¹⁵ Research groups developed relationships with Elders of the partnering communities. Elders

are seen as holders of Indigenous knowledge who play vital roles in helping ensure traditional protocols are followed and sacred knowledge remains protected over the course of a study. Other groups would meet with community stakeholders and form relationships to understand community-identified goals and needs. This created collaborative partnerships and implementation of a research project that was important to both the Indigenous community and the research group (reciprocity). Further, it was common to have members of the research group interact with the community outside of the research context, building safe and trustworthy relationships between people through ceremony and community activities.^{4,7,10} Other authors described the use of an ethical space,^{5,11,14,16} a concept that allows multiple ways of knowing to co-exist. This theoretical space is where open discussions can occur. Groups may discuss their cultural practices and ways of knowing, bridging the research intentions, values, and assumptions of both groups.¹⁸ Ultimately, the goal of early relationship building was to develop trust, provide a safe space for both groups to explain their epistemology, and create a collective understanding of community needs and research needs.

Indigenous advisory committee/ Knowledge Holders

Creation of either an Indigenous advisory committee or a group of Indigenous Knowledge Holders occurred at the beginning of some studies to provide cultural context and guidance.^{3-5,7-9,15} Committees consisted of community members, representatives, Indigenous Knowledge Holders, and researchers. The committees provided cultural support and guidance to partnered researchers and ensured traditional protocols were followed. In some cases, advisory committees were responsible for approving ethics protocols and procedures. It was common to have an Indigenous ethics board or advisory committee review the studies and provide their approval in addition to institutional ethics approvals from universities.^{3,5-11,14-16} Indigenous ethics boards were Indigenous university research ethics committees or ethics boards created by Indigenous organizations. Other groups did not create Indigenous advisory committees



Sharing circles emphasize problem solving and are intended to provide an opportunity for emotional openness and disclosure of feelings.

but used Indigenous Knowledge Holders who held the same responsibilities.^{6,10,11} Indigenous Knowledge Holders were chosen by the partnered Indigenous community. These individuals were usually Elders, but occasionally they were select groups of respected Indigenous community members. Indigenous advisory committees or Knowledge Holders ensured the cultural context was reflected from project inception to result dissemination.

Community guidance

Continual community involvement was a defining feature of a Two-Eyed Seeing approach.^{3-11,13-16} Indigenous community involvement centred on ensuring research groups were accountable and collaborative with the partnering community. Accountability was described as everything from involving the partnering Indigenous community in developing the research

question to sharing results,⁸ while collaboration was defined as providing a safe space for discussion and removing any power imbalances or biases.^{10,13,14} Community involvement included community control over study design and frequent discussions with the research group to ensure the study aligned with community values, needs, and protocols. It was evident that research groups must acknowledge and respect inclusion of partnering community members' knowledge and be ready to engage in conversations regarding the virtues and values of the research. These discussions highlight the project outcomes each partner expects and, more importantly, ensure community preferences lead the research.¹⁶

It was expected to see Elders influence study design. For instance, Elders suggested the use of certain qualitative methods, knowing that local approaches (within doing) not only resonate

with community members, but also demonstrate sharing of ideas and power within a Two-Eyed Seeing approach.¹⁶ Other communities introduced their specific and relevant ideas to the research groups, helping promote community beliefs and values.⁴ For example, the concept of knowledge gardening (seeding, nurturing, and growing information) was important to overcome the limitations of Western research-grant time frames and to create a culturally rooted analysis, which resonated with the partnering communities' cultural views.²

Traditional techniques

Research groups often used particular ways to gather traditional knowledge when working with Indigenous communities. Sharing circles were the most frequently used knowledge gathering method.^{4,6-9} Sharing circles are an Indigenous healing tool that differ from

group discussions or focus groups as they have sacred meanings in many Indigenous cultures.⁶ Guided by a facilitator with Indigenous knowledge, all participants in the circle are viewed as equal, with their information, spirituality, and emotionality shared between circle members. Sharing circles emphasize problem solving and are intended to provide an opportunity for emotional openness and disclosure of feelings. Sharing circles used in the studies were accompanied by cultural practices: prayers, Elder support, passage of sacred herbs, smudging, and the use of drums and songs.^{4,6-9} Other studies used Western interviewing techniques, such as individual semi-structured interviews, but used traditional knowledge to influence the interviews.^{3,11} For instance, two authors used a traditional Anishinaabe symbol-based approach to include reflections in their study, one as part of their semi-structured interview,³ the other as part of their sharing circles.⁶ This type of Indigenous circle ceremony offered participants time to reflect on a concept, such as their personal identity or community strengths, and then choose a symbol that represented the concept to them. This process is spiritual, and participants could present their symbol to the group, providing a space for reflection of the chosen concept.

Reciprocity, one of the four Rs, is present in multiple aspects of traditional knowledge gathering.^{4-8,11,15} Reciprocity included providing participants space to share their stories. Researchers were able to better understand and begin to develop a Two-Eyed Seeing perspective by listening to Indigenous community members' personal experiences. Participants' stories were presented to communities to encourage motivation for health and wellness change. Reciprocity is also culturally and ethically necessary, as a protocol, to acknowledge participant contributions; the acknowledgments can be gifts or sacred medicines like tobacco or monetary honorariums.¹⁵ Thus, groups often provided participants with gifts to honor the sharing of their knowledge and their time spent meeting together. The community provided reciprocity to the research group in the form of ceremonies, prayers for their wellness, and sacred foods.

Learning from a Two-Eyed Seeing approach (community data analysis)

Unlike Western data analysis research practices, a Two-Eyed Seeing approach emphasizes community and participant involvement.^{3,4,6-11} Elders and Indigenous advisory committees frequently guided data analysis. They provided a cultural context to ensure the information generated was helpful to the community and the data were not misinterpreted to benefit the researcher's agenda.^{3,4,6-11}

Ethical research processes ensured the information gathered through discussions in sharing circles was not misinterpreted by providing opportunities for sharing-circle participants to review the analyzed data and provide feedback.^{3,6-10} Research groups were expected to initiate and validate stories told in sharing circles, as stated in community-created protocols. Researchers analyzed recordings of interviews and presented summaries to participants during meetings, which provided opportunities for participants to change or add to their stories. As well, according to doing research with Indigenous communities and protection of intellectual property, researchers must verify all generated knowledge with the partnered communities before it is released to the research group.¹⁰ It is common for traditional knowledge to be misunderstood or taken out of context and for it to lose its original meaning. Further, researchers are responsible to give ownership of all knowledge generated from a study to the partnered community and to ask for permission about how, when, and with whom they may share the knowledge, as well as permission for any future use of the knowledge in papers or presentations.¹⁰ As the Indigenous community owns all generated knowledge, it is their decision what happens to the knowledge, from storage to destruction. Since partner communities own the knowledge shared and generated through research, research groups cannot prevent revisions or destruction of already generated data if the priorities of the community change.¹⁰

Making meaningful and lasting relationships

Two-Eyed Seeing approaches place importance on proper knowledge dissemination and continuation of relationships with the partnering

communities.^{6-8,15,16} Historically, research involving Indigenous communities followed a helicopter approach: arrival, data collection, and departure,⁸ taking information away from the community without honoring a four-Rs approach. Communities had no idea what the collected data was used for, by whom, for what purposes, or the research group's interpretations. Two-Eyed Seeing approaches emphasize sharing the final report with the community and presenting findings in a meaningful way so the information is beneficial to making a change within the community.^{7,8} Further, knowledge gathered from Indigenous research should allow for the collective story of the Indigenous community to be presented with Indigenous people involved, to ensure Indigenous knowledge is not altered or conformed to Western ways of thinking. Groups are accountable throughout the research process to ensuring the initial community needs and cultural values agreed on during development of the project remain present through the whole process. This can be accomplished through community-led projects.^{4,10}

All studies described how research teams should expect to continue their relationships with the community after the project is done. Some authors suggested that the relationships with the partnering community should extend beyond the final report and become a lifelong commitment.⁶ Long-term relationships reflect the respect and responsibility components of the four Rs, as research groups must continue to support partnered Indigenous communities (responsibility) and continue to help empower the community (respect). Further, Two-Eyed Seeing places importance on relationship building—a relationship that is not confined to study timelines. After completion of the study, research groups should set up systems with the partnered community to remain accountable to and reachable by community partners.

Two-Eyed Seeing within medical research

Medical research groups that are partnered with Indigenous communities can incorporate all eight themes to create a collaborative research process that ensures successful relationships. The first step is for the research group to form a relationship with the Indigenous community and begin the trust-building process. Each research

group member must provide an in-person positionality statement describing who they are, where they came from, and their ancestry. Research groups will also need to spend time with the community outside of research activities, developing trusting and respectful relationships. To guide the study, the research team and Indigenous community must define their interpretation of Two-Eyed Seeing and the principles that resonate with each partner. This is a collaborative process, one in which power imbalances are removed and there is respect for everyone's opinions, perspectives, values, and beliefs. Continual community involvement and the creation of an Indigenous Advisory Committee are essential. Research groups will not usually have knowledge of traditional practices or beliefs. Advisory committees provide cultural context and ensure community input is heard and local protocols adhered to. Further, research groups are expected to listen to community members outside of the advisory committee. It is imperative for Elders to speak directly with researchers to provide input and guide the study. Researchers should be aware of traditional knowledge gathering and cultural practices. Successful studies will either use traditional knowledge gathering methods or merge them with Western qualitative methods, as it creates a culturally safe study—for instance, the use of sharing circles as a qualitative method when interviewing Indigenous community members instead of Western focus groups. Study participants should be given the chance to review collected data to ensure validity and that their stories were not altered. Finally, research groups need to ensure study findings are disseminated back to the community in a meaningful way and set up methods for lasting relationships with the community.

Conclusion

This narrative review provides an overview on perspectives and application of a Two-Eyed Seeing approach when working with Indigenous communities. Two-Eyed Seeing brings together Indigenous and Western world views. The guiding principles of Two-Eyed Seeing, as it relates to research, revolve around relationships and the four Rs. Clear principles have been highlighted, which emphasize relationship

building; equal power balances in the partnership; and research that is culturally safe, respectful, and reflective of Indigenous values and self-determination. While there is still a relative lack of published literature on Two-Eyed Seeing in research studies, the common principles found in this review can provide a starting point for future researchers to begin to understand Two-Eyed Seeing. However, a Two-Eyed See-

Researchers are responsible to give ownership of all knowledge generated from a study to the partnered community and to ask for permission about how, when, and with whom they may share the knowledge.

ing approach cannot be generalized or formulated. This approach will be unique to the Indigenous community based on their beliefs, cultural traditions, collective knowledge system, and relationship with research group partners. Ultimately, research groups need to understand that research with Indigenous populations requires taking time to create a trusted, respectful, and ethical friendship in which problems can be identified and approached together, rather than based on a Western view of researchers coming into a community to solve their problems for them. ■

Competing interests

None declared.

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Collaboration transforms delivery of care for surgical patients

Surgical patient optimization is a multidisciplinary, structured, and personalized prehabilitation program designed to assist patients in preparing for surgery. Prehabilitation before major surgery can lead to a faster recovery, better patient experiences and outcomes, and savings for the health care system. Best practices for surgical prehabilitation focus on both mental and physical aspects of surgery by decreasing presurgical risk factors and increasing a patient's functional capacity.

In BC, the Specialist Services Committee and the Shared Care Committee support an innovative provincial program that is improving patients' readiness for and outcomes after elective surgeries. Launched in 2019, the Surgical Patient Optimization Collaborative (SPOC) improves the experience for surgical patients by:

- Using a patient-centred and multidisciplinary approach.
- Supporting care providers to implement change processes.
- Using preoperative surgical wait times.
- Integrating available community resources.
- Improving patient outcomes.

Sites are supported to implement prehabilitation programs using the Institute for Healthcare Improvement's (IHI) Breakthrough Series Collaborative Model.¹ With this model, SPOC provides participating teams with:

- 18 months of interactive learning sessions and action periods.
- Evidence-based and expert-reviewed tools and strategies in 13 clinical components.
- Funding and support for physicians and multidisciplinary team members.
- Quality improvement coaching, including guidance on data collection.

This article was submitted by the Specialist Services Committee and has not been peer reviewed by the BCMJ Editorial Board.

- In-person connections to other teams to learn from each other and from recognized experts.

Improved patient outcomes and experience

Access to appropriate information for patients and families to prepare for surgery significantly impacts their experience and recovery. For example, patients have a greater awareness of how important being healthy is for recovery and a better understanding of their role in influencing health outcomes. Meanwhile, families have a lesser caregiver burden or need less time to devote to post-op care.

Best practices for surgical prehabilitation focus on both mental and physical aspects of surgery by decreasing presurgical risk factors and increasing a patient's functional capacity.

To date, over 5200 patients were screened for more than 18 000 clinical components. Over 95% of patients were successfully prehabilitated for at least one clinical component.

Data² show that prior to surgery:

- 42% of patients improved their nutritional status.
- 80% of diabetic patients had their glycemic control assessed prior to surgery, and then decreased or maintained Hb A1C levels.
- 84% of patients increased physical activity.
- 79% of smoking patients decreased or stopped smoking.
- 86% of anemic patients increased their hemoglobin levels.

Thirteen clinical components for prehabilitation

Anemia
Cardiac
Frailty
Glycemic control
Mental health
Nutrition
Pain management
Physical activity
Smoking cessation
Social support
Sleep apnea
Substance use
VTE prophylaxis

And after surgery:

- 91% of patients reported an improved surgical experience.
- 86% of patients reported an improved surgical outcome.

Enriched provider experiences

Over 100 health care providers have implemented prehabilitation work in 14 sites/teams across the province. Surgeons, family doctors, and anesthesiologists collaborate with medical office assistants, preassessment clinic nurses, nurse navigators, site executives, and project managers to develop and sustain prehabilitation processes. This work includes regular collection and review of data, which is used to guide adjustments to plans and workflows. This has contributed to an increase in the number of patients screened.

Interdisciplinary collaboration is increasing job satisfaction for physicians and team members, with 94% of SPOC physicians reporting improved provider experiences. However, teams consistently noted system barriers such as complex workflows, including changes

to information technology and communication platforms and time for clinical follow-up, as well as shortages in workforce, space, and equipment.

Reduced system costs

Surgical patient prehabilitation increases efficiency of the health care system by better preparing patients for surgery, resulting in fewer adverse events and shorter hospital stays. In its first 2 years, SPOC has:

- Led to average net savings of approximately \$2175 per arthroplasty patient and \$7500 per colorectal patient.
 - 74% of the arthroplasty surgery savings and 55% of the colorectal surgery savings were due to a shorter surgical length of stay (LOS).
 - 37% of the colorectal surgery savings were due to a reduction in the rate of postsurgery surgical site infection.
- Shortened LOS for optimized patients by 28% for arthroplasty surgery and by 45% for colorectal surgery.

Spread and sustainability

SPOC is continuing to expand to more sites across the province, including through teams working with primary care networks and by offering a second cohort of teams. Learn more at www.sscbc.ca. ■

—Kelly Mayson, MD

—Thomas Wallace, MD

Co-chairs of SSC's Surgical Optimization Working Group

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Optimizing your disability and professional expense insurance

When did you last review your disability and professional expense insurance needs? It's recommended that you review your coverage with a Doctors of BC insurance advisor 1 year after starting a practice and 2 years thereafter.

If you have the Guaranteed Insurability Benefit (GIB) rider on your Doctors of BC Professional Expense Insurance (PEI) or Disability INCOMEprotect for practising physicians, you may increase your coverage without medical questions each November.

Disability insurance

Disability insurance provides monthly tax-free income if you're unable to work due to accident or illness. It's important to maximize your disability coverage, as 1) you could be disabled for a long period and disability benefits may be your only source of income, 2) the medical costs associated with a disability can be unexpectedly high, and 3) some of your disability benefits should be designated for retirement savings, since benefits end at age 65.

Insurers limit the amount of tax-free disability coverage you can purchase based on your net income (gross earnings less business expenses, excluding personal salary, dividends, and income tax). These limits are designed to ensure that claimants are not earning more from benefits than they were earning while employed. Depending on your income, the insurer may offer maximum coverage of 30% to 40% of your net income.

The BC government-paid Physicians' Disability Insurance (PDI) can help maximize the benefits available to a physician during a disability. PDI typically pays up to \$6100 of monthly tax-free disability benefits for physicians earning eligible MSP income. PDI will reduce benefits if the claimant's total disability benefits from all sources are greater than 60% of predisability net income (after expenses but before income or corporation tax). This is an important factor in determining how much additional disability you should have. For example, if you earn \$250 000 net income and are eligible for \$6100 of PDI, you should have up to \$6400 of additional personally paid disability. In this example, any additional coverage beyond \$6400 will reduce PDI benefits,

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Eric Silver MD and Elan Eisen — co-founders of RSRS.



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dollar for dollar. Each situation is different; you are encouraged to speak with a Doctors of BC insurance advisor about your personal situation.

Professional expense insurance

As costs of managing your practice increase, ensure your PEI coverage increases as well. PEI provides reimbursement of professional and business clinic expenses, including membership dues, accounting fees, liability insurance, office rent, and staff salaries. Note that spousal salaries for income-splitting purposes are not considered a reimbursable expense. If your PEI amount is inadequate, you may have to use your personal savings or disability payments to help fund your professional expense obligations during a disability.

Speak with a licensed Doctors of BC insurance advisor to get a proper assessment of your insurance needs. Email insurance@doctorsofbc.ca or call 604 638-7914 for a complimentary appointment.

—Julie Kwan
Business Development Manager, Insurance

BC Lymphedema Association: Updated professional resource directory

The BC Lymphedema Association has released its 2021–2022 edition of the *BCLA Professional Directory & Resource Guide*. The expanded guide includes new and updated educational content and is intended to help BC physicians and their patients find the services they need within their health region. Content includes

listings by health region, trained therapists, fitters, and support services for the management of patients with lymphatic disorders.

Also included is an update on the VGH Lymphedema Program, offering surgical solutions for patients.

A PDF version of the directory is available at [https://bclymph.org/Resource-Directory\(PDF\)](https://bclymph.org/Resource-Directory(PDF)). For further information, contact info@bclymph.org or call the information line listed on the back of the directory.



Website to connect people with mental health, substance-use supports

British Columbians can now navigate and connect with mental health and substance-use information and supports via the Wellbeing website (<https://wellbeing.gov.bc.ca>). The website features a guided search tool that helps users find a curated, personalized list of services based on their answers to simple questions about who they are and what they need. It is particularly beneficial for people who are seeking help for the first time and need extra guidance to learn about the information and supports that are available to them. It includes information about mental health and substance use to help support children or youth, postsecondary students, adults, parents or caregivers, seniors, Indigenous persons, 2SLGBTQ+ persons, people who use drugs, and service providers. Content on the website will be expanded with ongoing input from community partners and continuous peer review by people with lived and living experience of mental health and substance-use challenges.



British Columbia Medical Journal
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Editorial: The outsized impact of kindness

A lesson I have relearned is how the smallest act of kindness can elevate someone from just doing their job to being an angel of caring. The difference this makes to a vulnerable unwell patient and their family is immeasurable.

Read the editorial: bcmj.org/editorials/outsized-impact-kindness



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Innovative coating for blood vessels reduces rejection of transplanted organs

Researchers at UBC have found a way to reduce organ rejection following a transplant by using a polymer to coat blood vessels on the organ to be transplanted. The polymer substantially diminished rejection of transplants in mice when tested by collaborators at SFU and Northwestern University.

The polymer was developed by UBC pathology and laboratory medicine professor Dr Jayachandran Kizhakkedathu and his team at the Centre for Blood Research and the Life Sciences Institute. The findings were published recently in *Nature Biomedical Engineering* (www.nature.com/articles/s41551-021-00777-y).

The discovery has the potential to eliminate the need for drugs on which transplant recipients rely to prevent their immune system from attacking a new organ as a foreign object. Dr Kizhakkedathu explained that blood vessels in organs are protected with a coating that suppresses the immune system's reaction, but in the process of procuring organs for transplantation, the coating is damaged and no longer able to transmit the message. Dr Kizhakkedathu's team synthesized a polymer and developed a chemical process for applying it to blood vessels. He worked with UBC chemistry professor Dr Stephen Withers and the study's co-lead authors, PhD candidate Daniel Luo and recent chemistry PhD Dr Erika Siren.

The procedure has been applied only to blood vessels and kidneys in mice so far, but researchers are optimistic it could work equally well on lungs, hearts, and other organs. Clinical trials in humans could be several years away.

The research was supported by CIHR, NSERC, UBC, SFU, the Heart and Stroke Foundation of Canada, GlycoNet, and the Michael Smith Foundation for Health Research.



Spoken interpretation services available to community specialists

When working in their community offices, specialists can access free spoken language interpreting services as part of a 1-year pilot project, funded by the Specialist Services Committee (SSC)—a partnership of Doctors of BC and the BC government.

SSC is providing \$50 000 for this pilot project in response to physicians' feedback about supporting the delivery of safe and equitable patient care to diverse populations. Previously, this service was available to specialists who chose to pay privately or who work within the boundaries of health authority sites.

Accessible through the Provincial Language Service, professional interpreters offer services that are available:

- Via telephone.
- 24 hours a day, 7 days a week.
- On demand.
- In roughly 240 languages.

How specialists can connect with an interpreter:

1. Call 1 833 718-2154 (toll free).
2. Select a language.
3. Enter your access code, which was emailed to you by your section head, or contact SSC at sscbc@doctorsofbc.ca.
4. Indicate you are a member of Doctors of BC.
5. Wait 30 to 60 seconds to connect with an interpreter.

For more information, visit www.phsa.ca/health-professionals/professional-resources/interpreting-services.

Paul Oxley, MD, FRCSC, Rizwan Mian, MD, MS, FRCSC, Carly McNeely, Yousef Mian, David McNeely, MD, FRCPC

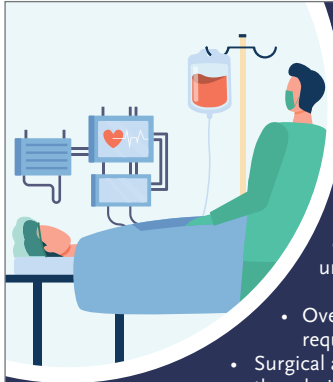
Canada's largest purpose-built public day-care surgery centre: A retrospective audit of patients requiring transfer to an inpatient hospital

The low rate of unplanned patient transfers from an outpatient surgical centre to a tertiary care hospital indicates that a publicly funded outpatient surgery program can be successfully operated in Canada under full control of a provincial health authority.

ABSTRACT: Rapid growth in regional population puts an incredible strain on health care resources. Our health authority attempted to reduce this burden by building a large, standalone outpatient care and surgery centre. To determine the success of this surgical program, we undertook a review of a 2-year period for all cases performed in the main operating room with an anesthetist present to determine successful discharge rates for these

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This article has been peer reviewed.








CANADA'S LARGEST PURPOSE-BUILT PUBLIC DAY-CARE SURGERY CENTRE: A retrospective audit of patients requiring transfer to an inpatient hospital


The low rate of unplanned patient transfers from an outpatient surgical centre to a tertiary care hospital indicates that a publicly funded outpatient surgery program can be successfully operated in Canada under full control of a provincial health authority.

- Over 2 years, 11 728 cases were performed; 140 (1.19%) required unplanned admission to the local tertiary care hospital.
- Surgical and anesthetic factors were responsible for more than 80% of the admitted cases.

MOST LIKELY SOURCES OF COMPLICATIONS:

 Anesthesia (44.3%, 62/140)	 Surgical (37.9% 52/140)	 Institutional issues 7.9% (11/140)	 Medical 5.7% (8/140)	 Patient selection 4.3% (6/140)
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 BCMJ 2021;63:330-335.



day-care cases. We also set out to determine factors responsible for unsuccessful discharge cases requiring admission to the local tertiary care hospital. Over 2 years, 11 728 cases were performed, with 140 (1.19%) requiring unplanned admission. Surgical and anesthetic factors were responsible

for more than 80% (115/140) of these admitted cases. A large standalone centre can successfully provide high-volume surgical care with a very low unplanned admission rate. These programs can greatly assist in offloading regional hospitals and reducing surgical admissions.

Background

The Fraser Health Authority is the largest and fastest growing health region in BC.¹ This rapid growth has put considerable pressure on local hospitals to deliver outpatient clinic, diagnostic, and surgery services. In response, the Ministry of Health designed and built a stand-alone, dedicated outpatient and surgery facility—the Jim Pattison Outpatient Care and Surgery Centre (JPOCSC). One of the main goals of the facility is to provide ambulatory surgical services to help alleviate demand on hospital operating rooms and expand overall surgical capacity in Fraser Health. The centre received significant public funding, but donor funding from the Surrey Hospitals Foundation, private donors, and ultimately Mr Jim Pattison accounted for a portion of the equipment costs.

Many studies have examined the key attributes of successful day-care surgery programs²⁻⁴ and have helped define patient health cutoffs for BMI, age, American Society of Anesthesia (ASA) level, and other variables. Enhanced recovery after surgery initiatives have greatly improved outpatient success,⁵⁻⁷ and most surgical specialties have tried to identify those procedures that can be safely performed in a day-care surgery setting.⁸⁻¹⁴ Most larger studies^{2,15} have focused on one surgical specialty. Recent anesthesia focus has been on the effect of obstructive sleep apnea on day-care surgery success rates.¹⁶ While studies have been conducted outside Canada,¹⁷⁻¹⁹ there have been no recent reviews of large day-care surgery centres in this country. In addition, most stand-alone surgical facilities in Canada are privately built and operated, which can lead to patient selection bias.

In any ambulatory surgery centre, programming to prevent and reduce complications that require patient transfer to a higher level of care or hospital admission is essential. Once those factors have been identified, it is also important to compare local results with national or international averages. JPOCSC submits data to the National Surgical Quality Improvement Program (NSQIP) database and uses it as a source of quality control.

We set out to identify unplanned transfers from JPOCSC to the local tertiary care hospital,

identify factors that led to those events, allocate those factors to specific aspects of the patient care pathway, and compare our results to NSQIP baselines. We also set out to demonstrate the viability of large, stand-alone, publicly run day-care surgery centres within the Canadian health care system.

Methods

All patients who underwent surgical procedures at JPOCSC from 1 January 2016 to 31 December 2017, including those who had a procedure with general anesthesia in a full-service operating theatre, were included in our study. Procedures performed in minor theatres that did not require general anesthesia were not included.

All patients who required transfer to the local tertiary care centre prior to discharge were identified, and their charts were reviewed to determine the most likely reason for transfer. We then categorized each transfer case by the most likely source of complication, as follows: surgical, medical, anesthesia, patient selection, and process (institutional). In cases where more than one factor was identified, only the most significant was categorized, as determined by a group consisting of a nurse, anesthetist, and surgeon. For example, if a patient had significant postoperative pain and required cardiac monitoring, the cardiac issue was determined to be the more significant reason for transfer. All transfer cases involved patients who could not be discharged home for any reason; they did not include patients who were discharged and readmitted at a later date.

We also reviewed the readmission rate within 1 week of discharge to capture any outliers. These data were further subdivided by surgical subspecialty.

Finally, NSQIP data for the same time period²⁰ as our study were used as a benchmark for comparing our results to the national average.

Results

During the 2-year study period, 11 728 procedures were conducted at the JPOCSC. **Table 1** lists the most commonly performed procedures according to surgical discipline. In total, 140 cases required transfer to the local tertiary care hospital.

TABLE 1. Most common procedures performed, by surgical discipline.

Discipline	Procedure
Plastic surgery	<ul style="list-style-type: none"> Breast reduction Alloplastic breast reconstruction Skin graft Melanoma excision/sentinel node biopsy Hand and wrist surgery
General surgery	<ul style="list-style-type: none"> Laparoscopic cholecystectomy Hernia repair Mastectomy/lumpectomy +/- sentinel node biopsy Anal fistulotomy/pilonidal sinus Soft tissue tumor excision
Ear, nose, and throat	<ul style="list-style-type: none"> Functional endoscopic sinus surgery Septoplasty Thyroidectomy Parathyroidectomy Tonsillectomy
Gynecology	<ul style="list-style-type: none"> Laparoscopic salpingectomy/cystectomy Hysteroscopy/dilatation and curettage Endometrial ablation Anterior/posterior repair Tubal ligation
Pacemakers	<ul style="list-style-type: none"> Insertion Generator exchange Lead revision Loop recorder implant/explant
Urology	<ul style="list-style-type: none"> Greenlight laser prostate Cystoscopy Extracorporeal shock wave lithotripsy Ureteroscopy Installation gemcitabine
Vascular surgery	<ul style="list-style-type: none"> Arteriovenous fistula creation
Orthopaedics	<ul style="list-style-type: none"> Arthroscopic shoulder repair Ankle reconstruction Anterior cruciate ligament repair Knee arthroscopy Hand and wrist surgery
Retinal surgery	<ul style="list-style-type: none"> Membrane peel Posterior vitrectomy with laser Oil exchange Gas exchange

Over the 2-year period, the discharge rate was 98.81%, and the transfer rate was 1.19%. Annual transfer rates were similar: 1.24% in the first year; 1.16% in the second year.

The average number of ambulatory surgeries performed per month at JPOCSC over the 2-year period was 488 (range 398–627) [Figure 1]. The average number of transfers per month was 5.8 (range 2–10) [Figure 2]. The transfer rate per month [Figure 3] refers to the number of transfers as a percentage of total case number. It ranged from 0.35% to 2.22%, with the average rate for all dates of 1.19%.

The categories most commonly associated with transfers over the 2-year period were anesthesia (44.3% [62/140]) and surgical (37.9% [53/140]) [Table 2]. Institutional factors were responsible for 7.9% (11/140) of all transfers, while medical and patient selection factors led to 5.7% (8/140) and 4.3% (6/140) of all transfers, respectively.

We also examined the total number of transfers per surgical discipline [Table 3]. In both years of the study, most transfers were associated with general surgery and plastic surgery. Retinal surgery was the only category not associated with transfers in either year.

Most unplanned readmissions occurred in the first 48 hours following discharge after surgery. The overall readmission rate was 1.81% for all surgical disciplines over the 2 years [Table 4]. The highest readmission rates were associated with urology, general surgery, orthopaedics, and ear, nose, and throat.

Discussion

Surgery continues to evolve to try to create less invasive, safer, and more expedient procedures. In addition, increasing numbers of procedures that once required lengthy inpatient stays have been switched to day-care surgery procedures.^{7,8,11-15} This has resulted in benefits such as reduced nosocomial infections and reduced costs.

There are many private surgical facilities in Canada that have been built predominantly to provide noninsured services, such as cosmetic surgery, or surgery covered outside the standard provincial health care systems. The Canadian surgical system has been largely hospital based, though increasing numbers of surgeries

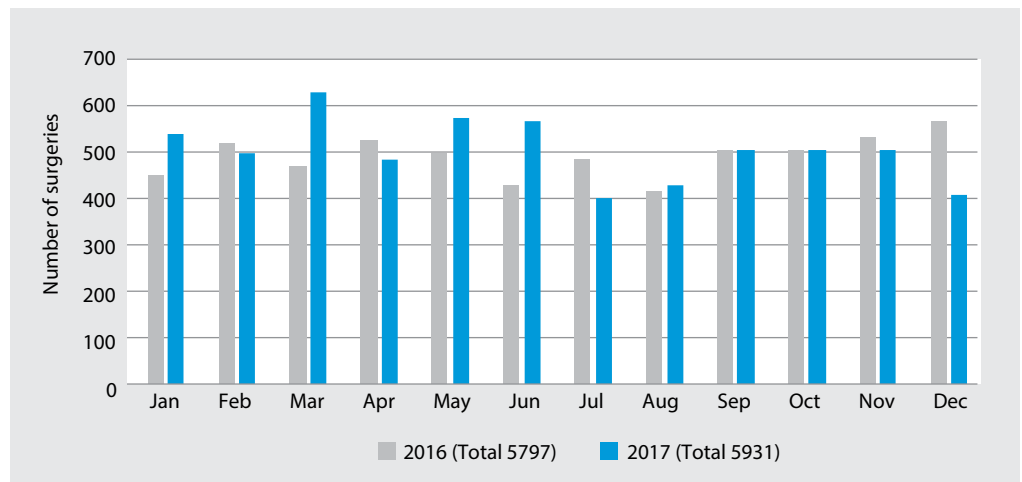


FIGURE 1. Number of surgeries performed per month at the Jim Pattison Outpatient Clinic Care and Surgery Centre.

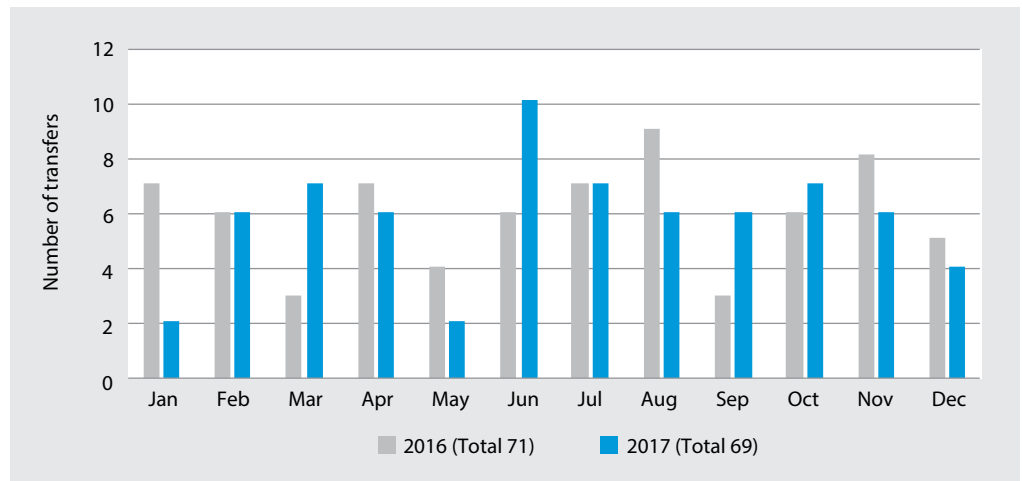


FIGURE 2. Number of transfers per month at the Jim Pattison Outpatient Clinic Care and Surgery Centre.

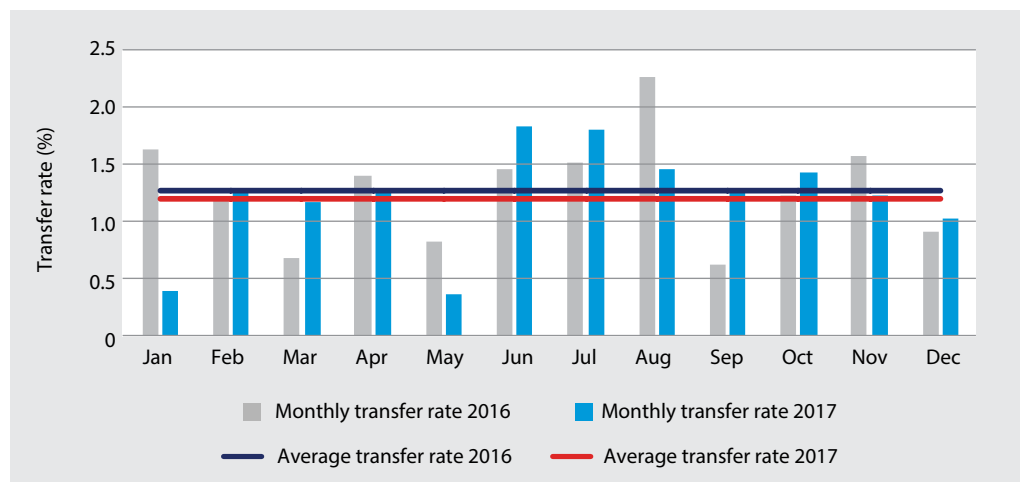


FIGURE 3. Transfer rate per month at the Jim Pattison Outpatient Clinic Care and Surgery Centre.

TABLE 2. Causes attributed to patient readmissions, by category and year.

2016	Cause	2017	Cause
Anesthesia (27)	<ul style="list-style-type: none"> • Pain (10) • Low oxygen saturations (7) • Nerve block complication (4) • Inappropriate technique/excessive intraoperative narcotics (4) • Negative pressure pulmonary edema (1) • Allergic reaction (1) 	Anesthesia (35)	<ul style="list-style-type: none"> • Pain (23) • Oxygenation (6) • High blood pressure (3) • Decreased level of consciousness (2) • Nausea (1)
Surgical (25)	<ul style="list-style-type: none"> • Bleeding (14) • Further surgery needed, or converted to open surgery (5) • Endoscopic retrograde cholangiopancreatography (3) • Pneumothorax (2) • Clipped wrong duct (1) 	Surgical (28)	<ul style="list-style-type: none"> • Bleeding (23) • Pneumothorax (1) • Needs lead change (1) • Perforated (1) • Fibroids (1) • Convert to open (1)
Institutional (8)	<ul style="list-style-type: none"> • Facility closing conflict (4) • Late surgical start (3) • Surgical on-call medical doctor not available (1) 	Institutional (3)	<ul style="list-style-type: none"> • Visitor refused to take patient home (1) • Scheduled late (1) • Difficult blood work draws (1)
Medical (5)	<ul style="list-style-type: none"> • Intra-op cardiac event or required cardiac monitoring (5) • Active infection (1) • Recent pneumonia (1) • Cerebrospinal fluid leak (1) • Bleeding pre-op (1) • Urosepsis (1) 	Medical (3)	<ul style="list-style-type: none"> • Post-op myocardial infarction (1) • Rapid atrial fibrillation (1) • Pneumonia (1) • Pacemaker malfunction (non-pacemaker insertion patient) (1)
Patient selection (4)	<ul style="list-style-type: none"> • Obstructive sleep apnea (4) 	Patient selection (2)	<ul style="list-style-type: none"> • Chronic pain (2)

TABLE 3. Total number of transfers, by surgical category, per year.

Discipline	2016	2017
General surgery	25	18
Plastic surgery	17	10
Gynecology	9	6
Urology	5	10
Ear, nose, and throat	8	11
Orthopaedics	4	3
Pacemakers	3	11
Retinal	0	0

TABLE 4. Readmissions within 1 week of surgery.

Discipline	Total number of cases	Unplanned readmissions	
		(Number)	(%)
General surgery	3592	85	2.37
Gynecology	1186	14	1.18
Orthopaedics	894	16	1.79
Ear, nose, and throat	1395	25	1.79
Plastics	2999	34	1.13
Urology	1001	38	3.80
Other	661	0	0.00
Total	11 728	212	1.81

are being contracted out to private centres to help alleviate hospital surgical volumes.²¹ There is no doubt that these centres can provide an excellent same-day discharge rate.² Due to provincial College of Physician restrictions, the cutoffs for patient variables, such as BMI, that allow for outpatient surgery are often stricter than those that a hospital can use. This limits the number of patients who can receive surgery at an outpatient facility.

Our review included all procedures performed in a full-service operating room with general anesthesia and cases, such as spinal cases or regional cases, where anesthesia was present; therefore, cases such as routine gastroscopy, colonoscopy, vasectomy, minor skin surgery, and minor hand surgery were not included. These procedures, performed with local anesthetic with or without quick reversal sedation, are widely accepted outpatient procedures. In addition, other procedures commonly performed on an outpatient basis, such as cataract surgery, are not performed at the JPOCSC. All patients were ASA 1 or 2 except vascular-access patients and patients with pacemakers who could be ASA 3 as well. A BMI limit of 45 was used, and patients with a significant history of obstructive sleep apnea or anesthetic complications are not permitted to have surgery at JPOCSC. Because operating room access at both JPOCSC and the tertiary care hospital is tied to the same allocation algorithm, many patients who would qualify for surgery at JPOCSC received their care at the tertiary care hospital to expedite access. Therefore, most day-care surgeries, regardless of location, received care from the same surgeon and anesthetic team.

When JPOCSC was created, the regional hospital's criteria for day-care surgery were adopted because JPOCSC's size and scope made it possible to treat more complex patients, and its close tie to the hospital made transfers easier, without refusal. The overall intent was to not limit the cases that would be conducted on an outpatient basis at one facility versus the other.

There can be a significant difference in the same-day discharge rate of a day-care surgical centre versus that of a hospital. Our team identified a significantly higher same-day discharge rate for an outpatient centre compared to that of a hospital when all other variables were

controlled.¹² We also found an institutional bias in admitting: the rate was almost 9 times higher at the hospital than at the day-care surgical centre, due largely to the ease of admitting. The discharge rate at the local tertiary care hospital matched that reported by a different group in another province²² for the same procedures, which further shows institutional bias when admission is a much simpler process. Therefore, a stand-alone outpatient centre has a greater chance of optimizing same-day discharge on a routine basis.

JPOCSC was opened to provide ambulatory day-care surgery to reduce volumes in the main hospital operating rooms and increase overall surgical capacity in Fraser Health. Since the surgeries performed can be relatively complex for day-care surgery, often beyond the scope of most free-standing ambulatory centres, it is important to continuously monitor the transfer rate from JPOCSC to a higher level of care and to compare the rate to that of similar institutions.

We determined that for the 11 728 surgeries performed over the 2-year period in this study, the unplanned transfer rate was 1.19%. This is similar to results in a report produced by multiple ambulatory surgery centres in the United States in 2017.²⁰ That study included 1499 ambulatory centres and 1 749 059 surgeries. The rate of hospital transfer and admission was 1.01%. Our transfer rate was within the middle 50th percentile for all centres. We used the NSQIP data because ambulatory centres are much more common in the United States; therefore, a larger database of comparative result was available. Our transfer rate also declined from 1.24% to 1.16% between the first and second years of study, even though more surgeries were performed in the second year.

The low number of transfers in our study and others suggests that ambulatory centres do not need to be immediately adjacent to a larger hospital. This can allow health authorities and governments to choose locations closer to new centres of population growth to improve resource distribution.

Paramount to determining the viability of successful outpatient discharge is the review of unplanned readmission within a specific period following surgery. Our overall rate of

readmission within the first week following surgery was 1.81% for all surgical disciplines. This rate was within the NSQIP mid-50th percentile for similar centres over the same time period.²⁰ For all cases, readmission was due to surgical complications such as hematoma or surgical site infection. In our review of readmissions,

In our public health care system, it is crucial to maximize resource use and patient access to services.

combined general surgery and plastic surgery breast reconstruction cases were placed in the plastic surgery group. This readmission rate is similar to the rate recorded at the regional hospital for similar cases, and is within the NSQIP average range.

In this study, the cause that was most likely responsible for patient transfer was examined. All reasons for transfer were then grouped into surgical, medical, anesthetic, institutional, and patient selection categories. The categories naturally had some crossover between groups. It is very difficult to isolate pain into either the anesthetic or surgical categories. This issue has been brought before both disciplines at JPOCSC for review. For simplification, we included postoperative pain under anesthesia.

Each case transferred from JPOCSC is presented to each member of the patient care pathway and is reviewed at divisional morbidity and mortality rounds, as are readmissions. This has proven beneficial to obtaining input from different parts of the care pathway. Other studies have shown that this type of review is essential to improving patient care outcomes.^{19,23-25}

Conclusions

The JPOCSC and Surgery Centre's unplanned transfer and admission rate to the tertiary care hospital was well within the average for similar

centres throughout the United States. The very high success rate for same-day discharge eclipsed that of case-controlled patients who had the same surgery at a regional tertiary care hospital. The lack of overnight stay capability at JPOCSC encourages adherence to the patient care pathway, and our low readmission rate postdischarge further indicates the successful same-day discharge of these patients.

In our public health care system, it is crucial to maximize resource use and patient access to services. Unplanned overnight admissions following surgery unnecessarily tie up inpatient beds and add further expense to the already taxed public system.

A publicly funded outpatient surgery program can be successfully operated in Canada under full control of a provincial health authority. ■

Competing interests

Three of the authors (Oxley P, Mian R., and McNeely D.) have privileges at the Jim Pattison Outpatient Clinic and Surgery Centre. Two of the authors (Oxley P. and Mian R.) are also part owners of a private clinic. No outside funding was received for this project.

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Opioid prescribing patterns in British Columbia from 2013 to 2017: A population-based study

A 5-year retrospective analysis of community-dispensed opioids in BC showed that the number of opioid prescriptions issued declined slightly, and the types of opioids prescribed varied by medical specialty and over the study period.

ABSTRACT

Background: Prescription opioids initiated in opioid-naïve patients are associated with long-term opioid use and opioid-related death.

Methods: We examined trends in prescribing practices using a data set of outpatient opioid prescriptions in BC from 2013 to 2017.

Note: All supplementary tables and figures (e.g., Table S1) are available online at bcmj.org.

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This article has been peer reviewed.

Results: In total, 19785 practitioners prescribed 15 693 867 prescriptions that were dispensed to 1 692 035 patients. In 2017, 11.5% of British Columbians were given at least one prescription for opioids. Over the 5-year period, opioid prescription rates declined by 1.6%; however, the proportion of patients who received more than 90 morphine milligram equivalents per day increased by 8%. There was heterogeneity of opioid prescriptions across and within specialty groups.

Conclusions: We provide population-level data to inform prescribers that there is a need to be aware of opioid prescription variability and its potential effect on long-term opioid use.

Opioids are an essential component of multimodal therapy for acute and cancer pain management. Legitimate opioid prescription use in this setting is not considered to be a major contributor to chronic opioid misuse.^{1,2} However, transition to persistent opioid use, distinct from opioid misuse, in an opioid-naïve patient is reported to be the most common complication occurring after elective surgery, and the rate of use may be as high as 1 in 15.^{3,4} For example, persistent opioid use following lumbar fusion surgery has been reported in 12.8% of opioid-naïve patients.⁵ An initial prescription of opioids carries

a 5.3% risk of persistent opioid use at 1 year and a 2.9% risk at 3 years.⁶ Certain patterns of initial opioid prescriptions are known risk factors for persistent opioid use in previously opioid-naïve patients. These include prescriptions for long-acting (versus short-acting) opioids, induction with tramadol, higher morphine milligram equivalent (MME) doses, increasing number of days of opioids supplied with the first prescription, and instigation of a repeat prescription on initiation of opioids.^{6,7} However, increased risk is independent of the initial indication for the opioid prescription.⁶

There is wide variation in opioid drug and dosage prescribing after common surgical procedures, yet as much as 70% to 80% of the drugs are not used and contribute to an opioid source within the community.^{8,9} These opioids are often kept for future potential emergency pain use but become a source for recreational misuse or diversion.¹⁰

Long-term use of legitimate prescription opioids or unused community opioids is a potential gateway to subsequent opioid use disorder and transition to illicit drug use. Four to six percent of individuals who use prescription opioids will make this transition, especially when prescription drugs become less available.¹¹⁻¹³ Canadians were the third highest consumer of prescription narcotic drugs per capita in 2018.¹⁴

The introduction of synthetic drugs such as fentanyl and carfentanyl into the illicit drug market has resulted in a surge of unintended opioid-related deaths since 2015. British Columbia declared this opioid crisis a public health emergency in 2016.¹⁵ One response to this crisis was *The 2017 Canadian Guideline for Opioids for Chronic Non-Cancer Pain*, which suggests that prescribers should restrict patients to 90 MME per day.¹⁶ Despite this and other recommendations, the 2019 Canadian opioid overdose-related death rates remained the highest in BC at a rate of 20.0 per 100 000, twice the national average of 10.2.¹⁷

It is important to understand the variability in opioid prescriptions among prescribers in an attempt to reduce the quantity of opioids within the community. Previous studies have described physician specialty-specific prescribing trends. However, they studied mainly patient populations in the US, and often did not describe prescriptions in relation to other factors such as patient age and sex.¹⁸⁻²⁰ Analyzing prescriptions by these characteristics is particularly important in understanding opioid use in age-specific populations because their opioid prescriptions can vary significantly by provider specialty.^{21,22}

We describe opioid prescribing patterns in BC from 2013 to 2017 with the primary goal of determining the relationship between prescriptions and patient age and sex, and prescriber types.

Methods

A 5-year retrospective longitudinal analysis of all community-dispensed opioids within BC was conducted. Ethical approval was obtained from the University of British Columbia Children's and Women's Research Ethics Board (H18-01006). The study conforms to the rules regarding data reporting as set out by Population Data BC and the provincial government.

Opioid classification

A list of all possible prescription opioids for the study period was created based on the World Health Organization Collaborating Centre for Drug Statistics Methodology Anatomical Therapeutic Chemical Classification System.²³ The categories for "opioids" and "drugs used in

opioid dependence" were included, and each was searched within the Health Canada Drug Product Database. In total, 691 drug identification numbers were identified.

Data sources

Dispensed prescriptions

A list of all prescriptions dispensed in BC between 1 January 2013 and 31 December 2017 was obtained from the PharmaNet database²⁴ through Population Data BC. PharmaNet, regulated by the BC Ministry of Health, records every prescription dispensed in community pharmacies, regardless of a patient's insurance status. The final list of opioid prescriptions included all those matching the 691 identified drug identification numbers.

For each prescription, the following data were collected: drug identification number, date dispensed, quantity dispensed, days supplied, and patient age and sex. Additionally, the following drug-specific details were obtained: chemical/generic name, drug strength, drug form units, and dosage form description (e.g., 3 [drug form units] tablets [dosage form description]). The field "directions for use" was requested but not obtained due to privacy/confidentiality concerns.

All patients and prescribers were given a unique study ID by Population Data BC in order to create a de-identified data set.

Opioid details

The Health Canada Drug Product Database was searched for each specific opioid within a drug to obtain the corresponding opioid strength.²⁵ Additionally, the oral MME was calculated for each drug using conversion factors obtained from the US Centers for Disease Control's 2017 oral MME guide.²⁶ Formulations were then aggregated by opioid type into 12 groups [Table]. Tramadol and tapentadol were combined due to their similar mechanism of action.²⁷ Codeine and tramadol/tapentadol were characterized as weak opioids; the remainder were characterized as strong opioids.

Prescriber details

Data on each physician's type of practice were obtained by linking their unique de-identified study ID to their listed specialty (or specialties)

from the BC College of Physicians and Surgeons database.²⁸ Physicians with multiple specialties were categorized by the primary specialty as designated by Population Data BC. Prescribers were then aggregated into the following categories: anesthesiology, specialty dentistry, general dentistry, diagnostics, general practice, medicine, nurse practitioner, pediatrics, pharmacy, physician: unknown specialty, psychiatry, surgery, and other (includes allied health professionals, optometrists, naturopathic physicians, midwives, and podiatrists).

BC population details

Annual population data for BC, stratified by age and sex, were obtained from published Government of British Columbia estimates.²⁹

Data cleaning

Prescriptions with unidentified sexes or with ages greater than 113 (the oldest identified British Columbian during the study period) were set to missing. Prescriptions from prescriber types that were not present in BC during the study period were excluded because they were perceived as data errors. Daily MMEs and days supplied greater than twice the 99th percentile were excluded because they were considered data errors. Physicians' specialties that could not be identified from the BC College of Physicians and Surgeons database were categorized as an "unknown" speciality. The prescriber for prescriptions with misclassified prescriber designations were also set to "unknown."

Statistical analyses

Patients, prescribers, and prescriptions were classified descriptively overall and by year using medians and interquartile ranges (IQRs) for continuous variables and counts for categorical variables. Using age- and sex-specific reference population totals from the BC general population, prescription rates per 1000 were calculated for each study year. Data were stratified by prescriber group type. The total number of prescriptions per provider was calculated overall and for each of the three most common opioid groups prescribed within the prescriber speciality group.

Trends in the number of prescriptions issued over time by opioid group, both overall and within prescriber groups, were assessed

visually and via Poisson regression, including a cubic spline for calendar month from the start of the study period. All analyses were conducted using R statistical software.³⁰

Data cleaning, editing, and analysis was conducted on a secure server in the Population Data BC Secure Research Environment. Analysis exports conformed to the rules and limitations set by Population Data BC and were restricted to counts greater than or equal to 5.

Results

Details on opioid prescriptions and patient cohorts are presented in the Table. Between 2013 and 2017, 15 693 867 opioid prescriptions were dispensed in BC. Ten prescriptions were excluded from analysis due to unidentified sex; 35 were excluded for ages greater than 113. Prescriptions from prescriber types that were not present in BC during the study period were excluded (n = 792). Daily MMEs and days supplied greater than twice the 99th percentile were excluded (n = 3923 and 23 375, respectively). Physicians' specialities that could not be identified were categorized as an "unknown" speciality (n = 229, accounting for 2015 101 prescriptions). A further 111 996 prescriptions had misclassified prescriber designations; in these cases, the practitioner was also set to "unknown."

The 15 665 732 prescriptions included in the analysis (15 693 867 minus 28 135 excluded) were prescribed by 19 785 practitioners to 1 692 035 patients, yielding an average annual opioid prescription per capita rate of 124 per 1000 (median 50 years, 51% female) [Table]. The median daily MMEs increased from 32 in 2013 to 34 in 2017. Opioid prescription rates per capita declined by 1.6% across all prescriber groups over the 5 years. The top three opioid prescriber groups were general practitioners (42%), pharmacists (13%), and general dentists (13%) [Figure S1, Table S1]. The top 20% of prescribers were responsible for 86% of opioid prescriptions over the study period; the top 10% were responsible for 66% of prescriptions. Overall, four drugs collectively accounted for more than 75% of all prescriptions: codeine (35%), hydromorphone (18%), morphine (12%), and oxycodone (12%). The median number of days the drugs were prescribed was consistently 7 throughout 2013–2017 [Table]. However, the

TABLE. Cohort description and summary of opioid prescriptions, 2013–2017. Continuous data are displayed as a median interquartile range; categorical data are displayed as N (%) unless otherwise specified.

Population	2013	2017	Absolute change
British Columbia population	4 630 077	4 924 233	+6.3%
Total number with prescription	605 726 (13.1)	565 776 (11.5)	-1.6%
Sex			
Female	318 836 (52.6)	298 414 (52.3)	–
Male	286 890 (47.4)	267 362 (47.3)	–
Age	52 [37, 65]	54 [38, 68]	–
Prescribers			
Total number	13 340	14 786	+10.8%
Type			
Anesthesiology	130 (1.0)	96 (0.6)	-0.4%
Specialty dentistry	549 (4.1)	440 (3.0)	-1.1%
General dentistry	1920 (14.4)	2026 (13.7)	-0.7%
Diagnostics	110 (0.8)	61 (0.4)	-0.4%
General practice	5658 (42.4)	6819 (46.1)	+3.7%
Medicine	1127 (8.4)	960 (6.5)	-1.9%
Nurse practitioner	116 (0.9)	240 (1.6)	+0.7%
Other*	87 (0.7)	122 (0.8)	+0.1%
Pediatrics	120 (0.9)	85 (0.6)	-0.3%
Pharmacy	1232 (9.2)	1520 (10.3)	+1.1%
Physician: unknown specialty	942 (7.1)	1321 (8.9)	+1.8%
Psychiatry	313 (2.3)	224 (1.5)	-0.8%
Surgery	1036 (7.8)	872 (5.9)	-1.9%
Prescriptions			
Total number	3 010 634	3 223 935	
Prescriptions per 1000	650.2	654.7	+0.7
Opioid group			
Codeine	1 180 364 (39.2)	964 686 (29.9)	-9.3%
Hydromorphone	501 661 (16.7)	581 887 (18.0)	+1.3%
Morphine	395 902 (13.2)	309 830 (9.6)	-3.6%
Oxycodone	435 044 (14.5)	282 000 (8.7)	-5.8%
Buprenorphine	109 730 (3.6)	632 777 (19.6)	+16.0%
Tramadol/Tapentadol	270 460 (9.0)	330 004 (10.2)	+1.2%
Fentanyl	83 947 (2.8)	60 492 (1.9)	-0.9%
Methadone	15 197 (0.5)	52 843 (1.6)	+1.1%
Meperidine	13 901 (0.5)	6284 (0.2)	-0.3%
Opium	2420 (0.1)	2027 (0.1)	0.0%
Butorphanol	892 (0.0)	695 (0.0)	0.0%
Pentazocine	1113 (0.0)	410 (0.0)	0.0%
Dose prescribed			
Days prescribed	7 [4, 25]	7 [2, 15]	0 days
Prescriptions ≥ 3 days	2 542 684 (84.5)	2 316 653 (71.9)	-12.6%
Prescriptions ≥ 31 days	125 233 (4.2)	102 379 (3.2)	+1.0%
Oral MME [†] (per unit)	5.0 [4.5, 15.0]	7.5 [4.5, 30.0]	+2.50 MMEs
Oral MME (daily)	32.00 [18.00, 60.00]	33.75 [18.00, 90.00]	+1.75 MMEs
Oral MME (daily) ≥ 90	536 636 (17.9)	837 747 (26.0)	+8.1%
Oral MME (daily) ≥ 120	408 684 (13.6)	732 120 (22.7)	+9.1%

*Includes allied health professionals, optometrists, naturopathic physicians, midwives, and podiatrists

† MME = morphine milligram equivalent

number of prescriptions with a daily MME greater than 90 and 120 increased by 8% and 9% during the study period, respectively.

For both males and females, the annual rate of opioid prescriptions per capita decreased from 2013 to 2017 [Figure S2]. The per capita rate of prescriptions increased with increasing age for both sexes [Figure S2]. For males and slightly more for females, there was a substantial increase in weak opioid prescriptions between the ages of 10 and 19 years [Figure S2]. General dentists were responsible for 32% of prescriptions within this age range, compared to only 3% in the total study population. The opioid most commonly prescribed to patients between the ages of 10 and 19 years was codeine, with median daily MME of 34 and median of 4 days supplied. In patients between the ages of 80 and 89 years, the most commonly prescribed

opioid was hydromorphone, with a median daily MME of 24, and median of 7 days supplied.

Declines in the overall number of prescriptions issued were related primarily to reductions in prescriptions for codeine, oxycodone, and morphine [Figure, Table S2, Figure S3]. Conversely, the number of buprenorphine, tramadol/tapentadol, and methadone prescriptions increased during the study period. On a per prescriber basis, there was large variability in drug choice between practitioner types [Table S1]. Number of days supplied and daily MMEs also varied between prescribers and drugs, and were generally higher for oxycodone, morphine, and hydromorphone than for codeine and tramadol/tapentadol. Methadone, buprenorphine, and fentanyl made up 14% of all prescriptions and had the greatest MME and number of days supplied.

General practitioners were responsible for most total prescriptions (74%) [Table S1, Figure S1 and S4]. The most common opioids prescribed varied by practitioner type [Figure S5]. Codeine was one of the top three most commonly prescribed opioids among almost all practitioner types, with a median 26 (IQR 15–36) daily MME for a median 8 (IQR 5–25) days supplied. Tramadol/tapentadol was favored by surgical specialities, and represented 35% of their opioid prescriptions, with a median 22 (IQR 15–30) daily MME for a median 9 (IQR 5–28) days supplied. On average, psychiatrists prescribed the greatest MME per day, with a median daily MME of 64. Trends in prescribing patterns over the study period differed by practitioner type [Figure S1]. General practitioners had declining prescription rates (between -25% and -35%) for most of their favored opioid

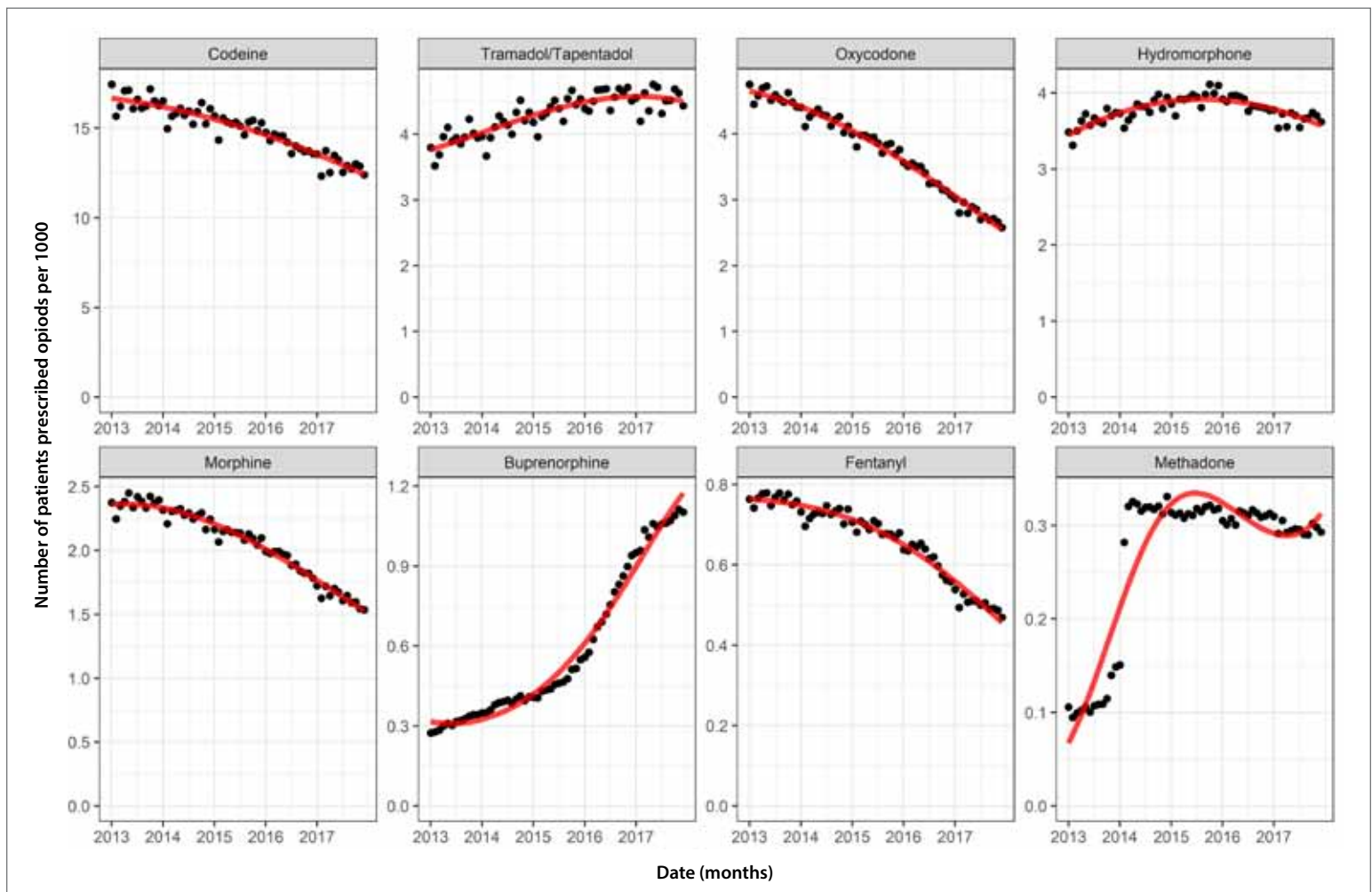


FIGURE. Change in opioid use for the eight most common opioid types, 2013–2017. Black dots represent raw data; red curves are the fitted values from a Poisson regression model with a cubic spline for date. Panes are organized from most to least common opioid group.

groups, while surgical groups had increasing use of tramadol/tapentadol (12%) and decreasing use of codeine (-12%) between 2013 and 2017 [Figure S1]. Psychiatry had a notable drop in buprenorphine prescriptions (-70%) between 2014 and 2017 [Figure S1]. Most other rates were consistent over time.

Supplementary data tables detailing prescribing patterns for all subspecialties and drugs prescribed are available online [Table S1 and S2, respectively].

Discussion

This review of all opioid prescriptions filled at community pharmacies in BC between 2013 and 2017 showed an overall reduction in opioid prescription rates across all prescriber groups by 1.6%. The overall prevalence rate of opioid prescriptions in BC in 2017 was 12%. General practitioners prescribed 74% of all community opioids. There was a marked reduction in prescription rates among psychiatrists. Opioid dispensing rates increased with patient age, with a marked upturn for weak opioid prescriptions between ages 10 and 19 years. Within this age range, general dentists were the predominant prescribers. The opioids prescribed varied by specialty and over the study time period. Codeine and oxycodone prescription rates decreased from 2013 to 2017 in all groups, with surgical specialties transitioning to tramadol/tapentadol. Prescriptions for harm reduction opioids such as methadone and buprenorphine increased.

These data are extremely important because opioid prescription patterns are known to be a risk factor for subsequent persistent opioid use in previously opioid-naïve patients.⁷ The overall prevalence of prescription opioids seems concerning. However, without comparison to other North American regions, it is undetermined whether this is a factor in BC's opioid crisis. The heterogeneity of prescriptions across prescriber groups may be a contributing factor to the unused opioid mass in the community, which is a potential risk factor for opioid misuse and diversion.

Reduced opioid prescription rates by psychiatrists may be secondary to a shift in practice patterns due to addiction medicine specialists assuming care of patients with opioid use

disorder in 2014. Pharmacists were the third largest group of opioid prescribers. Although they prescribed primarily codeine-containing medications, 10% of prescriptions were documented to be for hydromorphone. Pharmacists' responsibility for opioid prescriptions may be due to BC's provincial opioid prescription monitoring strategies in which pharmacists can be the recorded prescribers of opioids when providing emergency supplies and in certain rural communities for over-the-counter opioid-containing prescriptions.

The increase in dispensed opioids to teenage patients suggests the need for consistent assessment of indication and intensity of opioid prescriptions given the higher prevalence of opioid misuse in this population.

The increased use of harm reduction opioids is consistent with the recognized efficacy of these drugs in treating opioid use disorder.³¹ The reduced preference for codeine may be related to increased awareness of the pharmacogenetic variability of codeine metabolism following the 2012 Food and Drug Administration's black box warning regarding the use of codeine in children less than 12 years of age who were undergoing tonsillectomy.³²

The marked increase in opioid prescriptions in patients between ages 10 and 19 years raises questions about the appropriateness of these prescriptions in this vulnerable population. Similar to our study, Volkow and colleagues found dentists to be predominant prescribers of opioids in patients between 10 and 19 years in the United States.³³ A study of BC dentists between 1997 and 2013 identified increasing codeine prescription rates, and reported that most dentists prescribed codeine for an

inappropriate duration of more than 3 days.³⁴ Furthermore, a survey of BC dentists and endodontists showed that they often prescribed opioids when not indicated.³⁵ The increase in dispensed opioids to teenage patients identified in our study suggests the need for consistent assessment of indication and intensity of opioid prescriptions given that there is an association between higher prevalence of prescription opioid misuse with greater medical use of prescription opioids in this population.³⁶

Smolina and colleagues described determinants of opioid consumption trends in BC between 2005 and 2012, and found a 31% increase in opioid prescriptions in terms of MME.³⁷ In the US, Levy and colleagues found a 3.7% increase in opioid prescription rates from 2007 to 2012.¹⁸ Our study employed different selection criteria and is, therefore, not directly comparable to the aforementioned studies. We found consistent decreases in opioid prescription rates per capita, with an overall 1.6% decrease between 2013 and 2017 but an 8% increase in prescriptions with daily MME greater than 90. There appears to be a significant change from a 31% increase over 7 years to a 1.6% decrease over the subsequent 5 years, which may be due to a combination of increased practitioner recognition of opioid-associated risks and pervasive prescription regulation. Opioid dispense rates in most Canadian provinces peaked between 2011 and 2016.³⁸

Previous research has described opioid prescriptions by prescriber type.^{18,39} Studies were limited to an examination of one surgical specialty or specific opioids such as buprenorphine or tramadol.⁴⁰⁻⁴³ Wen and colleagues found an overall 2.2-fold increase in psychiatry buprenorphine prescriptions between 2006 and 2014 in the US, which contrasts with our 0.7-fold decrease.⁴⁰ This discrepancy may be due to the different study periods. Similar to the results of our study, tramadol dispensing rates increased in all Canadian provinces between 2007 and 2016, with the greatest increase leading up to 2009.⁴³ Unique to our study is the evaluation of variability in opioid prescription patterns of both prescriber groups and opioid types. These results demonstrate heterogeneity in both the drugs prescribed and daily MME of prescriptions.

The outcomes of our study are strengthened by the use of population-level data and the linkage of multiple data sources with complete descriptions of practitioner types. Our study is limited by the lack of inpatient opioid prescription data, unknown rates of illicit opioid consumption, and lack of prescription indications. Furthermore, our study examined dispensed opioids as a proxy for total prescriptions, which is further used as a proxy for opioid consumption. The data set also contained data inconsistencies such as obsolete prescriber groups, patient ages, and days supplied deemed improbable, as well as missing data. Physician specialty descriptions were also not available for 13% of prescriptions. This highlights the challenge of collecting, verifying, editing, and maintaining a large database, and implies the need to tighten guidelines for the collection and reporting of such data.

This retrospective population-based study describes the variation and temporal changes in opioid prescription patterns among prescribers in BC. Providers currently have limited access to data that describe prescribing patterns within their specialties; therefore, they may struggle to identify where their practice falls on this spectrum. Currently, practitioners in Alberta and Nova Scotia can request a peer comparison report as part of their province's opioid review program.^{44,45} Since its implementation of a peer assessment program, Alberta has demonstrated reduced MME prescription rates per capita.⁴⁵ Permitting prescribers to compare their prescriptions with their peers in other jurisdictions has also demonstrated efficacy in reducing opioid prescription rates.^{46,47}

Conclusion and future directions

This analysis of opioid prescriptions in BC between 2013 and 2017 demonstrated an overall 1.6% reduction in opioid prescription rates. Opioids were more frequently prescribed in older patients, but the greatest age-specific gradient was observed between children and young adults. Notably, there was heterogeneity in opioid type and prescription MME among prescriber groups. This data set is currently being analyzed to characterize and report on long-term opioid prescriptions. This review provides evidence to support the development

of physician peer comparison reports in BC. However, this should be an aim for all provinces so that national and international comparisons can be made in speciality-specific prescription practices. ■

Competing interests

None declared.

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Disclaimer

All inferences, opinions, and conclusions drawn in this original research article are those of the authors, and do not reflect the opinions or policies of the Population Data BC Data Steward(s).

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Our path toward a more **equitable, diverse, and inclusive** Doctors of BC

BC doctors are a diverse group comprised of different genders, racial backgrounds, religious affiliations, sexual orientations, ages, specialties, practice locations, and more. As physicians, our members also serve a patient population that is equally as diverse in their backgrounds and in their health care needs.

Meaningful work continues to take place on our path to ensuring Doctors of BC is **representative and inclusive of the diversity of our members**, and to supporting our members in contributing to efforts to **ensure BC's health care system is culturally safe, equitable, and inclusive** for providers and patients alike.

For more information visit our updated Equity, Diversity & Inclusion webpage which includes a newly developed vision statement, information on the recently created Diversity and Inclusion Advisory Working Group, details on our ongoing work advancing Indigenous cultural safety and humility, and much more.



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Disaster preparedness in medical training needs to be a part of the new normal

Doctors of BC published a policy paper on integrating physicians in disaster preparedness and health emergency management back in 2018.¹ The current pandemic has again put a spotlight on this important discussion. As we plan for the postpandemic world, we need to increase disaster preparedness and health emergency management awareness, not only among physicians, but also among medical students and residents.

The call to increase awareness in disaster preparedness among medical learners is not new. The International Federation of Medical Students' Associations published a policy statement in 2017² calling to better “incorporate disaster medicine and health emergency management into the medical curricula, balancing the biomedical and public health dimensions.” A recent systematic review of disaster training programs also highlighted that when medical schools incorporate these programs for medical students, they improve their preparedness, skills, and knowledge—especially during times of pandemic.³

In Canada, there is an expectation from the public for physicians to be prepared for, respond to, and manage the consequences of a disaster. Although medical schools acknowledged that expectation, forty-six percent of the surveyed medical schools do not teach disaster medicine to learners.⁴

To address this gap in medical training, there exist many frameworks and examples. For instance, the National Collaborative for Disaster Health Education and Research in Australia developed a framework to guide disaster preparedness training and to ensure consistency and ease of implementation.⁵ Ashcroft

Forty-six percent of the surveyed medical schools do not teach disaster medicine to learners.

and colleagues also demonstrated the effectiveness of using multimodal formats and suggested a structure for disaster preparedness training based on their systematic review.³ Even simple, classroom-based interactive discussions resulted in improved knowledge among students.

The current pandemic has shown us that a disaster doesn't just affect a few specialties, such as public health, emergency, critical care, and family medicine; it can have impacts on all disciplines of medicine. While we cannot predict when another disaster or health emergency will happen, we can do our best to raise awareness and competency among our learners—help them understand the basics of disaster preparedness and become better equipped to respond to health emergencies both as learners and as future physicians.

By incorporating disaster preparedness early in the medical curriculum, we help learners build reflexes early on in their training. We also create a culture that is fundamental to integrating physicians in disaster preparedness and health emergency management.

Recovery in the postpandemic world cannot mean merely returning to the old ways. The new normal requires us not to build back, but rather to build back better. ■

—Derek C. Chang, MD

—Graham Dodd, MD

Members, Emergency and Public Safety Committee

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WorkSafeBC's Hand Therapy Program

In 2020, WorkSafeBC's Hand Therapy Program treated 4630 injured workers, slightly fewer than the 4841 treated in 2019. The goal: to provide timely, specialized treatment to help injured workers get back on the job as soon as it is safe to do so. The program is delivered through our contracted network of 46 hand therapy clinics around the province. These clinics, staffed by certified hand therapists, provide services to workers who have sustained injuries to the upper extremity, below shoulder level.

Referrals

Workers either self-refer to one of the clinics or are referred by a family physician, a hand surgeon, or WorkSafeBC. Physicians may refer an injured worker patient directly to one of the contracted hand therapy providers or recommend to the case manager that the injured worker be referred to the program.

Hand injury treatment: An example

The following example illustrates how a typical hand injury might be treated within our hand therapy framework.

A 23-year-old carpenter—we'll call him Rick—suffered a laceration to the right index finger extensor tendon, with a mallet deformity, when he hit his hand against a sharp piece of rebar. Rick saw his family physician the day of his injury and attended an orthopaedic consultation 10 days later. At the consultation, the orthopaedic physician recommended splinting to address the 15 degree lag at the DIP joint. The worker returned for suture removal 1 week later. With the wound healing, the physician recommended referral to a certified hand therapist, and the WorkSafeBC claim owner



initiated the referral process to WorkSafeBC's Hand Therapy Program.

One week later, Rick had an assessment at one of WorkSafeBC's certified hand therapy clinics, 1 month after his injury. On assessment, the hand therapist noted that the injury was healing, but there was some skin breakdown from the bandages. The certified hand therapist fabricated a new splint to hold the DIP joint in slight hyperextension and the PIP joint in flexion. Rick attended the Hand Therapy Program for splinting, progressive range of motion, strengthening, and return-to-work planning. The Hand Therapy Program coordinated and initiated a graduated return-to-work plan, which the worker initiated after 2 months of treatment.

Rick participated in a 3-week graduated return-to-work plan monitored by the certified hand therapist. After completing the graduated

return-to-work plan, the worker was discharged from the Hand Therapy Program fit to return to work with no limitations and no permanent functional impairment.

Further information

For more information on WorkSafeBC's Hand Therapy Program, please contact the Health Care Programs team at 604 232-7787 or toll-free 1 866 244-6404, or visit the hand therapy page at www.worksafebc.com/en/health-care-providers/rehabilitation/hand-therapy.

If you have questions regarding a specific worker patient's hand injury, please call a medical advisor in your nearest WorkSafeBC office. ■

—Linda Calvert, BScPT
WorkSafeBC Program Manager, Health Care Programs

This article is the opinion of WorkSafeBC and has not been peer reviewed by the BCMJ Editorial Board.

CME calendar

Rates: \$75 for up to 1000 characters (maximum) plus GST per month; there is no partial rate. If the course or event is over before an issue of the *BCMJ* comes out, there is no discount. **Deadlines:** ONLINE: Every Thursday (listings are posted every Friday). PRINT: The first of the month 1 month prior to the issue in which you want your notice to appear; e.g., 1 February for the March issue. The *BCMJ* is distributed by second-class mail in the second week of each month except January and August. **Planning your CME listing:** Advertising your CME event several months in advance can help improve attendance; we suggest that your ad be posted 2 to 4 months prior to the event. **Ordering:** Place your ad at www.bcmj.org/cme-advertising. You will be invoiced upon publication. Payment is accepted by Visa or MasterCard on our secure online payment site.

PSYCHOLOGICAL PPE, PEER SUPPORT BEYOND COVID-19

Online (Wednesdays)

In response to physician feedback, the Physician Health Program's drop-in peer support sessions, established 7 April, are now permanently scheduled for Wednesdays at noon. The weekly sessions are co-facilitated by psychiatrist Dr Jennifer Russel and manager of clinical services Roxanne Joyce and are drop-in with no commitment required. The focus is peer support, not psychiatric care. All participants have the option to join anonymously. To learn more about the sessions and the program, visit www.bcmj.org/news-covid-19/psychological-ppe-peer-support-beyond-covid-19. Email peersupport@physicianhealth.com for the link to join by phone or video.

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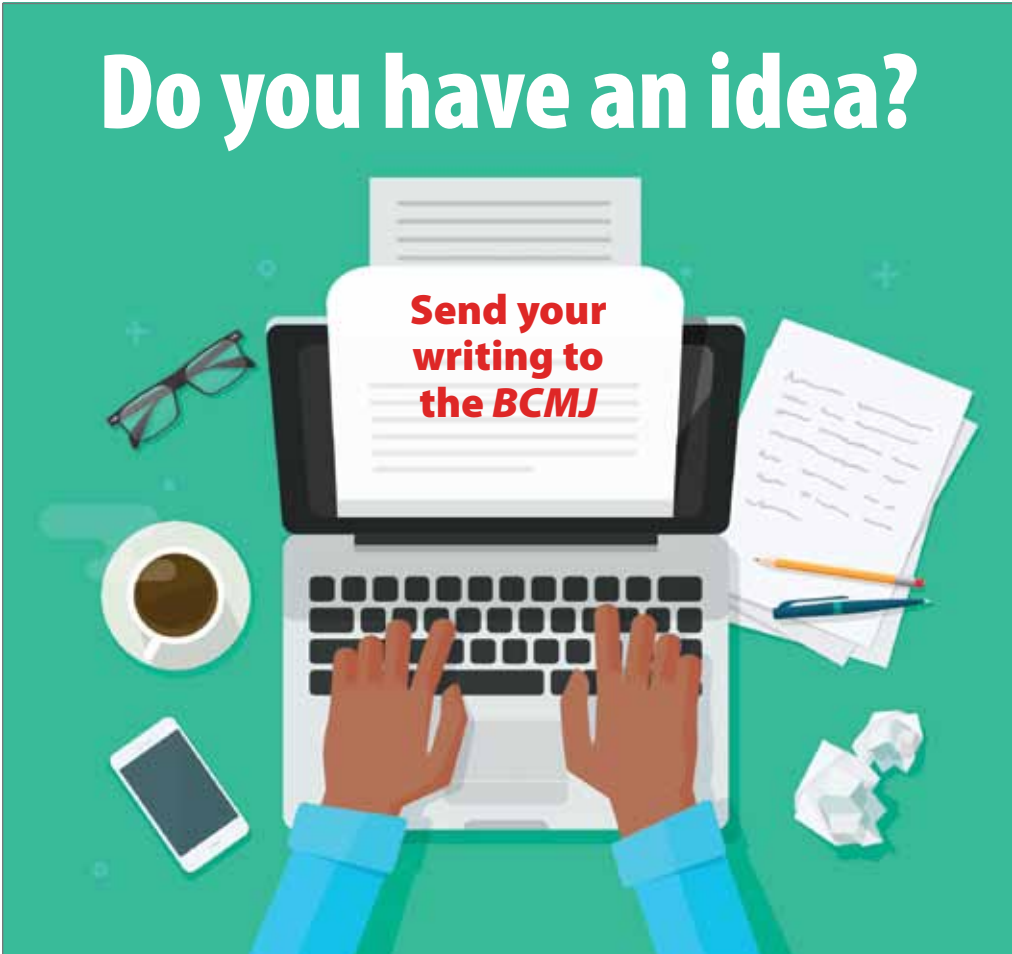
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Dr Madeline Huang Chung 1925–2021

Dr Madeline Huang Chung was born in Shanghai, China, on 3 July 1925. She passed away in her sleep on 22 August 2021 after facing dementia with grace and dignity for many years. She lived a full and eventful life as a loving, dedicated family member, wife, mother, and grandmother, as well as a trail-blazing female physician.

Dr Chung graduated from Xiangya (Yale-China) Medical School in Changsha, Hunan Province, in 1948 at the age of 23. She would joke that she was probably the only doctor in Canada who never completed high school as her education was interrupted by World War II. She came to North America to finish her studies due to the ongoing civil war in China, with the goal of returning to China as a medical missionary once finished. The China Immigration Act had just been repealed in 1947, which had allowed her to come. After two internships, the first in Tacoma and the second in Victoria, she went to Montreal for the first year of her residency in obstetrics and gynecology. There she met her future husband, Dr Wallace Chung, who was in his first year of medical school at the time. The couple married on 7 June 1953 and moved to Vancouver. There she started a solo practice at Vancouver General Hospital and the old Grace Hospital.

Because of her sex and her ethnicity, she faced significant discrimination from staff and faculty, as well as the community. She was denied a loan to start her office because the bank was concerned that she would quit work and stay home once she had children. Despite the opposition, her practice thrived. Newly arrived Chinese-speaking immigrants and women of all ethnicities who wished to have a female obstetrician found her. Despite initially being denied an academic appointment, she was also popular among medical students and residents due to her enthusiasm for teaching.

Over a long career starting in 1956, until her retirement in 1992, she delivered 7226 babies. They were all carefully documented in her obstetrical appointment books. She delivered babies whose parents she had also delivered; all were members of the unofficial club of the Chung Babies. She retired as a clinical professor emeritus.

Dr Chung's parents were Yoong Yih Wong and Alice Wong. Madeline was the firstborn and eldest of three girls. Her father was very advanced in his thinking for the time and believed that his girls' education should not be any different than that of any boy's.

Dr Chung had a relatively privileged life initially, as the daughter of a government official, but her teenage years were extremely fraught. She spent World War II as a refugee in the countryside around Hong Kong after the city fell to the Japanese army. As a young teen, she was the one who had to forage for food and seek shelter for her injured mother and younger siblings. Her desire to help others in need was heightened by her deep Christian faith as well as the suffering she had encountered. On one occasion, she brought home a patient for Christmas dinner. The young woman, a newly arrived immigrant, had just been diagnosed with cancer and had no family or friends locally. Dr

Chung took her under her wing until family could arrange to come over to care for her. On another occasion, a Chinese refugee family was welcomed to live in her family home until they could get on their feet.

She also volunteered her time in the community. She was very active in the Chinese United Church and served as a board member and chair. She was one of the co-founders of the Chinese Language True Light School, which exists to this day. She was not amused at being audited twice in 1 week by the Canada Revenue Agency (fruitlessly both times) as they could not believe that someone could do all that work for free. For her dedication she was given an honorary life membership in the Canadian Medical Association in 1993 and she received a Civic Merit Award from the City of Vancouver in 2013. She was always extremely humble and never sought recognition as long as she could continue doing what she loved.

Postretirement, she most enjoyed being Gumma to her five grandchildren, traveling extensively with her husband, growing huge azaleas in her garden, and continuing her volunteer work. She traveled to China with the Evangelical Medical Aid Society, where she fulfilled her life's dream to do medical missions, teaching, and delivering babies.

A heartfelt thanks to her wonderful family doctor, Dr Cindy Chang, who was always there when needed, and her devoted caregivers, Reyna and Shirley, without whom we would not have been able to fulfill mom's wish to remain at home.

To hear Dr Chung in her own words, listen to a recording done for the Chinese Canadian Women Project of the Multicultural History Society of Ontario: <https://mhso.ca/chinese-canadianwomen/en/database.php?c=43>.

—Maria Chung, MD
Vancouver

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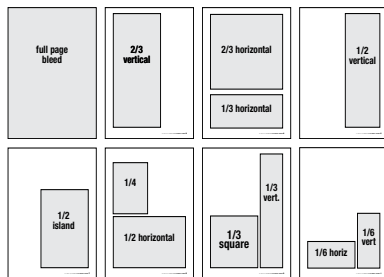
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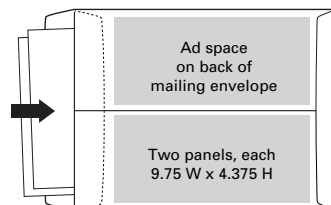


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Bridging the 6-foot gap

A medical student's experience using stories to connect with palliative care patients during the coronavirus pandemic.

Holly Cherniwchan, BHSc



It was during the pandemic that I had my first opportunity to meet with a patient approaching end of life. In September 2020, I enrolled in the UBC Legacy Project, where medical students partner with a person who has a life-limiting condition to support them in creating a project to leave with their loved ones. I had been reading about how the coronavirus complicated the grieving process for patients and their families; if there was some way I could help, I wanted to try. So there I was, an inexperienced 22-year-old medical student, donned in PPE, entering a hospice for the first time.

I felt overwhelmed in the unfamiliar building, introducing myself to many unknown, partially covered faces. The prior 6 months of my medical school experience consisted of virtual interactions with mostly healthy volunteers, and I could no longer rely on my nonverbal skills to develop rapport. It was as if my face protection formed a wall between me and everyone else.

Before I had time to question my ability to work on this intimate project with Sylvie,*

**The patient's name in this reflection was changed for privacy reasons.*

Ms Cherniwchan is a medical student at the University of British Columbia (class of 2023).

This article has been peer reviewed.

I was in her room. Sylvie was a 52-year-old immigrant from England, in Canada with her husband, dying with a rare brain cancer.

The room was quiet, except for a ticking clock. As I looked at her from a 6-foot distance, there was a strange sense of isolation, despite being so close. I wondered how to get started, but without delay Sylvie was already sharing her stories. She used to be a journalist and couldn't wait to tell me about her life. I felt my anxiety melt away. I set up the iPad and got things going.

Over 2 short weeks, Sylvie and I connected over our shared interests in art, dogs, and traveling. We discussed sensitive topics, such as what she loves about her husband. We shared many laughs and many tears. Even though she never remembered my name, her face lit up each time I walked into her room. I hope she knew that, behind my mask, I was smiling too.

I didn't know Sylvie for long, yet we were able to create a meaningful video to share with her husband, who is grieving the loss of his soulmate much too prematurely. It was also a project to share with her family in England, who could not be there to share her last breaths because of the coronavirus.

I wondered how to get started, but without delay Sylvie was already sharing her stories.

Being a part of Sylvie's and her husband's lives is the most valuable experience I've yet to have as a medical student. Reflecting on my time with them, I came to realize what an honor it is to be trusted with someone's memories,

to put them together in a video to be a final send-off to their loved ones, and to join them in their last few days in the physical world.

When I last saw Sylvie, she told me that she felt lucky to have had our

time together. I couldn't help but feel that I was the lucky one. Sylvie taught me that, at a time when masks, goggles, gowns, and gloves dehumanize our interactions with each other, we can still connect through our stories. ■

Competing interests

None declared.

Acknowledgments

The author would like to thank the patient's family for granting permission to share this story and the Victoria Hospice Society for welcoming this project into the facility. She would also like to thank Drs Philippa Hawley and Tara McCallan for their support during this project.



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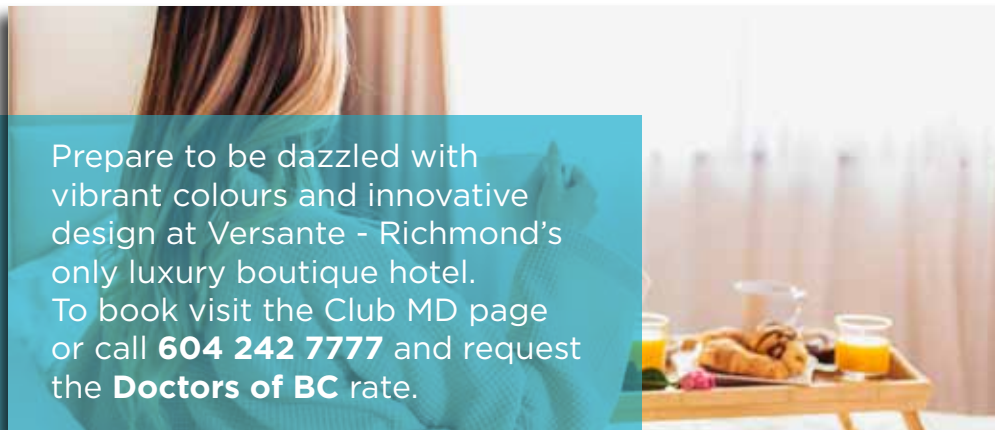
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