

# BCM J

A Doctors of BC Publication

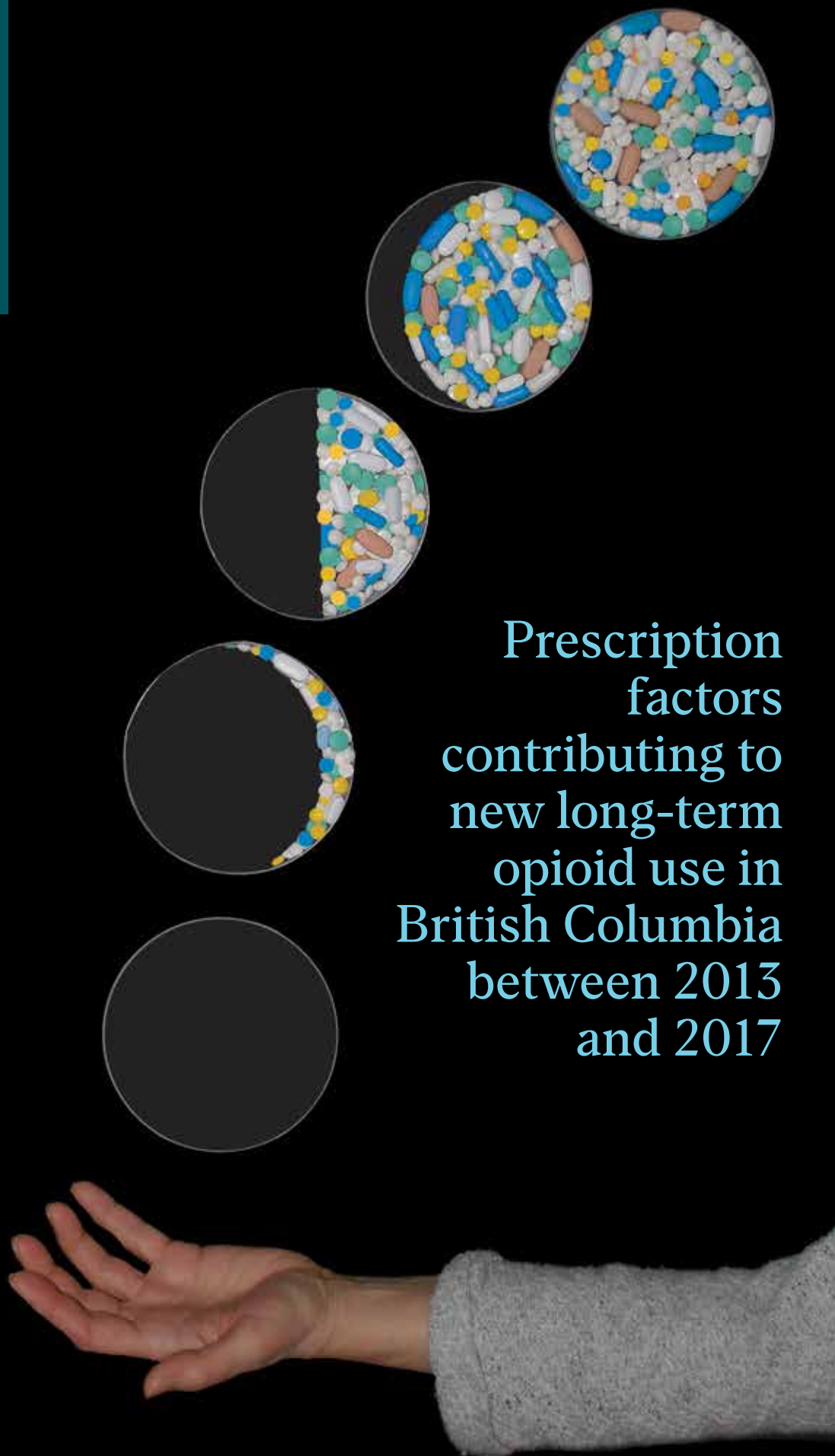
## IN THIS ISSUE

**Umbilical lesion: Granuloma or omphalomesenteric duct?**

**Artificial intelligence in family medicine: Opportunities, impacts, and challenges**

**Caring for the sexual lives of community patients living with dementia**

**Turning the other cheek: Portraits of doctors and scientists don't show a left-cheek bias**



Prescription  
factors  
contributing to  
new long-term  
opioid use in  
British Columbia  
between 2013  
and 2017

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device  
helps save  
lives.



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Most people present the left cheek when sitting for portraits or photographs, as demonstrated in da Vinci's Mona Lisa. Why do physicians show no such bias? "Turning the other cheek: Portraits of doctors and scientists don't show a left-cheek bias" begins on page 75.

## 45 Editorials

- I miss the CPSBC Library  
Caitlin Dunne, MD
- *I, Robot*  
Sepehr Khorasani, MD

## 47 Letters

- Re: Closure of the CPSBC medical library  
Rachael Bradshaw, MAS, Melissa Caines, MLitt, Jane Jun, MLIS
- Cervical screening for people experiencing homelessness, addiction, or mental illness  
Ralph Jones, MD
- Re: Supporting the stillbirth journey at BC Women's Hospital and Health Centre  
Karleen Gribble, Ciara Curran

## 49 President's Comment

The power of physician leadership  
Charlene Lui, MD

## 50 Premise

Artificial intelligence in family medicine: Opportunities, impacts, and challenges  
Lucy Hui, Daniel Raff, MD, Ricky Hu, MD, Olivia Yau, MD, Rohit Singla, MASc

## CLINICAL

### ORIGINAL RESEARCH

## 54 Prescription factors contributing to new long-term opioid use in British Columbia between 2013 and 2017

Rebecca Z. Xu, MD, Jeffrey N. Bone, PhD,

Rebecca Courtemanche, MSc, Leeor S. Yefet, MD, Mary-Claire Simmonds, MBBS, Eric Cattoni, MD, Gillian R. Lauder, MB BCH, Douglas J. Courtemanche, MD

### CLINICAL IMAGES

## 64 Umbilical lesion: Granuloma or omphalomesenteric duct?

Karen Letourneau, CRGS, Pavandeep Gill, MD, Ethan Matsuo, Kelly S.A. Matsuo, MD

## 66 Premise

Caring for the sexual lives of community patients living with dementia  
Leah Rosetti, MD, Rosemary Basson, MD

Contents continued on page 44

### Environmental impact

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## ON THE COVER

Evidence-informed measures are needed that focus on safe and effective cessation of prescribed opioids in primary care. "Prescription factors contributing to new long-term opioid use in British Columbia between 2013 and 2017" begins on page 54.

**Mission:** The *BCMJ* is a general medical journal that shares knowledge while building connections among BC physicians.

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Tara Lyon, 604 638-2815  
[journal@doctorsofbc.ca](mailto:journal@doctorsofbc.ca)

ISSN 0007-0556 (Print)  
ISSN 2293-6106 (Online)  
Established 1959

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*Although there are significant concerns, artificial intelligence (AI) in family medicine also shows great promise, as with AI-enabled wearable devices. "Artificial intelligence in family medicine: Opportunities, impacts, and challenges" begins on page 50.*

*Contents continued from page 43*

## 71 BCCDC

Physicians are key to reducing unnecessary dental antibiotic prescribing

David M. Patrick, MD,  
Kate O'Connor, RN,  
Edith Blondel-Hill, MD,  
Lynsey Hamilton, MSc,  
Fawziah Lalji, PhD,  
Hannah Lishman, PhD,  
Clifford Pau, DMD,  
Nick Smith, MPH

## 73 Obituary

Dr Frances Mary Forrest-Richards

## 74 Classifieds

## 75 Beyond Medicine

Turning the other cheek: Portraits of doctors and scientists don't show a left-cheek bias  
Annukka K. Lindell, PhD

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# I miss the CPSBC Library

One year ago, on 15 March 2024, the College of Physicians and Surgeons of BC (CPSBC) decided to close our medical library. In response, I wrote an editorial expressing my disappointment.<sup>1</sup> As you may recall, this closure was made without consulting registrants and with minimal notice to physicians and staff.

The *BCMJ* received a record number of letters in response—more than on any other topic in recent memory. Dr Koehler wrote that although information on the Internet is easily accessible, it can be inadequate and biased. Dr Koehler hoped the CPSBC would recognize its members' need for accurate information.<sup>2</sup> Dr Kope pointed out that the CPSBC's rationale to close the Library due to a "significant decrease in library use" stands in contrast to important principles for health promotion in medicine despite declining uptake, such as the case of immunizations.<sup>3</sup> Many physicians shared that they relied on the Library to tackle complex clinical questions and valued the monthly *Cites & Bytes* newsletter. Additionally, I received numerous private messages, emails, and other personal communications from physicians who expressed that the CPSBC Library was an invaluable resource.

On a personal note, the closure of the Library has significantly impacted my research mentorship for medical students and residents. I depended on the Library's support for literature searches and reviews, which helped students refine their research questions and improve their study design. Moreover, in preparing my annual lectures for University of British Columbia undergraduate classes, the CPSBC Library team made it far easier to stay current on new publications related to my topics. Without their assistance, this task has become far more time-consuming.

Dr Gillespie suggested a possible "win-win solution": that Doctors of BC take

over the medical library.<sup>4</sup> This suggestion received several notes of support. However, given the current economic climate, this option seems unlikely in the near term.

For perspective, I calculated that in 2023, we paid approximately \$125.54 annually per active registrant for access to library services, which is comparatively smaller than the \$25 paid in 1963, considering inflation.<sup>1</sup> Recently, I reached out to the CPSBC again to ask if it might be open to discussing the Library's closure with the *BCMJ*—particularly whether there were any plans to consult registrants about potentially reopening the Library or reallocating the Library's budget. According to the CPSBC's 2024–2028 strategic plan, there is an emphasis on transparency, particularly in "provid[ing] clear, relevant, and timely information about [its] mandate and work."<sup>5</sup> This seems relevant, as many have asked how the Library's \$1.86 million budget will be redirected. The CPSBC communications team responded to me: "While we understand that the decision to close the library is disappointing to some registrants, CPSBC will not reconsider it. It is the role of the CPSBC Board to determine strategic and financial priorities. The decision to close the library was made by the board after careful consideration showing significant decrease in use over the years."

If the closure is indeed the result of necessary budget cuts—an unfortunate but perhaps inevitable reality—we may need to accept that this is the cost of doing business in today's inflationary times. There's no denying the utility of digital platforms such as UpToDate, which provide immediate access to clinical information. For those of us with academic or health authority affiliations, we may still have access to resources through hospital librarians or UBC. But many of us relied entirely on the CPSBC Library for access to journals, books, point-of-care tools, pharmacopeia,

drug interaction checkers, reading lists, videos, and more. According to the CPSBC's committee reports for the 3 years prior to the closure, an average of 1710 physicians submitted over 10 000 queries, and roughly 46 500 articles were downloaded through the CPSBC Library website. If you were one of those physicians, what do you do now?

In our Letters to the Editor in this issue, Rachael Bradshaw, Melissa Caines, and Jane Jun write on behalf of the Health Libraries Association of BC's executive board to share their thoughts on the enduring value of librarians.<sup>6</sup> Out of respect and gratitude for the former CPSBC Library team, we're publishing this letter despite the uncertain prognosis for this cause. When we look back on this moment—5, 10, or 25 years from now—perhaps we will regard this period as a sign of the times. Free and reliable forms of artificial intelligence may have stepped into the gap left by the Library. Yet, I suspect that the transition will not be as swift or seamless as some anticipate. For now, patients rely on our expertise, and in turn we rely on the resources that help us provide the best care possible. Libraries remain essential to that mission. ■

—Caitlin Dunne, MD, FRCSC

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# I, Robot

Island Health robot has finally arrived. However, this is not a science fiction movie set in 2035, the producers and cast do not include Will Smith, and the robot is not automated and human-like. This is a Canadian reality show from 2025 set in Victoria, BC. The producers and cast include ordinary, kind-hearted individuals with one common goal: enhancing patient care through surgical innovation.

Thanks to generous community donors to the Victoria Hospitals Foundation, as part of the newly launched campaign “It’s Time for Surgical Innovation,” Vancouver Island patients can now benefit from robotic surgery in Victoria. The Island Health robot is called the da Vinci Surgical System, and it does not look like nor is it meant to replace humans.

Robotic surgery has been around for many years and is currently considered the standard of care in the United States. Initially used mainly in urology, it is now used in various other surgical disciplines as well, such as general surgery; ear, nose, and throat; and gynecology. It offers many benefits to both surgeons and patients.

For surgeons, robotic surgery provides improved ergonomics with less physical demand, allowing surgeons to remain in a tailored sitting position during long operations. It also provides better visualization and depth perception with 3D imaging and a surgeon-operated camera. These characteristics can result in reduced musculoskeletal and mental fatigue, improved performance, and fewer errors.<sup>1</sup> With additional freedom and dexterity, while eliminating tremors and increasing magnification to scale movements, robotic surgery allows for more efficient and more accurate surgery.

From a patient’s perspective, minimally invasive surgery has been long established to result in improved patient outcomes, and robotic surgery allows a greater proportion

of operations to be completed in a minimally invasive fashion.<sup>2</sup>

Clinical benefits of robotic surgery are well known in the field of urology. In other disciplines, such as general surgery, the evidence is evolving, but at the very least, we know robotic surgery is noninferior and, in some instances, superior to laparoscopic surgery. In colorectal surgery, specifically rectal resection, lower rates of conversion to open surgery is a widely accepted benefit of robotic surgery.<sup>3</sup> This is especially the case in obese patients, where access to a deep, narrow pelvis can be challenging laparoscopically. Conversion to open surgery can have a significant impact on patient outcomes, such as increased wound complications, anastomotic leak, and overall morbidity.<sup>4</sup> Recent meta-analyses and systematic reviews have demonstrated that robotic surgery, compared with laparoscopic surgery, resulted in significantly faster bowel recovery, shorter length of hospital stay, and lower overall complication rates.<sup>5,6</sup> Urinary and sexual dysfunction have also been shown to be reduced in robotic rectal surgery compared with a laparoscopic approach.<sup>7</sup>

Despite the benefits of robotic surgery, its adoption in Canada has been slow, primarily due to cost. The purchase price of a robot is \$2–3 million, with additional costs of around \$3500 per case and \$180000 in annual maintenance. In a publicly funded health care system, justifying the additional cost may be considered prohibitive by some, and predictably, the majority of robotic systems are purchased through philanthropic donations to hospital foundations. However, the cost of surgery extends beyond the operating rooms, and the many benefits of robotic surgery may result in reduced overall costs. In a retrospective study from Kingston, Ontario, Patel and colleagues demonstrated that implementing a robotic colorectal surgery program in a Canadian tertiary care centre did not significantly increase the cost of care.<sup>8</sup>

Additionally, access and cost-effectiveness are expected to improve as more competitors enter the robotics market. Last, studies comparing robotic surgery with laparoscopic surgery have indicated increased operative time as a downside (an additional 20 to 30 minutes in rectal surgery);<sup>5</sup> however, this will become a nonissue as surgeons become more efficient at docking and using the system.

To use robotic surgery in practice, it must be incorporated into surgical training. In a survey of program directors from Canadian general surgery residency and fellowship programs, less than 5% of resident clinical case volume constituted robotic surgery. More importantly, none of the program directors felt their trainees would be competent in using the robot after training. The good news is that skills acquired during laparoscopic surgery are translatable to robotic surgery, with a shorter learning curve.<sup>9</sup> With more robotic systems entering the market, lower costs, and increased accessibility, combined with dedicated robotic training programs in surgical residency, the uptake of robotic surgery in Canada should hopefully pick up the pace.

As for what comes next, the introduction of artificial intelligence and automation in robots could be used to guide and assess surgeons in performing surgeries more efficiently and effectively, which leads to the question: How far could or should this be taken? Could an automated robot using artificial intelligence turn on its creator? Stay tuned. ■

—Sepehr Khorasani, MD, MSc, FRCSC

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References continued on page 48

# Letters to the editor

We welcome original letters of less than 500 words; we may edit them for clarity and length. Letters may be emailed to [journal@doctorsofbc.ca](mailto:journal@doctorsofbc.ca) or submitted online at [bcmj.org/submit-letter](http://bcmj.org/submit-letter) and must include your city or town of residence, telephone number, and email address. Please disclose any competing interests.

## Re: Closure of the CPSBC medical library

We would like to extend our heartfelt thanks to those who have written about the closure of the College of Physicians and Surgeons of British Columbia (CPSBC) Library in March 2024 and signed the petition to stop the closure ([www.change.org/p/stop-the-closure-of-the-cpsbc-library](http://www.change.org/p/stop-the-closure-of-the-cpsbc-library)). Through this letter, we, as librarians, seek to add to the conversation.

Libraries provide widespread access to information resources and expert research support. This means their work and value include and go beyond physical spaces and print books. While caring for library spaces and managing the circulation of physical materials is critical, there is also much occurring behind the scenes. Through a complex infrastructure, libraries provide access to paywalled digital resources such as research platforms and software (e.g., EBSCO, Ovid, Covidence) required by clinical and academic faculty, staff, and students for their work. Whenever patrons access an e-resource such as an e-book or online journal article, they are using the library.

Libraries democratize information so patrons do not need to pay out of pocket for subscriptions. While some health care providers have access to evidence-based resources through their academic institutions or health authorities, many do not. Most vendors do not permit institutions to add external parties to their licensing agreements. These contractual stipulations disproportionately impact those without institutional access, such as recent graduates and clinicians in private practice. Until

March 2024, the CPSBC Library had been able to bridge this gap for its many members.

In addition to making resources available, librarians help craft expert searches and advise research teams. It is important to recognize that librarians are highly skilled information professionals with master's degrees. They are experts in searching for and evaluating information, as well as applying methodologies to enable knowledge synthesis research. Librarians' responsibilities can vary by institution. In some, librarians teach students and assist faculty in performing their own searches and keeping research projects methodologically sound. At others, such as the former CPSBC Library, librarians conducted literature searches for their patrons and sent them curated lists of relevant results.

The board's decision to close the CPSBC Library based on "data showing significant decrease in library use"<sup>1</sup> fails to capture the value of services provided by librarians. Reducing the CPSBC Library's worth to metrics favored by for-profit institutions does not acknowledge critical service delivery, such as supporting physicians with time-sensitive clinical questions, guiding systematic reviews, and providing access to high-quality evidence directly impacting patient care and safety. Libraries' true value lies in the expertise and support they offer, which cannot be fully reflected through quantitative measures alone.

Regardless of institution, it is incontestable that librarians save their patrons time, money, and effort by providing widespread access to e-resources at no cost to the individual and by sharing their research

expertise. These valuable systems cannot operate without financial support and people to keep them running. Eliminating a library not only removes the staff managing these systems but also eliminates access to information within subscription resources that is used to provide quality patient care and guide sound health care decisions.

—Rachael Bradshaw, MAS, MLIS

—Melissa Caines, MLitt, LibTech

—Jane Jun, MLIS

On behalf of the Health Libraries Association of BC Executive Board

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*Editor's note: For previous letters and Dr Dunne's editorial about the closure of the CPSBC Library, visit [bcmj.org](http://bcmj.org) and search for "library closure."*

## Cervical screening for people experiencing homelessness, addiction, or mental illness

I read with great interest two articles in the December 2024 *BCMj* regarding cervical screening, in particular screening in populations that experience challenges. I appreciated the outstanding and culturally sensitive work with First Nations and Métis communities [*BCMj* 2024;66:370-374].

I work with people experiencing homelessness, addiction, and mental illness. This work is via health authority clinics. I have long been aware of the possibility of simpler acceptable means of screening using human papillomavirus swabs. The problem

is that when managers or staff show interest in this option, they often move on to other positions. It is difficult to elevate this issue to a level where an executive will take responsibility and introduce the screening at all our clinics.

There are added difficulties in helping people who have no address or email access and are disabled to the extent that they cannot reliably take part or follow up unless they are helped to do so. I hope someone reading this letter will take notice and persuade health authority support services to, as the movie says, “do the right thing.”

—Ralph Jones, MD  
Chilliwack

## Re: Supporting the stillbirth journey at BC Women’s Hospital and Health Centre

We are writing in response to the article by Gill and colleagues<sup>1</sup> on supporting bereaved parents who have experienced stillbirth. We were impressed with the care taken to involve those with personal experience in research to inform improved care. However, it was noticeable that the article avoided using terms such as “women,” “mothers,” “men,” and “fathers” that would make the sex of the people involved clear. This avoidance of referencing sex (desexed language) when sex is important has increasingly occurred as the cultural salience of the concept of gender identity has risen, but it presents a variety of difficulties,<sup>2,3</sup> and this article is no exception.

When a stillbirth occurs, both mothers and fathers can be said to have experienced the stillbirth of their child, but they have not had the same experience. A pregnant woman whose fetus dies late in pregnancy or during birth and gives birth to a dead baby does not have the same experience as a father who observes this process, even though he also grieves. However, this article makes it difficult or impossible to determine whose experience is being described. In summarizing the research, “people” is used to refer to mothers only; to mothers and fathers; and to mothers, fathers, and extended family. One has to read each

reference to know. Similarly, it is sometimes difficult or impossible to distinguish whether the study findings refer to mothers, fathers, or both. The same is the case with quotations.

The article notes there is sensitivity around language in relation to stillbirth and explains that the term “bereaved parents” is used “to reflect the preferred language of our study participants.” However, this does not appear to clearly be the case. One study participant is quoted as saying she would have “appreciated being treated like a *mom*. . . . It would have helped me to have felt cared for and treated like a *mom*” (emphasis added). And the words of another study participant were altered, perhaps to avoid “women” or “mothers”: “[There is a need to] create a network of [*parents*] who have been through it” (emphasis added). Further, fathers are sometimes referred to as “partners,” and in this way their relationship to their child is marginalized. This is even in a sentence noting their marginalization: “Partners often face the erasure of their status as grieving parents.”

The potential for causing distress by not recognizing the different stillbirth experiences of women and men and not accounting for this in the care provided to them and the language used needs to be appreciated. The second author of this letter has extensive experience providing peer support to women who have experienced stillbirth (including in Canada) and emphasizes the importance that many women place on being referred to as mothers.

Of course, we understand the authors’ intent to ensure language is sensitive to the needs of individuals who prefer their sex not be referred to due to their personal experience of gender identity. We agree there should be sensitivity to individual patient language preferences<sup>4</sup> even while recognizing their sexed experiences.

—Karleen Gribble  
School of Nursing and Midwifery, Western  
Sydney University, Australia

—Ciara Curran  
Little Heartbeats

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Continued from page 46

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## The power of physician leadership

I recently had the pleasure of spending time with first-year medical students, and what struck me was the pure joy and enthusiasm they exude despite the immense challenges they face. For them, every patient interaction, every diagnosis made, and every skill mastered is a step closer to fulfilling their dream of healing others. Their resilience and optimism remind us of the reasons we chose this noble profession.

As seasoned doctors, we know the path of practising medicine is not without its difficulties. We face long wait lists that test our ability to deliver timely care, emergency room closures that leave communities underserved, and a growing lack of access to primary care that exacerbates health inequities. Navigating the complexities of our health care systems—especially in environments with inadequate resources—tests our resolve and can overshadow the joy that once inspired us. These challenges require us not only to persevere but also to lead. Positive leadership is crucial to fostering an environment in which change is possible, innovation thrives, and our shared commitment to patient care remains steadfast.

Through my own journey in physician leadership, I have had the privilege of witnessing firsthand the extraordinary courage and resilience of my colleagues. When visiting with rural physicians in northeastern BC, I witnessed hardworking, fearless individuals who used creativity and innovation to enable timely and quality care for their patients. Across our province, in the face of a strained and often unsustainable health care system, physicians have consistently risen to meet challenges through leadership

that inspires trust, collaboration, and hope for the future of health care. Courageous leadership means pushing for systemic improvements that prioritize respect, psychological safety, and the health of everyone within the system. And courageous leadership has never been more essential.

To those who have not yet stepped into leadership, I extend an invitation: your voices, ideas, and perspectives are vital. Leadership is defined not by titles but by actions, and the future of our profession depends on the courage and passion of those willing to shape it. Whether by mentoring future physicians, championing systemic change, or finding new ways to improve patient care, every act of leadership matters. Together, we can shape a health care system that values the physician voice, supports well-being, and delivers better outcomes for

all. For those already in leadership, I offer an uplifting call to persevere with positivity, collaboration, and hope. Together, we can navigate even the most daunting challenges and inspire the changes our health care system and patients so desperately need.

By supporting one another, advocating for systems that nurture rather than burden us, and addressing resource challenges with collaborative solutions, we can transform the practice of medicine. Let us

remember that our leadership, optimism, and dedication have the power to create a ripple effect—not just restoring our own sense of fulfillment but also shaping a future where the joy of medicine can flourish for generations to come. Because together is our superpower. ■

—Charlene Lui, MD  
Doctors of BC President

**Leadership is defined not by titles but by actions, and the future of our profession depends on the courage and passion of those willing to shape it.**



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# Artificial intelligence in family medicine: Opportunities, impacts, and challenges

Integrating artificial intelligence into family medicine will have impacts across the continuum of patient care.

Lucy Hui, Daniel Raff, MD, MSc, Ricky Hu, MD, MASc, Olivia Yau, MD, MSc, Rohit Singla, MASc

**ABSTRACT:** Implementation of artificial intelligence (AI) across the continuum of patient care in family medicine should be given careful, thorough consideration to ensure high-quality care standards are maintained, the integrity of the doctor–patient relationship is preserved, and potential ethical implications are addressed. This article examines the impact of AI across the chain of activities in family medicine, describing its influence over five phases of patient care: patient engagement, clinical encounter preparation, patient examination, diagnosis and treatment planning, and ongoing care and long-term management. Concerns regarding the erosion of human touch, technology overdependence, data privacy, and algorithm bias are also examined to address the social, ethical, and legal implications of increasing implementation of AI.

The tapestry of health care is in a constant state of evolution. Among the myriad innovations that have emerged in recent decades, artificial intelligence (AI) holds the most transformative potential. AI could provide clinical decision support tools, make predictive analyses, and expedite administrative tasks.<sup>1</sup> Family medicine, anchored in personalized and holistic care, is at an exciting crossroad as this digital force spreads across specialties. Introducing AI into family medicine poses the question: How does technology match up with a deeply human-centred practice? By understanding the interplay between AI and the family physician, we can enhance

the practice of family medicine and ensure that its foundational principles remain firm in the face of technological advancements.

## What makes up the continuum of patient care in family medicine?

In family medicine, the continuum of patient care can be used to outline a patient's comprehensive journey, from the initial point of contact to long-term health management [Box]. It starts with patient engagement, where practitioners establish trust and open channels of communication. This progresses to clinical encounter preparation, where thorough reviews of patient histories equip physicians for

### BOX. Artificial intelligence–enabled continuum of patient care in family medicine.

#### Patient engagement:

- Prediction of at-risk individuals.
- Personalized health care.
- Patient empowerment.

#### Clinical encounter preparation:

- Patient profile construction.
- Predicting health complications.
- Automating routine tasks.

#### Patient examination:

- Ambient artificial intelligence and real-time exam interpretation.
- Eliminating subjectivity.
- Increased sensitivity and specificity.

#### Diagnosis and treatment planning:

- Personalized medical plan.
- Flagging contraindications.
- Enhanced resource allocation.

#### Continual care and long-term management:

- Continuous monitoring.
- Fortifying medical adherence.
- Prompting preventive medicine.

*Ms Hui is a second-year medical student in the Faculty of Medicine at the University of British Columbia.*

*Dr Raff is a family medicine resident in the Faculty of Medicine at UBC. Dr Hu is an internal medicine resident in the Faculty of Medicine at UBC. Dr Yau is a family medicine resident in the Faculty of Medicine at UBC. Mr Singla is an MD/PhD student in the School of Biomedical Engineering and the Faculty of Medicine at UBC.*

*This article has been peer reviewed.*

informed consultations; patient examination, which delves into history taking and physical assessment; and diagnosis, where practitioners distill insights from examinations to identify health conditions. Post-diagnosis, the focus shifts to treatment planning, ensuring tailored interventions are charted. Finally, long-term health management emphasizes continuous care, ensuring patients adhere to treatment regimens and receive guidance for sustained well-being.

## How can AI influence the continuum of patient care in family medicine?

### Patient engagement

An AI-enhanced approach allows clinicians to tailor care to each patient's health narrative with better precision and empathy. While traditional methods of dissecting massive data sets often fall short, AI offers a new lens to detect patterns and derive insights. One of the most tangible impacts of this capability is the precise identification of at-risk patient characteristics. For example, AI has been shown to accurately predict individual suicide risk.<sup>2</sup> AI-driven algorithms can also create personalized health recommendations by combining genetic predispositions and lifestyle data.<sup>3</sup> The Rothman Index, a scoring system using electronic health records to predict overall patient health, is one example of AI-driven precision medicine.<sup>4</sup> Personalized advisories foster adherence and position the patient at the centre of their health journey, promising more informed decision making and proactive health management. In particular, patients with chronic diseases can benefit from nudge-inspired AI-driven behavior intervention. For example, a macronutrient detection algorithm can analyze images of food taken by a patient and communicate nutritional information to the patient.<sup>5</sup>

### Clinical encounter preparation

An enduring patient-physician relationship provides a mosaic of longitudinal data that is ripe for AI's analytical abilities. AI excels in efficiently processing vast amounts of data, saving clinicians countless hours spent

reviewing results, discharge summaries, and imaging reports. A prognostic study in a gastroenterology department revealed that clinicians who used AI systems that specialized in organizing patient records saved 18% of the time to address clinical questions without compromising accuracy.<sup>6</sup> More than just collating information, this is about deep-diving into the data, spotlighting recurring health patterns, unearthing latent risks, and predicting future complications. For example, AI-based methods can be used to optimize medication alerts for possible drug interactions, allergies, or adherence issues using information from medical records.<sup>7</sup> AI-enabled previsit planning tools can automate routine tasks such as appointment reminders, questionnaire integration, and tracking of age-appropriate screenings, further freeing up a clinician's time<sup>8</sup> and potentially alleviating administrative burnout.

### Patient examination

Patient examination combines history taking and physical examination, representing a deeply personal aspect of health care. Patients share intimate details, while physicians strive to interpret an intricate blend of health experiences. AI may provide guidance and assistance in this area. Ambient AI is one tool that can seamlessly capture physician-patient conversations while operating in the background, reducing the likelihood of details being missed.<sup>9</sup> Natural language processing AI, such as Dragon Ambient eXperience (DAX) Express, is already being incorporated into clinicians' workflows to reduce documentation burden.<sup>10</sup> Beyond observing, AI may also predict potential areas of concern, guiding the physician toward pertinent questions based on the patient's narrative.

The application of AI to physical examinations addresses the variability and subjectivity inherent in diagnostic techniques, bringing standardization and consistency. For example, in pulmonary conditions, where traditional auscultation varies based on clinician experience, AI-powered auscultation devices can reduce variability, offering

more consistent results than those based on the human ear alone.<sup>11</sup> In dermatological examinations, AI systems perform nuanced real-time image classifications.<sup>12</sup> These advanced algorithms compare patient data against extensive databases, highlighting patterns that human observation may miss.<sup>13</sup> Integrating AI with imaging and point-of-care ultrasound has the potential to enhance the sensitivity and specificity of physical exams.<sup>14</sup> This streamlines the diagnostic process and brings physical examination techniques closer to the objective precision sought in family medicine.

### Diagnosis and treatment planning

AI especially shows its value in medical cases where symptoms resemble a jigsaw puzzle, with pieces that are scattered, non-specific, or indicative of multiple overlapping conditions. The use of AI-assisted image analysis has already shown promising results in improving early detection of invasive and small-sized breast cancer.<sup>15</sup> Using natural language processing, AI can also analyze unstructured clinical notes and lab reports to highlight patterns that may aid in diagnosis.<sup>16</sup> Given the relevant clinical features, AI may also generate a list of must-not-miss differentials to support clinicians' investigative process.<sup>17</sup> As AI technology advances and becomes more integrated into health care systems, it could lead to a re-evaluation of existing guidelines, enabling a shift toward more personalized and age-specific screening strategies. This has profound implications for primary care, where early detection and efficient allocation of screening resources are paramount.

AI also shows significant potential in treatment planning. Harnessing the power of predictive analytics, AI platforms can simulate various treatment trajectories tailored to a patient's unique medical and genetic blueprint.<sup>18</sup> Physicians can then visualize the likely therapeutic impacts and be forewarned of potential side effects, drug interactions, and the longer-term prognosis.<sup>19</sup> Such a broad view ensures that treatment plans are effective and aligned with individual patient needs and preferences

## PREMISE

and has the potential to lead to enhanced resource allocation.

### Continual care and long-term management

AI's potential in this space is visible in the emergence of wearable health devices,<sup>20</sup> which monitor numerous health parameters, from heart rhythms to glucose levels. Their strength lies in the ability to detect and flag deviations or anomalies in real time. Prompt alerts, when acted upon, can lead to timely medical interventions, circumvent complications, and forestall potential health crises. With AI-enabled wearables as a catalyst, health care shifts from reactive to proactive. AI can improve patient adherence to treatment plans, addressing forgetfulness through applications that provide reminders, tailored dosage advice, and feedback on medication efficacy based on real-time patient feedback.<sup>21-23</sup> These systems can also provide personalized lifestyle recommendations, such as activity prompts or dietary advice, based on sedentary patterns and glucose levels from data-driven insights.<sup>18-24</sup> AI-powered chatbots can also provide 24/7 support for patients, offering health recommendations, assistance with mental health concerns, and symptom tracking.<sup>25,26</sup>

### What are the obstacles to integrating AI into family medicine?

There are four major challenges to integrating AI into diagnosis and treatment: erosion of human touch, clinician and patient overreliance on technology, threats to privacy, and spread of bias in AI algorithms.

#### Erosion of human touch

As AI-driven tools mediate patient interactions with physicians, is the human touch that defines family medicine being diluted? Automated advisories, while personalized, may lack the empathy and understanding of a human practitioner, potentially undermining the core values of family medicine and eroding patient trust. As patients grow used to AI-driven assistance, the traditional human-centric medical consultation risks

being supplanted, leading to a sense of isolation and a feeling of being managed by an impersonal algorithm, which can weaken the therapeutic relationship. In the worst cases, patients may be reduced to mere data points, undermining the trust and the sense of personal touch that lie at the heart of family medicine.

#### Overdependence on technology

Intertwining AI and medicine comes with the risk of physicians becoming overly reliant on AI and potentially overlooking their clinical expertise.<sup>27</sup> While the quantity of data that AI can process is impressive, it can

**With AI-enabled wearables as a catalyst, health care shifts from reactive to proactive.**

paint an incomplete picture while leading clinicians to undervalue their own judgment. Previously, overdependence on technologies like electronic health records has led to automation-induced errors.<sup>28</sup> Additionally, AI's emphasis on precision may lead to overdiagnosis and unnecessary tests, increasing health care costs and patient anxiety.<sup>29</sup> Medicine is an art as well as a science—a delicate blend of intuition, accumulated experience, patient narratives, and context-driven judgment. This exposes a crucial medico-legal question: If a physician misses critical information due to an AI error, who is medicolegally at fault? While AI enhances diagnostics and treatment, its integration must be carefully managed, ensuring it supports rather than replaces human expertise.

#### Threats to privacy

Integrating AI into health care causes unease about patient privacy as the public grapples with concerns over the security, transparency, and responsible use of their medical information. AI algorithms typically train on databases that potentially

contain confidential health information. Some algorithms may operate as “black boxes” and arrive at decisions through an unexplainable process.<sup>30</sup> This may challenge privacy regulations such as the Health Insurance Portability and Accountability Act and the Personal Information Protection and Electronic Documents Act, which require transparency in data processing to protect a patient's right to know how their health information is used.<sup>31</sup> Another privacy concern is the adequate removal of personally identifiable information from data sets. Through complex data patterns, AI algorithms may inadvertently re-identify individuals through quasi-identifiers, linkage attacks, or techniques that nullify data perturbation.<sup>32</sup> Addressing these challenges requires a comprehensive approach, including robust data security measures, ethical AI development practices, transparent algorithms, and ongoing education for health care professionals and the public about the privacy implications of AI in health care.

#### AI biases

The maxim “garbage in, garbage out” applies to AI's role in the continuum of patient care. Incomplete records, biased data sets, and minor inaccuracies can severely compromise AI's outputs, leading to potentially erroneous recommendations. The dangers of relying on AI algorithms are well documented in dermatology: underrepresentation of diverse skin types in training data threatens the external validity of such tools.<sup>33</sup> AI deep learning models have been shown to readily predict patient race from radiographs, even when clinical experts failed to do the same.<sup>34</sup> Therefore, human oversight of AI models may be of limited use in identifying race-specific errors generated by AI algorithms.<sup>34</sup> Without careful consideration, the use of AI risks exacerbating existing biases and worsening outcomes for marginalized groups. In the age of information inundation, discerning data that are of clinical relevance from noise and ensuring that essential insights are not buried can be an overwhelming task.

## Conclusions

The impact of AI stretches across the continuum of patient care, and, as with any significant technological leap, the journey is dotted with challenges. The essence of family medicine, with its emphasis on human touch, empathy, and shared decision making, risks being overshadowed in a health care paradigm that is overly dependent on AI. As we venture into this AI-augmented era, continuous introspection is imperative. The promise of AI in family medicine is about not just efficient care, but care that is more attuned, responsive, and, ultimately, human. ■

## Competing interests

None declared.

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**Without careful  
consideration, the use  
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Rebecca Z. Xu, MD, Jeffrey N. Bone, PhD, Rebecca Courtemanche, MSc, CCRP, Leeor S. Yefet, MD, Mary-Claire Simmonds, MBBS, FANZCA, Eric Cattoni, MD, CCFP, Gillian R. Lauder, MB BCh, FRCPC, Douglas J. Courtemanche, MD, MS, FRCSC

# Prescription factors contributing to new long-term opioid use in British Columbia between 2013 and 2017

Changing opioid prescription practices is key to reducing opioid overdose.

## PRESCRIPTION FACTORS CONTRIBUTING TO NEW LONG-TERM OPIOID USE IN BRITISH COLUMBIA

A cross-sectional analysis of outpatient opioid prescribing from 2013 to 2017

A data set of community-dispensed opioids in British Columbia from 2013 to 2017 was used to identify opioid-naive individuals. Opioid prescriptions were analyzed to describe new long-term and non-long-term users.

  
**19 785**  
practitioners  
issued

  
**15 693 867**  
opioid  
prescriptions

  
to  
**1 692 035**  
patients



- 7.2% of opioid-naive individuals became new long-term users.
- New long-term users were initially prescribed a total opioid dose 1.7 times higher than non-long-term users.

### By the end of the study:

- 59.8% stopped opioid use
- 37.9% continued opioid use
- 2.3% transitioned to methadone or buprenorphine



Findings may help prescribers understand how opioid prescriptions influence long-term use.

BCMJ 2025;67:54-63.

Xu RZ, Bone JN, Courtemanche R, et al.

## ABSTRACT

**Background:** The opioid epidemic has been linked to liberal opioid prescribing practices of physicians. We re-examined trends in opioid prescription practices in British Columbia that have led to new long-term use.

**Methods:** A data set of community-dispensed opioids from January 2013 to December 2017 was used to identify opioid-naive individuals. Opioid prescriptions were analyzed to describe new long-term and non-long-term users. Initial prescription factors associated with longer use were estimated.

**Results:** In total, 19 785 practitioners issued 15 693 867 opioid prescriptions to 1 692 035 patients; 7.2% of opioid-naive individuals

Dr Xu is a plastic surgery resident in the Division of Plastic, Reconstructive and Aesthetic Surgery in the Department of Surgery at the University of Toronto (ORCID ID: 0000-0003-3617-1031). Dr Bone is a biostatistical lead in the Clinical Research Support Unit at the BC Children's Hospital Research Institute (ORCID ID: 0000-0001-7704-1677). Ms Courtemanche is the clinical research manager for the Division of Plastic Surgery at the University of British Columbia (ORCID ID: 0000-0002-8805-3670). Dr Yefet is a neurosurgery resident in the Division

of Neurosurgery in the Department of Surgery at the University of Toronto (ORCID ID: 0000-0003-1504-1772). Dr Simmonds is a consultant pediatric anesthesiologist at Women's and Children's Hospital in Adelaide, Australia. Dr Cattoni is a family physician in the Sheway medical clinic in Vancouver; the medical director of FIR Square, BC Women's Hospital and Health Centre; a consultant physician in the Perinatal Addictions Service, BC Women's Hospital and Health Centre; and a clinical assistant professor in the Faculty of Medicine at UBC. Dr Lauder is a pediatric

anesthesiologist and a clinical professor in the Faculty of Medicine at UBC and the Department of Pediatric Anesthesia at BC Children's Hospital (ORCID ID: 0000-0001-6774-6120). Dr Courtemanche is a clinical professor in the Department of Surgery at UBC and the Division of Pediatric Plastic Surgery at BC Children's Hospital (ORCID ID: 0000-0003-3720-9302).

Corresponding author: Dr Douglas J. Courtemanche, douglas.courtemanche@ubc.ca.

This article has been peer reviewed.

became new long-term users. Compared with non-long-term users, new long-term users were first prescribed a total opioid dose 1.7 times higher, and most received their prescription from a family physician. By the end of the study, 59.8% of new long-term users had stopped opioid use, 37.9% continued use, and 2.3% transitioned to methadone/buprenorphine. Longer duration of opioid use was associated with older age, a first prescription of fentanyl or butorphanol, and a first prescriber specialty type of psychiatry.

**Conclusions:** Limitations included the fact that first prescriptions may have been renewals of hospital prescriptions and indications were unknown. This study may inform prescribers how opioid prescriptions impact long-term use.

## Background

Long-term opioid therapy is associated with significant side effect profiles.<sup>1-4</sup> The prevalence of long-term opioid therapy has been reported to be 5.4% in the United States and 17.6% in Canada.<sup>5,6</sup> Within most populations and health care settings, the rising prevalence of long-term opioid therapy has been associated with a corresponding increase in opioid misuse and opioid-related overdose and mortality.<sup>2,3,5-7</sup> The prevalence of opioid misuse (i.e., the use of opioids differently from how they were prescribed) ranges between 21% and 29% in primary and tertiary care settings, respectively.<sup>8</sup> Compared with matched controls, long-term opioid therapy management of noncancer-related pain is associated with a 58% increased risk for all-cause mortality compared with non-opioid analgesia.<sup>3</sup> Since 2016, there has been an almost threefold increase in fatal overdose rates in British Columbia due to all illicit drugs, with 45 deaths per 100 000 individuals in 2023.<sup>9</sup> Notably, drug toxicity is now the leading cause of unnatural death in BC, surpassing deaths related to motor vehicle accidents.<sup>10</sup> Although these illicit drug deaths are not necessarily correlated with opioid prescriptions, it should be considered that 24% of all US opioid-related deaths in 2020 involved a prescription opioid.<sup>11</sup> There are several

predictors of the use of long-term opioid therapy in opioid-naïve patients, including patient characteristics (pain, medical conditions, and mental health conditions), sociodemographic influences, and prescription factors.<sup>12</sup>

The opioid epidemic has been linked to liberal opioid prescribing practices of physicians, increased availability of pharmaceutical opioids in the community, and increased opioid consumption.<sup>13,14</sup> Recognizing prescription opioids as an important contributor to the opioid epidemic is key to understanding and minimizing the potential harm when prescribing opioids.<sup>12,15-17</sup> This is especially relevant in the context of opioid-naïve individuals. Some individuals may be only short-term users, while others become long-term users. In noncancer opioid-naïve patients, the number of days supplied of the initial opioid prescription was the strongest predictor of long-term use.<sup>12,16</sup> Opioid type (long-acting or tramadol) and dose were also significant predictors of continued use.<sup>12,16</sup> A recent meta-analysis of observational studies on the use of prescribed opioids for chronic pain showed strong associations between overdose (fatal and nonfatal) and current substance use disorder; mental health diagnosis; pancreatitis; and prescription factors, such as multiple opioid prescribers, multiple dispensing pharmacies, prescription of morphine equivalents that were 90 mg or greater, and prescription of fentanyl.<sup>18</sup> Despite known risk factors of long-term opioid therapy, initial prescribing practices around the world vary substantially.<sup>19,20</sup> Jani and colleagues found that individuals in Taiwan were initially prescribed weak/moderate opioids at 8 morphine milligram equivalents (MME) per day, compared with individuals in the United States, who were initially prescribed higher-potency opioids (e.g., oxycodone, hydrocodone, hydromorphone) at nearly five times the MME (38 MME per day).<sup>20</sup> This variability in prescription practices in excess of clinical need increases the risk of opioid dependency, recreational use, opioid sharing/diversion, accidental overdose, and death.<sup>21-23</sup>

Within BC, there is a wide range of opioid prescription patterns.<sup>24</sup> A 5-year longitudinal population-based study by Yefet and colleagues found that 12% of individuals within the province were provided with an opioid prescription during the study period, and prescriptions varied within and across subspecialties by both specific opioid type and prescribed MME.<sup>25</sup> A better understanding of the relationship between initial prescriptions and new long-term use may thus inform and educate prescribers of opioids. Appropriate educational tools and resources for pain management may reduce the likelihood of patients developing problematic opioid use and the contribution of opioid prescriptions to the opioid epidemic. This study aims to build on the results of Yefet and colleagues<sup>25</sup> by describing trends in opioid prescriptions for new long-term users and exploring the prescription and prescriber factors associated with new long-term opioid use.

## Methods

Ethics approval for this study was obtained from the University of British Columbia Children's and Women's Research Ethics Board (H18-01006). This study was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments. This research was funded by the BC Children's Hospital Research Institute's Evidence to Innovation. This study conforms to the rules of data reporting outlined by Population Data BC.<sup>26</sup>

## Data sources

This study was a secondary analysis of a de-identified, 5-year, population-based prescription data set obtained by Population Data BC that was used in a previous report that described opioid-prescribing patterns in BC.<sup>25</sup> The data set included all community-dispensed opioids in BC from 2013 to 2017. Each prescription included the drug identification number, date dispensed, quantity dispensed, days supplied, and patient age and sex. Request to analyze the indication for opioid prescriptions

was denied due to patient confidentiality concerns.

Drug-specific details included chemical/generic name, drug strength, drug form units, and dosage form (e.g., two tablets). Oral MME was calculated for each drug using conversion factors from the US Centers for Disease Control’s 2017 oral MME guide.<sup>27</sup> Opioid formulations were grouped by specific opioid type. Tramadol and tapentadol were combined due to similar mechanisms of action.<sup>28</sup> Codeine and tramadol/tapentadol were characterized as weak opioids, and the remainder as strong opioids.

Prescriber specialty type, described in the data set analyzed by Yefet and colleagues,<sup>25</sup> was based on linked data obtained from the College of Physicians and Surgeons of BC.<sup>29</sup>

**Inclusion/exclusion**

Data cleaning was performed. Prescriptions within the first 6 months of the study period were excluded to meet the criteria of opioid-naïve [Table 1].<sup>30</sup> Similarly, prescriptions associated with the start of an episode in the last 6 months of the study period were also excluded, because there was not enough follow-up time to define those episodes as potential long-term users (see episode duration definitions<sup>30</sup> in Table 1).

**Study population**

The study population was categorized into three user groups:

- Non-long-term users.

- New long-term users initially prescribed an opioid that was not methadone or buprenorphine.
- Long-term users initially prescribed methadone or buprenorphine.

Long-term users initially prescribed methadone or buprenorphine were separated from new long-term users because the latter were assumed very unlikely to be opioid-naïve.

**Statistical analysis**

Descriptive data were used to summarize opioid user groups by patient factors (e.g., age, sex), prescription factors (e.g., MME, days supplied, prescriber specialty type, opioid type), and episode factors (e.g., type, duration, ongoing status at the end of the study period). For new long-term users, the prescriptions from incident long-term episodes with a daily MME greater than 90 MME per day were calculated. The number of specific opioid and prescriber specialty types per episode were summarized. Opioid use status at the end of the study period was determined.

The probability of continued opioid use by initial drug type prescribed was estimated using the Kaplan-Meier estimator. Those results were summarized graphically as the probability of continuing use at 1 year and 2 years after first prescription. The relationship between prespecified demographic and prescription factors and episode duration was analyzed using multivariable Cox proportional hazards models. For those models and Kaplan-Meier curves, we censored

individuals at the end of their episode or the end of the study period, whichever came first. Results from Cox models were summarized as hazard ratios and 95% confidence intervals. All analyses were conducted using R statistical software, version 4.0.3.<sup>31</sup>

**Results**

**Study population**

From January 2013 to December 2017, 15 693 867 opioid prescriptions were issued to 1 692 035 individuals in BC by 19 785 practitioners. During the last year of the study period, 3 223 935 opioid prescriptions were dispensed to 565 776 people within BC. This equates to 155 MME morphine for every person in the province. These prescriptions were supplied to 11.5% of the BC population.

In total, 28 135 prescriptions were excluded from analysis due to unidentified sex, age greater than 113 years, inaccurate prescriber type, or prescriptions with daily MMEs or days supplied that were more than twice the 99th percentile. From the remaining 15 665 732 prescriptions, those in the first 6 months of the study (8 365 887) and those associated with an episode that began in the last 6 months of the study (419 302) were excluded. Of the included incident episodes, 42% of prescriptions were single or short-term use; 58% were long-term use [Figure 1].

**Non-long-term users**

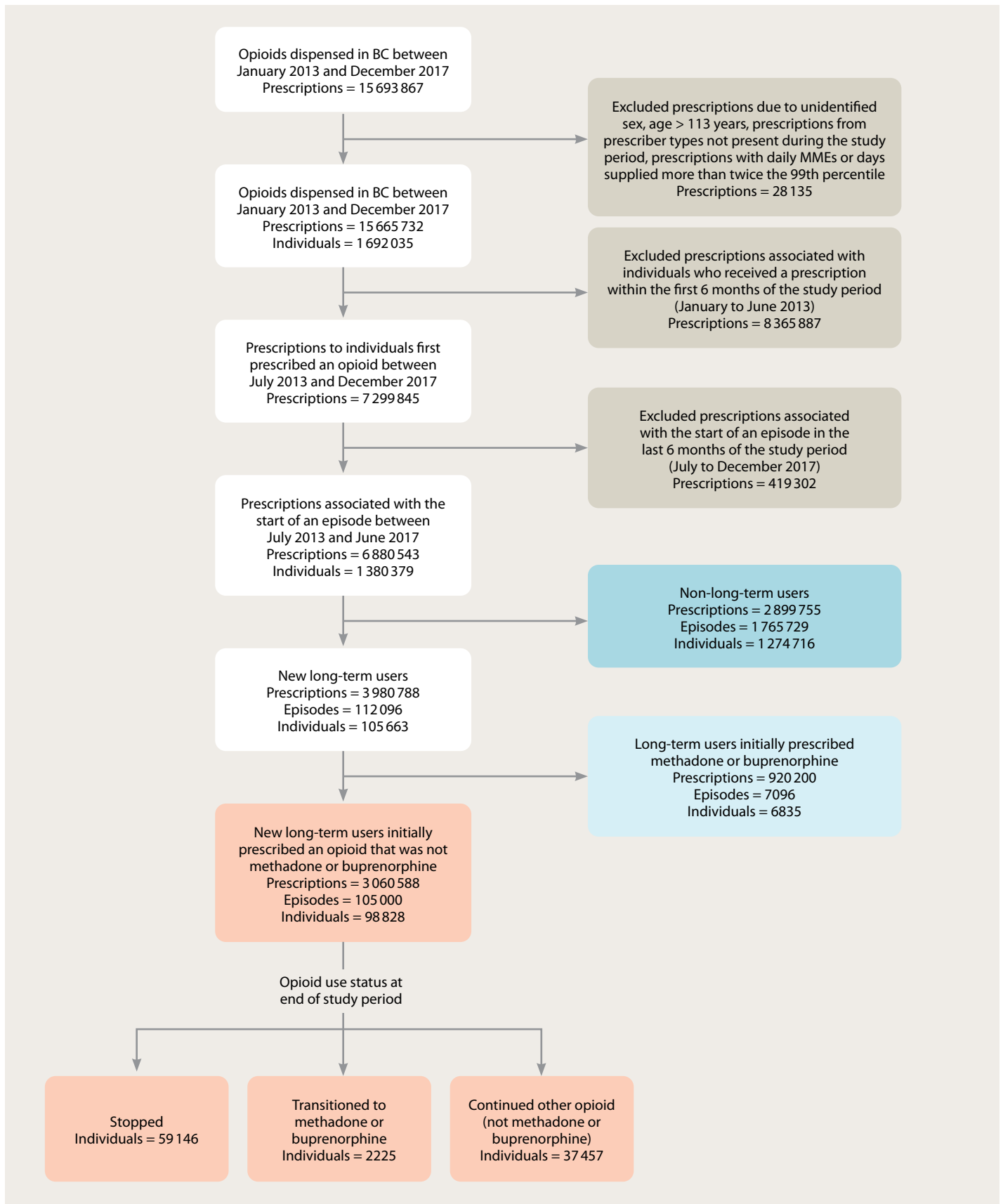
In total, 2 899 755 prescriptions were associated with 1 274 716 individuals with non-long-term-use (median age 51 years; 47.8% male) [Table 2]. The initial prescription median MME was 30.00 (IQR 18.75, 45.00), with a median day supply of 5.00 (IQR 3.00, 7.00) MME, giving a median total prescription (dose × days supplied) of 135.00 (IQR 90.00, 188.00) MME. Most initial prescriptions were for codeine (67.1%) or tramadol/tapentadol (18.8%). The most common prescriber specialties were family practice (48.7%), surgery (18.1%), and dentistry (15.6%). Most episode types were single prescription (71.1%), followed by short term (17.8%) and intermediate (11.1%).

**TABLE 1.** Prescription opioid user type and episode duration definitions.<sup>30</sup>

Term	Definition
Opioid-naïve	No opioid prescriptions 180 days prior to first opioid prescription
Episode duration	Difference between the first day of opioid prescription and the last day of opioid prescription, with no subsequent opioid prescriptions in the following 181 days
Short-term use	< 90-day episode with > 1 prescription within a given calendar year*
Intermediate use	≥ 90-day episode with < 10 opioid prescriptions AND < 120 days supplied, within a given calendar year*
Long-term use	> 90-day episode with either ≥ 10 opioid prescriptions over > 90 days OR ≥ 120 days supplied, within a given calendar year*

\*“Within a given calendar year” was added to the definition to calculate incidence in a calendar year.





**FIGURE 1. Long-term opioid users flow chart.**  
(MME = morphine milligram equivalents).

TABLE 2. Incident episode details by opioid user group.

	Non-long-term users	New long-term users initially prescribed an opioid that was not methadone or buprenorphine	Long-term users initially prescribed methadone or buprenorphine
Prescriptions (N)	2 899 755	3 060 588	920 200
Episodes (N)	1 765 729	105 000	6 835
Patients (N)	1 274 716	98 828	8 529
Age in years (median [IQR])	51.00 [34.00, 65.00]	61.00 [50.00, 74.00]	36.00 [28.00, 49.00]
Male (N, %)	844 144, 47.8	48 561, 46.2	4 702, 66.3
<b>Type of episode (N, %)</b>			
Single prescription	1 255 933, 71.1	—	—
Short-term prescription	313 624, 17.8	—	—
Intermediate-term prescription	196 172, 11.1	—	—
<b>Episode start (N, %)</b>			
July–December 2013	222 682, 12.6	14 979, 14.3	393, 5.5
January–December 2014	445 537, 25.2	29 598, 28.2	1 333, 18.8
January–December 2015	443 351, 25.1	28 371, 27.0	1 211, 17.1
January–December 2016	436 087, 24.7	23 449, 22.3	2 662, 37.5
January–June 2017	218 072, 12.4	8 603, 8.2	1 497, 21.1
First prescription MME* (median [IQR])	30.00 [18.75, 45.00]	22.50 [12.86, 36.00]	120.00 [42.00, 240.00]
First prescription days supplied (median [IQR])	5.00 [3.00, 7.00]	10.00 [5.00, 25.00]	2.00 [1.00, 7.00]
Total opioid prescribed (MME dose × days supplied [IQR])	135.00 [90.00, 188.00]	225.00 [135.00, 405.00]	225.00 [135.00, 450.00]
<b>First prescriber specialty (N, %)</b>			
Family practice	859 712, 48.7	83 488, 79.5	45, 0.6
Unknown	97 863, 5.5	6 576, 6.3	< 5
Medicine	117 944, 6.7	6 135, 5.8	< 5
Surgery	318 740, 18.1	4 612, 4.4	< 5
Dentistry	275 738, 15.6	1 761, 1.7	3 926, 55.3
Pharmacy	7 126, 0.4	765, 0.7	118, 1.7
Dentistry (oral surgery)	78 159, 4.4	465, 0.4	< 5
Nurse practitioner	2 833, 0.2	366, 0.3	< 5
Anesthesia	2 805, 0.2	314, 0.3	< 5
Psychiatry	1 122, 0.1	278, 0.3	6, 0.1
Diagnostic	822, 0.0	171, 0.2	185, 2.6
Other	2 158, 0.1	41, 0.0	< 5
Pediatrics	707, 0.0	28, 0.0	2 814, 39.7
<b>First opioid prescribed (N, %)</b>			
Codeine	1 185 107, 67.1	56 340, 53.7	—
Tramadol/tapentadol	331 889, 18.8	20 871, 19.9	—
Hydromorphone	126 777, 7.2	14 084, 13.4	—
Oxycodone	83 433, 4.7	8 194, 7.8	—
Morphine	34 460, 2.0	4 637, 4.4	—
Fentanyl	729, 0.0	493, 0.5	—
Meperidine	2 465, 0.1	269, 0.3	—
Opium	784, 0.0	87, 0.1	—
Pentazocine	56, 0.0	16, 0.0	—
Butorphanol	29, 0.0	9, 0.0	—
Buprenorphine	—	—	5 952, 83.9
Methadone	—	—	1 144, 16.1
Episode ongoing at study end (N, %)	15 835, 0.9	39 682, 37.8	—

\* MME = morphine milligram equivalents.

### New long-term users

In total, 3 060 588 prescriptions were associated with 98 828 individuals who were new opioid-naive users who went on to have long-term episodes (median age 61 years; 46.2% male) [Table 2]. Overall, 7.2% of opioid-naive individuals became new long-term users during the study period. The initial prescription median MME was 22.50 (IQR 12.86, 36.00), with a median day supply of 10.00 (IQR 5.00, 25.00) MME, giving a median total prescription (dose × days supplied) of 225.00 (IQR 135.00, 405.00) MME. In total, 515 126 (16.8%) prescriptions from incident long-term episodes had a daily MME greater than 90 [Figure S1; available at bcmj.org]. Most initial prescriptions were codeine (53.7%), tramadol/tapentadol (19.9%), or hydromorphone (13.4%) [Table 2]. Approximately one-quarter (24.2%) of all long-term episodes involved prescriptions for three or more opioid types over the duration of an episode [Table S1; available at bcmj.org]. The most common prescriber specialty was family practice (79.5%); however, 18.8% of episodes involved prescriptions from three or more prescriber specialty types [Table S2; available at bcmj.org]. At the end of the study period, individuals had one of three outcomes: 59.8% (59 146) stopped opioid use, 37.9% (37 457) continued opioid use, and 2.3% (2 225) transitioned to methadone or buprenorphine [Figure 1]. Of the 59 146 individuals who stopped opioid use, 3445 had received a methadone or buprenorphine prescription prior to stopping.

### Long-term users

In total, 920 200 prescriptions were associated with 6835 individuals who were long-term users that were first prescribed methadone or buprenorphine (median age 36 years; 66.3% male) [Table 2]. The initial prescription median MME of methadone or buprenorphine was 120.00 (IQR 42.00, 240.00), with a median day supply of 2 days, giving a total prescription of 225.00 (IQR 135.00, 450.00) MME. The initial prescription was typically from a dentist (55.3%) or pediatrician (39.7%).

**TABLE 3.** Estimated hazard ratios for length of opioid prescription for first opioid prescribed, first prescriber, and other demographic factors.

Variable	Hazard ratio* (95% confidence interval)
Age per 5 years	1.03 (1.03, 1.03)
<b>Sex</b>	
Female	1.00 (reference)
Male	0.99 (0.99, 0.99)
<b>Year of first prescription</b>	
2013	1.00 (reference)
2014	0.99 (0.99, 0.98)
2015	0.98 (0.98, 0.97)
2016	0.95 (0.96, 0.94)
2017	0.96 (0.96, 0.95)
<b>First opioid prescribed</b>	
Fentanyl	1.61 (1.72, 1.54)
Butorphanol	1.59 (2.27, 1.12)
Meperidine	1.19 (1.23, 1.14)
Oxycodone	1.19 (1.19, 1.18)
Morphine	1.18 (1.19, 1.16)
Hydromorphone	1.16 (1.16, 1.15)
Opium	1.12 (1.20, 1.04)
Tramadol/tapentadol	1.04 (1.05, 1.04)
Pentazocine	1.02 (1.30, 0.81)
Codeine	1.00 (reference)
<b>First prescriber type</b>	
Psychiatry	1.32 (1.39, 1.25)
Pharmacy	1.22 (1.25, 1.19)
Diagnostic	1.15 (1.22, 1.08)
Nurse practitioner	1.15 (1.19, 1.10)
Anesthesia	1.06 (1.11, 1.03)
Family practice	1.00 (reference)
Physician	0.91 (0.92, 0.90)
Medicine	0.91 (0.91, 0.90)
Pediatrics	0.89 (0.96, 0.83)
Other†	0.73 (0.76, 0.70)
Dentistry	0.70 (0.70, 0.70)
Surgery	0.70 (0.70, 0.69)
Dentistry (oral surgery)	0.68 (0.68, 0.68)
<b>First prescription MME‡</b>	1.00 (1.00, 1.00)
<b>First prescription days supplied</b>	1.01 (1.01, 1.01)

\* Hazard ratios greater than 1 indicate longer episode lengths (e.g., a hazard ratio of 1.50 = 50% longer duration of an episode; a hazard ratio of 2.00 = 100% longer duration, or twice as long).

† Other = allied health professionals, optometrists, naturopathic physicians, midwives, and podiatrists.

‡ MME = morphine milligram equivalents.

**Prescriber types influencing duration of use**

As a first prescriber specialty type, psychiatry was associated with a 32% longer episode duration compared with family practice [Table 3]. Other specialty types with longer episode durations included pharmacy, nurse practitioner, and diagnostic medicine. Dentistry (oral surgery), dentistry, surgery, and pediatrics were associated with shorter episode durations.

**First opioid prescription type influencing duration of use**

Episodes with a first opioid prescription of butorphanol or fentanyl were 60% longer than episodes that began with a prescription of codeine [Table 3]. Episodes with a first prescription of tramadol/tapentadol or pentazocine were similar in duration (2% to 4% longer) to episodes that began with

a prescription of codeine. Users who were first prescribed fentanyl had a 23.2% probability of continued use after 1 year and a 15.0% probability after 2 years [Figure 2, Table S3; available at bcmj.org]. Individuals who were first prescribed codeine, tramadol/tapentadol, hydromorphone, oxycodone, or morphine had a 4.4% to 7.6% probability of continued use at 1 year and a 2.3% to 4.4% probability at 2 years [Table S3; available at bcmj.org].

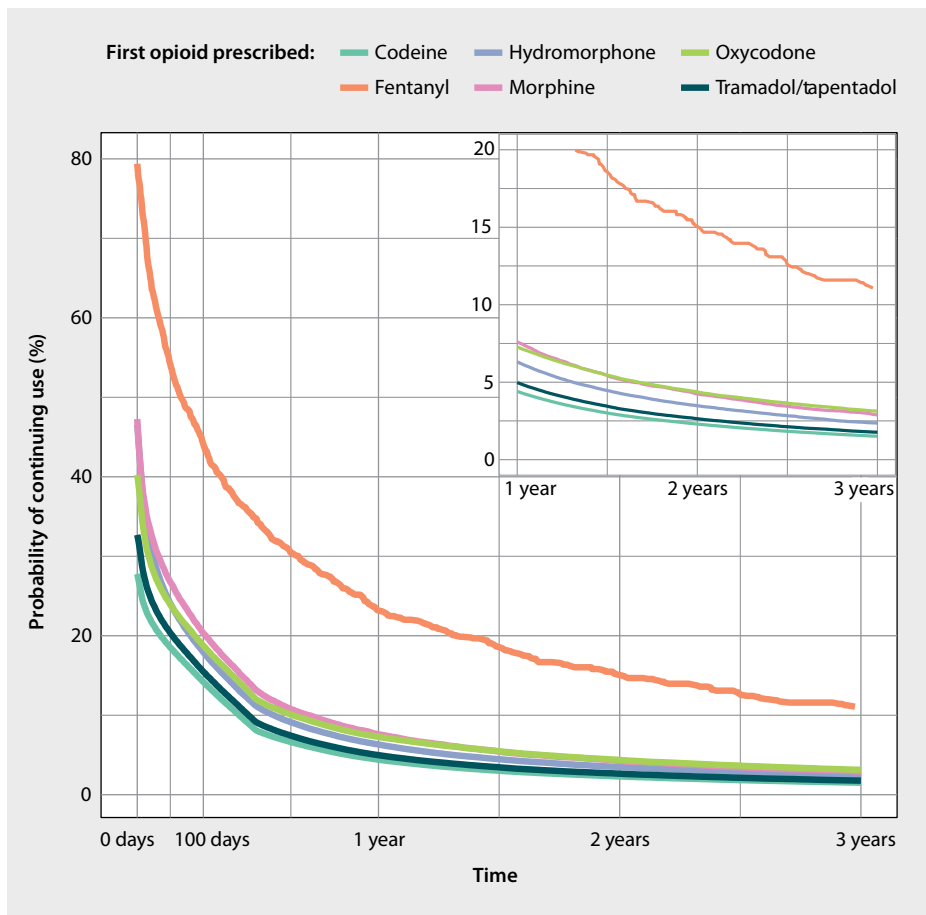
**Discussion**

Over the 4-year study period, 7.2% of opioid-naïve individuals became new long-term users. Compared with non-long-term users, new long-term users were prescribed a lower initial MME (22.5 vs 30.0) but with a longer supply (10 vs 5 days), which meant they received a higher total initial opioid dose (225 vs 150 MME). New long-term

users most often received their prescription from a family physician (79.5%) compared with non-long-term users (48.7%). Almost one-quarter of long-term episodes involved three or more different opioid types, and nearly one-fifth involved prescriptions from three or more prescriber types. At the end of the study period, 59.8% of new long-term users had stopped opioid use, 37.9% had ongoing opioid use (opioid other than methadone or buprenorphine), and 2.3% had transitioned to methadone or buprenorphine.

**Prescriptions**

Our study population was similar to that of Jani and colleagues<sup>20</sup> in terms of sample size and age and sex distribution. Although we found a higher initial prescription MME in non-long-term users compared with new long-term users, this finding is difficult to explain without knowing the indication for use. The median MME of the initial prescription for new long-term users (22.5 MME) was lower than the initial prescribing opioid dose in other North American regions (38.0 MME in Boston), similar to that in other Canadian provinces (27.0 MME in Quebec; 23.0 MME in Alberta), and higher than that in other areas of the world (12.0 MME in the United Kingdom; 8.0 MME in Taiwan).<sup>20</sup> These geographical variations have been attributed, in part, to the type of opioid prescribed: codeine is more commonly prescribed in Canada and the United Kingdom, whereas oxycodone and tramadol are more commonly initially prescribed in Boston and Taiwan, respectively.<sup>20</sup> In Portugal, which has low opioid use and opioid-related deaths compared with other countries in the Organisation for Economic Co-operation and Development, tramadol, buprenorphine, and tapentadol are the three most prescribed opioids for any indication.<sup>32</sup> In our study, codeine and tramadol were prescribed more than any other opioid across new long-term users and non-long-term users. This may reflect the relative ease with which physicians can prescribe these opioids. Stronger opioids required a duplicate prescription



**FIGURE 2.** Probability of continuing opioid use by first opioid prescribed. Curves are estimated from Kaplan-Meier estimators.

during the study period. Additionally, opioid-naïve individuals who became new long-term users received an initial prescription with a longer supply compared with non-long-term users (10 vs 5 days). This finding is consistent with that of Shah and colleagues, who found that increasing the days supplied was associated with a higher likelihood of continued opioid use.<sup>12</sup> In contrast to Shah and colleagues, who found that patients who initially received tramadol were less likely to discontinue opioid use, our results showed that individuals who were prescribed fentanyl, morphine, or oxycodone had the higher probability of continued use at 2 years. Although we found that hydromorphone and oxycodone were associated with longer episode lengths, it is difficult to hypothesize why this may be in the absence of knowing the indications for prescribing.

### Prescribers

Our study is unique in that we characterized opioid prescribers by opioid user type. Nearly 80% of prescribers for new long-term users were from family practice. In contrast, only 50% of prescribers in the non-long-term user group were from family practice. Surgery and dentistry accounted for 18.1% and 15.6% of the remaining initial prescriptions, respectively. The almost 20% of new long-term users with three or more prescriber types may be a reflection of patients who lacked a primary care provider; had complex medical problems; went to walk-in clinics, emergency departments, or pain clinics; and/or had opioid-seeking behavior. Moreover, prescribers are not required to review a patient's past prescriptions.<sup>33</sup> Our finding of family physicians prescribing opioids to long-term users is similar to that in Germany and France but differs from regions in Northern Europe where opioids for chronic pain are prescribed mainly by specialists.<sup>32</sup> Additionally, other regions, such as Portugal, have Pharmacy and Therapeutics Committees that are responsible by law to monitor prescription patterns, provide recommendations, and advance research.<sup>32</sup> To date, nothing similar exists in Canada.

Although the first prescriber type for new long-term users was family physician (80%), it is important to contextualize this finding within the limitations of the study data and health care system. Data were limited to outpatient prescriptions; therefore, an initial prescription within the study data may have been a renewal of a prescription prescribed in a hospital setting (e.g., emergency department, hospital prescriptions). Within BC's health care system, long-term follow-up care often circles back to the family physician (or, less often, a psychiatrist or another clinician). If a treatment plan is unclear, this may limit a family physician's ability to appropriately evaluate a patient's request to continue a prescription.<sup>34</sup>

In our study, longer durations of opioid use were associated with prescribers from certain specialties: psychiatry, pharmacy, nurse practitioner, or diagnostic medicine, whereas oral surgery, dentistry, pediatrics, and surgery were associated with shorter episode durations. This may reflect pain etiology.

### Long-term opioid therapy

Because we did not have access to the indication for each prescription, we were unable to determine which prescriptions were appropriate for long-term opioid therapy and which may have been associated with an opioid use disorder. Long-term opioid therapy may be appropriate pain management for some individuals; however, the benefits of long-term opioid use for noncancer chronic pain have been questioned due to concerns about side effect profiles, opioid use disorder, diversion, overdose, and death. In 2020 and 2021, 24% and 21%, respectively, of all US opioid deaths involved a prescription opioid.<sup>35</sup> Due to the pharmacological properties of opioids, repeat dosing results in tolerance and dependence, and a small percentage of individuals may develop addiction, even with short-term use.<sup>36</sup> With higher doses of opioids prescribed to individuals in the community, the probability of diversion increases, with the most common form being patients sharing their prescribed opioids with their family or friends for self-medication purposes.<sup>36</sup>

### Methadone/buprenorphine

Most new long-term users in our study did not receive methadone or buprenorphine. This may be partially explained by the fact that we were not able to account for other agents that are currently used for opioid agonist therapy, such as slow-release morphine (Kadian), which has been commonly prescribed since 2015–2016. Our findings indicate that a number of previously opioid-naïve individuals prescribed long-term opioid therapy (non-opioid agonist) may have benefited from a weaning schedule or conversion to opioid agonist therapy. Without knowing the indication for opioid prescription, it is difficult to make firm recommendations. It is clear that long-term opioid therapy for noncancer pain is associated with risks; current advice is to help patients wean off the opioid or use the lowest dose that helps them function in daily life.<sup>37</sup> However, weaning management alone is not appropriate without providing suitable multidisciplinary support and other alternatives for pain management. Deprescribing or weaning management alone is associated with harm such as withdrawal, depression, suicide ideation, and seeking illicit drugs for opioid replacement, with its antecedent risks of overdose, illicit drug-related infections, and death.<sup>38</sup> Other supportive measures may be indicated, including referral to ongoing addiction therapy (e.g., intensive outpatient treatment, residential treatment); provider-led counseling; long-term substance use monitoring (e.g., regular assessment, follow-up, and urine drug tests); comprehensive preventive and primary care; and psychological treatment interventions, social supports, and specialist care.<sup>39</sup> A better awareness of nonprescription and prescription factors for overdoses, recently described by Wang and colleagues,<sup>18</sup> and the first opioid prescription variables that contribute to longer durations of opioid use may facilitate shared decision making regarding prescribing opioids for chronic pain and may inform harm-reduction strategies.

### Study limitations

Our study focused on community prescribing practices alone and did not include hospital prescriptions. We were unable to account for the indication of prescription and/or pain etiology across user types, so we cannot interpret the appropriateness of opioid prescriptions—for example, opioid prescriptions as part of cancer treatment. For the same reason, we cannot make inferences about whether patients were being prescribed opioids for opioid use disorder. The lack of indications for these prescriptions leaves gaps in our understanding and ability to make recommendations. Furthermore, our study did not include any outcome data; thus, we are unable to determine why a patient may have stopped taking opioids or why an episode ended. Additionally, we cannot confirm that opioids were used as prescribed or the fate of any unused opioids. Because our study did not include hospital prescriptions, we do not know how many opioid-naïve patients had hospitalizations or emergency room visits and received opioids prior to discharge and their first community-dispensed opioid prescription. It is possible our definition of opioid-naïve may have included individuals who were not truly opioid-naïve—for example, patients who had recently moved to BC or who had been discharged from hospital care. First prescriptions may have been a renewal of a hospital prescription. Thus, our study may have overestimated the number of first prescriptions provided by family physicians. In terms of prescriptions, it is likely the days supplied calculated from “as needed” prescriptions were unreliable. We were also unable to account for slow-release drug formulations. We did not examine whether prescriptions from multiple prescribers overlapped, whether combination agents (e.g., oxycodone/naloxone) or additional substances (e.g., benzodiazepines) were used, or how these factors may have affected the risk of long-term use. Despite these limitations, our long-term study over 4 years gives a better understanding of how opioid prescribing evolves with time, which enables informed decision

making and policy to promote safe prescribing that is aligned with patient needs.

### Conclusions

In summary, 7.2% of previously opioid-naïve individuals became new long-term users over the 4-year study period. Longer duration of opioid use was associated with older age, a first prescription of fentanyl or butorphanol, and a first prescriber specialty type of psychiatry. In this cohort, only 5.7% of new long-term opioid users received a prescription for methadone or buprenorphine. It would be interesting to see how this proportion may have changed in the following years, from 2018 to 2023. Without data on indications and outcomes, it is challenging to determine the appropriateness of the prescriptions analyzed; however, our findings suggest that further guidance on prescribing practices is necessary. Changing opioid prescription practices is key in reducing opioid overdose.<sup>11</sup> Primary care providers, as the main prescribers of opioids, are in a key position to prevent long-term opioid use. North American opioid guidelines have had a significant effect on reducing opioid prescriptions, but our work suggests that more guidance may be required to target long-term opioid therapy in BC. Emerging evidence of an association between precipitous opioid tapering with symptoms of withdrawal, mental health issues, suicide, and overdose compounds this issue.<sup>38</sup> Hence, evidence-informed measures that focus on effective—but safe—reduction and cessation of prescribed opioids in primary care are needed. Future work that builds on our findings by incorporating indications would be a valuable contribution to our understanding of patterns in long-term opioid therapy prescribing. ■

**Availability of data and material:** Access to data provided by the data stewards is subject to approval but can be requested for research projects through the data stewards or their designated service providers. The following data sets were used in this study: PharmaNet and Medical Services Plan Practitioner File. You can find further information on these data sets by visiting the PopData project web page

at [https://my.popdata.bc.ca/project\\_listings/18-216/collection\\_approval\\_dates](https://my.popdata.bc.ca/project_listings/18-216/collection_approval_dates). All inferences, opinions, and conclusions in this article are those of the authors and do not reflect the opinions or policies of the data stewards.

**Code availability:** Please contact the corresponding author for further information.

### Acknowledgments

The authors would like to thank Dr Marija Bucevska, Ms Young Ji Tuen, and Ms Sophia Shayan for their assistance coordinating this project. We would also like to thank the University of British Columbia Division of Plastic Surgery, the UBC Faculty of Medicine, and the BC Children's Hospital Research Institute for funding this work.

### Funding

This study was funded by a BC Children's Hospital Research Institute Evidence to Innovation Theme Seed Grant Award (grant number GR019197 BCCHR) and by a University of British Columbia Faculty of Medicine Summer Student Research Program grant awarded to R.X.

### Competing interests

None declared.

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Karen Letourneau, CRGS, Pavandeep Gill, MD, FRCPC, Ethan Matsuo, Kelly S.A. Matsuo, MD, FRCPC

# Umbilical lesion: Granuloma or omphalomesenteric duct?

Sonographic, surgical, and histopathological findings may be required to distinguish between umbilical granulomas and polyps.



**FIGURE 1.** Clinical photograph of the umbilical polyp.

An 11-month-old female presented with a firm, nontender, bright-red, moist umbilical lesion without obvious urine or bile discharge [Figure 1]. The child was otherwise well. The differential diagnosis included granuloma and omphalomesenteric duct remnant. However, the clinical manifestations were non-specific, making differentiation difficult. Granulomas are common and are treated with topical silver nitrate; omphalomesenteric duct remnants are rare and require surgical excision [Table].

Initially, umbilical granuloma was suspected clinically and was treated with silver nitrate. When the lesion persisted, ultrasonography was performed, which revealed a deep-seated cyst inconsistent with a granuloma [Figure 2]. Given the

uncertain diagnosis, the child was referred to pediatric surgery. At surgery, the lesion appeared similar to residual mucosa tissue but not patent to the internal organs. The sac was dissected from the base of the umbilicus and a cord-like structure that tapered off approximately 1 cm deep to the umbilical skin. Histologically, benign intestinal mucosa was seen in continuity with adjacent epidermis and both underlying dermal fibrosis and smooth muscle hyperplasia [Figure 3], which confirmed the diagnosis of omphalomesenteric duct remnant, specifically umbilical polyp.

Disorders of the umbilicus in infancy are categorized as either abdominal wall defects, as in umbilical hernia, gastroschisis, and omphalocele; unobliterated embryological structures, as in urachal anomalies and

*Ms Letourneau is a sonographer in the Island Health Authority. Dr Gill is a dermatopathologist in the Island Health Authority and a clinical assistant professor in the Department of Pathology and Laboratory Medicine at the University of British Columbia. Mr Matsuo is a third-year kinesiology student at the University of Victoria. Dr Matsuo is a radiologist in the Island Health Authority.*

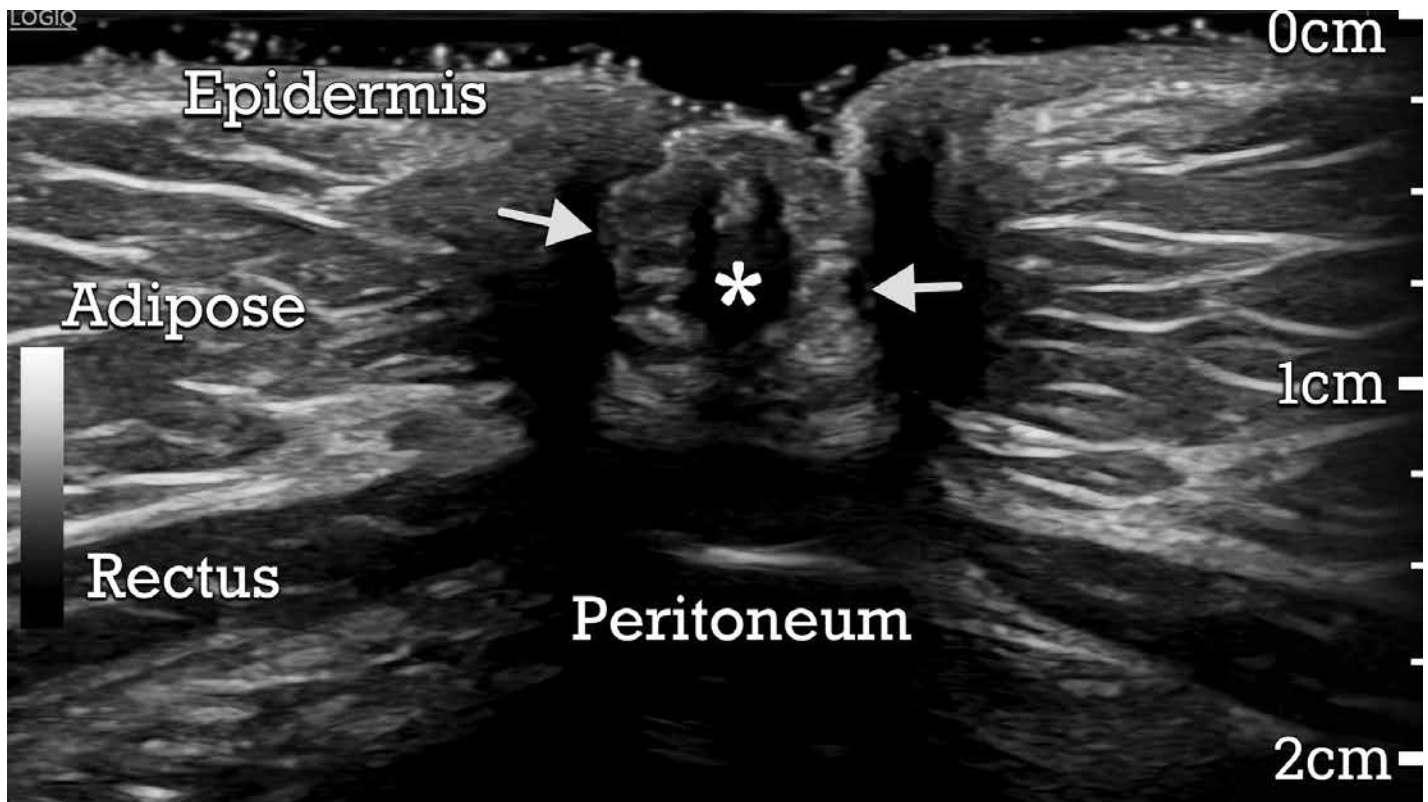
*Corresponding author: Ms Karen Letourneau, karenletourneau@me.com.*

*This article has been peer reviewed.*

**TABLE.** Comparison of umbilical granuloma and omphalomesenteric duct.

Characteristic	Granuloma	Polyp (omphalomesenteric duct)
Appearance	Dull red or pink, soft, uneven, moist	Bright red, firm, smooth, moist
Incidence	Common: 3.8% to 7.3%	Rare: < 2% (approximately)
Etiology	Forms after cord detachment	Congenital, persistent omphalomesenteric duct
Treatment	Topical silver nitrate	Surgery
Sonography	Superficial, solid	Deep seated, cystic
Histology	Granulation tissue	Gastrointestinal mucosa in continuity with epidermis





**FIGURE 2.** Transverse ultrasonography image of umbilicus showing a round complex cyst (\*) with a thick echogenic rim (arrows), deep to the rectus abdominus muscles.

omphalomesenteric remnant; or skin lesions, such as granulomas or dermoid cysts.

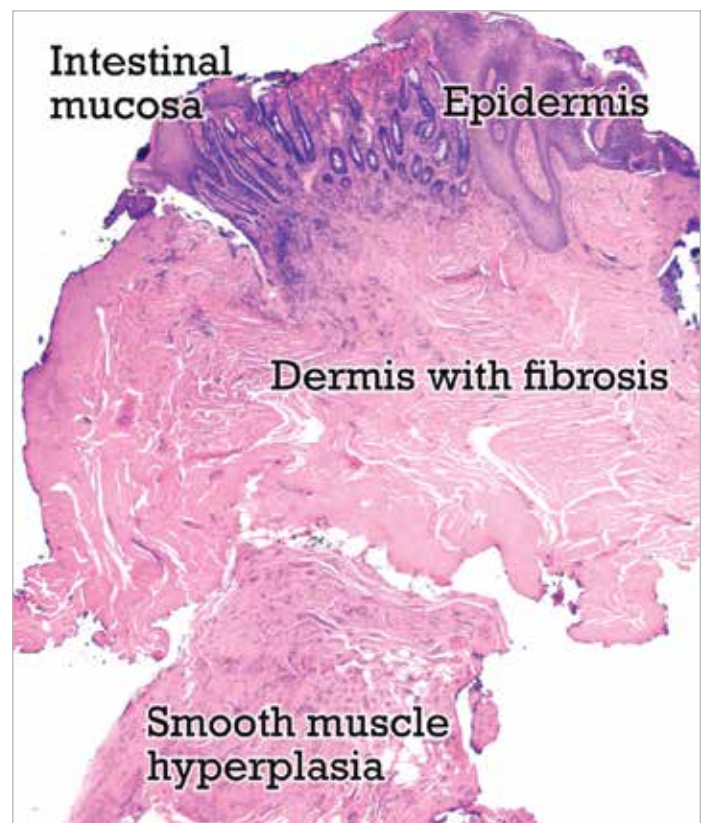
Approximately 2% of the population has an omphalomesenteric duct remnant, most commonly associated with an enteric Meckel diverticulum.<sup>1-3</sup> Sonographically, an umbilical polyp appears as a deep-seated cystic lesion with thick echogenic walls, with or without a sinus or deeper tract. The pathway for treatment typically begins with topical silver nitrate. Failure to respond is suggestive of an embryological defect. Ultrasonography may be helpful; however, final diagnosis usually requires histopathological examination. ■

**Competing interests**

None declared.

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**FIGURE 3.** Hematoxylin and eosin–stained section (×20) showing intestinal mucosa in direct continuity with the epidermis.

# Caring for the sexual lives of community patients living with dementia

A discussion of ways to open the conversation between physicians and their patients, suggestions for interventions by community physicians, and assistance for physicians about sexual medicine.

Leah Rosetti, MD, FRCPC, Rosemary Basson, MD, FRCP (UK)

**ABSTRACT:** Research indicates that most couples that include a partner living with dementia consider sex to be of similar importance as couples without cognitive challenges. Additionally, preliminary evidence suggests that continuing sexual activity may slow cognitive decline. However, physicians rarely discuss sexual concerns in this population. Increasing cognitive difficulties and ever-changing personalities compound the frequent age-related vascular, hormonal, and sexual dysfunction; thus, dysfunctions that are complex and different from similarly aged cognitively well persons are likely. Aside from a focus on inappropriate sexual behavior, information on the complexities of their sexual dysfunction or its optimal treatment is minimal, especially in community-dwelling populations. To address this deficit, we discuss ways to open the conversation, offer suggestions for interventions by community physicians, and confirm currently available assistance for physicians about sexual medicine.

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*Dr Rosetti is a sexual medicine physician and academic co-head at the BC Centre for Sexual Medicine. Dr Basson is a clinical professor emerita at the University of British Columbia and past director of the BC Centre for Sexual Medicine.*

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*Corresponding author: Dr Leah Rosetti, leah.natalie.rosetti@gmail.com.*

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*This article has been peer reviewed.*

It is now more widely recognized that many older people retain sexual enjoyment and desire for a sexual life, but this is rarely applied to those living with dementia.<sup>1</sup> Similarly, many physicians will inquire about sexual problems associated with chronic illness but exclude dementia. Data from the National Social Life, Health, and Aging Project (NSHAP), which included assessment of community-dwelling couples' cognition and sexuality in 3196 men and women, found that only 1.4% of the 315 women and 17% of the 264 men with dementia had spoken about sex with a doctor.<sup>2</sup> Only very recently has there been more understanding and acceptance that people with dementia are still sexual beings with ongoing desire for sexual intimacy as well as affection and emotional connection.<sup>3</sup>

There may be an assumption that sex would not be important or that dementia would so challenge emotional intimacy that, at least for the well partner, sexual activity would be unwanted. Certainly, emotional intimacy is identified as a major sexual motivation for men and women,<sup>4</sup> and deterioration of cognition and changes in personality and roles may have a severe impact. No longer knowing who the well partner is but wanting sex with them can be particularly distressing.

Negating such assumptions, using a slightly abbreviated version of the Montreal Cognitive Assessment (MoCA) and a cutoff score of 18 to indicate a probable

degree of dementia, the NSHAP researchers found marked sexual resilience for couples where one or both partners were living with dementia. For them, the importance and frequency of sex, a wish for more sexual interaction, and the prevalence of sexual dysfunction were similar to couples without cognitive loss. Moreover, couples challenged with dementia were more likely to continue their sexual lives despite having a sexual dysfunction.<sup>2</sup> Our hesitancy to broach this topic with our patients is misplaced.

We aim to encourage physicians to inquire about and address sexuality as part of their patients' global health. We outline evidence for the desire for rewarding sexual lives expressed by community-dwelling patients living with dementia, the limited understanding of likely complex sexual dysfunction in this population (driven in part by its usual omission by health care providers), and evidence of the relationship between one's sexual life and cognition.

Difficulties in long-term care facilities posed by sex-negative attitudes from staff, concerns for privacy, and the safety of patients and other residents are beyond the scope of this article. For reviews on this topic, see the following resources:

- Makimoto K, Kang HS, Yamakawa M, Konno R. An integrated literature review on sexuality of elderly nursing home residents with dementia. *Int J Nurs Pract* 2015;21(Suppl 2):80-90. <https://doi.org/10.1111/ijn.12317>.

- Villar F, Celdrán M, Serrat R, et al. Staff's reactions towards partnered sexual expressions involving people with dementia living in long-term care facilities. *J Advanced Nurs* 2018;74:1189-1198. <https://doi.org/10.1111/jan.13518>.

## Literature review

Aside from some studies on inappropriate sexual behavior, the literature on the sexual lives of community-dwelling couples living with dementia is limited. Some of the few much smaller studies identified increased sexual dysfunction, increased sexual dissatisfaction (especially for the well partner), and cessation of partnered sex than did NSHAP.<sup>5</sup> Dementia-related apathy may extend to sexual apathy,<sup>6</sup> but some research identified both partners' dissatisfaction with their sexual infrequency.<sup>7</sup>

In the second wave of NSHAP in 2011, 1598 couples from the first wave in 2006 were reassessed. Of note are ongoing sexual activity and the importance of sex despite cognitive decline, not only in those whose MoCA scores suggested mild cognitive impairment, but also for those whose scores indicated probable dementia. The findings of the NSHAP study are summarized in Table 1.

Unlike partnered sex (i.e., sex in the context of affection and intimacy), self-stimulation decreased in those with cognitive deficits.<sup>8</sup> This reflects the current understanding of human sexual response,<sup>9,10</sup> which acknowledges many intimacy-related incentives for partnered sex.<sup>4</sup>

Certainty about sexual difficulties in the context of dementia is limited not only by the paucity of research prior to the NSHAP study but also by the question of reliability, given the participants' cognitive challenges. Poor short-term memory of recent sexual experiences, a tendency to minimize concerns, and loss of insight can limit accuracy. Inclusion of the partner would appear to be essential. Both partners being seen together and separately, as in this large study, would facilitate the most reliable data. Nevertheless, later stages of severe dementia preclude reliable data,

which cannot be corroborated by that partner (e.g., the patient's wanting or enjoyment of sex).

## The relationship between cognition and sexuality

Studies prior to NSHAP found associations between cognition and sexuality. A study of 3060 men and 3773 women aged 50 to 89 completed word recall and number sequencing tests.<sup>11</sup> Men confirming sexual activity in the previous year showed better recall and sequencing than those who were not sexually active. For women, the same was true for word recall. The direction of causality remained unknown. A second publication showed that more frequent sexual activity predicted better performance on Addenbrooke's Cognitive Examination total score and in the domains of fluency and visuospatial abilities.<sup>12</sup>

In both the second (2011) and third (2016) waves of NSHAP, both sexual and cognitive assessments were included in the in-home interviews and the questionnaires

that couples completed in private. Cognitive function in 2011 did not predict sexual frequency or quality (i.e., how pleasurable sexual activity was) in 2016. Interestingly, for participants younger than 74 years of age, the quality of their sexual lives related to better cognitive function 5 years later. For older participants, sexual frequency was found to be associated with better cognitive function 5 years later.<sup>13</sup> It is unclear why this difference exists. Possibly only those couples for whom sex is very pleasurable continue after age 74, and thus frequency may be the only remaining variable.

Another study collected baseline intimacy and sexuality survey data from 155 cognitively intact, married older adults. This cohort was followed for 10 years to evaluate any association between sexuality and future cognitive status. Over the 10-year study period, 33.5% of individuals developed cognitive impairment. Those with greater sexual satisfaction at baseline were less likely to develop mild cognitive impairment or dementia over the study period, irrespective

**TABLE 1. Findings from the National Social Life, Health, and Aging Project.<sup>2</sup>**

		Normal (%)	Mild cognitive impairment (%)	Dementia (%)	P value
At least one sexual problem	Male	72.9	74.1	76.6	.46
	Female	79.9	78.4	80.5	.99
Bothered by sexual problems	Male	48.4	48.9	37.3	.29
	Female	19.6	14.7	11.6	.03
Avoided sex due to sexual problems	Male	29.5	28.8	26.3	.41
	Female	23.5	19.2	12.6	.09
Spoke with physician about medical conditions impacting sex	Male	33.1	23.0	16.9	< .001
	Female	11.6	7.1	1.4	.001
Erectile dysfunction	Male	46.0	43.8	29.4	< .001
Problems with lubrication	Female	27.1	22.6	11.9	.01
Inability to orgasm	Male	31.4	33.9	33.4	.96
	Female	34.4	33.0	24.7	.06
Lack of sexual interest	Male	33.3	33.0	40.0	.39
	Female	58.7	59.9	64.5	.81
Pain with sex	Female	11.4	9.9	4.6	.37
Enjoy sexual touching	Male	81.1	72.4	54.9	.001
	Female	56.6	42.7	26.9	< .001

## PREMISE

of the romantic relationship, social supports, emotional intimacy, or beliefs about sexuality.<sup>14</sup>

Data from the Concord Health and Ageing in Men Project found that men with declining sexual frequency and erectile dysfunction experienced greater decline in Mini-Mental State Examination scores over 5 years of follow-up.<sup>15</sup> This association remained even when potential confounds, including age, BMI, comorbidity, number of medications, smoking, depression, self-rated health, and hormone levels, were accounted for in statistical analyses.

### Complexities of sexual dysfunction in dementia

The brain areas involved in sexual response have been clarified by functional imaging over the past 2 decades.<sup>16</sup> The areas include those of the “sexual interest network,” their activation necessary to recognize and attend to sexual stimuli, allow sexual imagery, and motivate or inhibit subsequent behavior. Then follows the activation of some and de-activation of other areas for arousal and other areas for orgasm, all followed by very different areas of activity and suppression, reflecting the postorgasmic state. However, as researchers have recently noted, networks serving higher-order cognition and memory are also intrinsically involved in partnered sexual experiences.<sup>17</sup> These include the ability to feel pleasure, learn more rewarding sexual acts, have empathy with the partner’s emotions, manage one’s fears of rejection or embarrassment, and allow the disinhibition needed for arousal and sexual activity. These circuits are all potentially compromised by dementia. Indeed, using brain imaging to quantify changes in sexual behavior in behavioral-variant frontotemporal dementia and Alzheimer disease, researchers’ findings suggested the involvement of specific neural circuits that demonstrated an interplay between circuits involving reward, empathy, and emotional processing, as well as those associated with autonomic function.<sup>18</sup> Given that interruption of neural circuits is not limited to those directly involved in sexual arousal, the complexities of sexual

dysfunction from dementia are likely not only different from persons without cognitive challenges but also highly unstable as the disease worsens.

We have little information on these dementia-related sexual dysfunctions, though the NSHAP study has a number of interesting findings. Forty-five percent of men and 73% of women living with dementia disliked “genital sexual touching.” However, they maintained a sexual focus on intercourse and reported slightly lower prevalence of erectile dysfunction and

**People with dementia are still sexual beings with ongoing desire for sexual intimacy as well as affection and emotional connection.**

female orgasm difficulties. Manual genital stimulation is typically involved for women to orgasm, and older men will usually need manual stimulation in addition to mental sexual arousal to experience erections sufficiently firm to allow intercourse, which makes this finding somewhat perplexing and worthy of further exploration. Also of note is the low frequency of sexual avoidance shown by women living with dementia [Table 1].

### Why are physicians hesitant to include sexual inquiry during a systems review?

Sexual history taking has been identified as an often overlooked domain of the clinical interview.<sup>19</sup> Potential reasons for excluding sexual inquiry include misgivings of inappropriateness, uncertainty about how to broach the subject, a mistaken belief that sex would no longer be important, and a fear of opening a Pandora’s box, given a lack of experience in addressing sexual concerns, competing clinical priorities in a time-constrained setting, or lack of options for referral of complicated cases.

### Why is sexual inquiry necessary in this population?

Sexual activity remains important for those with cognitive decline. Beyond the value of sex to facilitate emotional intimacy and physical pleasure, recent research suggests that sexual frequency and satisfaction may positively influence future cognition.<sup>13</sup> As outlined above, sexual satisfaction was positively correlated with cognition 5 years later in participants 66 to 74 years of age. In those aged 75 to 85, sexual frequency was positively correlated with cognition 5 years later.<sup>13</sup>

Further, a 10-year cohort study revealed that sexual satisfaction was associated with decreased risk of transitioning from normal cognition to mild cognitive impairment or dementia.<sup>14</sup> Thus, difficulties with sexual function may be a novel modifiable risk factor for development of cognitive impairment.

Research supports the notion that patients want their physician to ask about sexual problems and that they are much more likely to engage if the physician initiates this discussion.<sup>20</sup>

### When and how should physicians inquire about sexual function?

During a general assessment, appropriate opportunities for sexual inquiry include assessments of mood or cognition. An introductory sentence has been shown to increase patients’ comfort with confirming that they have a problem [Table 2].<sup>21</sup> These introductory sentences validate and normalize the difficulty and are known to facilitate disclosure.<sup>21</sup> Patients can find it reassuring to know that their symptoms are logical and experienced by others in their situation.

### What can physicians do to address sexual problems?

Physicians may be able to offer solutions to address an elicited sexual concern at a future visit [Table 3]. If this is not possible, the couple may welcome a referral to the BC Centre for Sexual Medicine, where such referrals are currently given priority. A referral form is available at

www.vch.ca/sites/default/files/2024-12/BCCSM-Referral-Dec-2024.pdf. The centre's fax number is 778 504-9746.

## Conclusions

For patients with dementia, degeneration in the areas of the brain involved in higher-order cognitive networks involved in partnered sexual activity may compound sexual dysfunctions common to older persons without cognitive loss. However, research identifies strong sexual resilience in many couples living with dementia, but minimal physician intervention. Importantly, ongoing sexual activity may foster cognition as well as benefit general health and happiness. It is important to no longer neglect this aspect of patients' health. In BC, consultation for sexual dysfunction in this population is currently available in a timely manner. ■

## Competing interests

None declared.

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References continued on page 70

**TABLE 2.** How to transition into assessment of sexual function during a general assessment.

Timing during systems enquiry	Suggested introduction
Mood assessment	"Many patients with symptoms of depression like yours tell me they have lost pleasure in so many aspects of their lives—even their sexual lives. So, I need to ask if you are having sexual difficulties."
Medication side effects	"Unfortunately, many antidepressants have side effects, and some, including sexual problems, don't disappear after a few weeks. So, I need to ask if you are having sexual difficulties."
Cognitive assessment	"Many patients with memory problems tell me that many aspects of their life are affected, even their sexual life. So, I need to ask if you are having sexual difficulties."

**TABLE 3.** Suggestions for initial evaluation of sexual dysfunction in dementia.

Concern	Suggestion
Only the patient or the partner has identified a sexual problem.	Explain the need to see both partners, individually and as a couple, so two more visits will likely be necessary to address their concerns.
The patient or partner is uncertain if it is appropriate to hope for continued sex.	Reassure patients that couples living with dementia can and do continue to have rewarding sexual lives. Explain that ongoing discussion regarding preferences, boundaries, and challenges will be needed between the couple as the illness progresses. Reassure them that they have a safe environment to discuss these matters with you.
The couple has never really communicated about their sex lives.	With both partners present, ask them to identify the problems as well as what they have particularly enjoyed in the past. Simply having the couple communicate this way, safely, with you in the room, may be all that is needed. They often find their own solutions once there is clarity.
All sexual experiences have stopped due to sexual dysfunction(s), but both partners regret this.	Explain that many similar couples treasure physical affection and sensual and sexual touching and do not necessarily need penetrative intercourse to gain the benefits of sexual activity. Consider normalizing and encouraging a focus on nonpenetrative sex.
A firm erection is desired, but phosphodiesterase 5 inhibitors no longer work.	Explain the need for ongoing mental sexual arousal to allow the medication to work. When cognitive loss precludes maintained attention on sexual stimuli, consider normalizing and encouraging nonpenetrative sex.
An orgasm is desired but is no longer possible.	Normalize different kinds of sexual stimulation, including fantasy, images/videos, more intense physical stimulation (e.g., for men, firm manual stimulation may allow orgasm, whereas vaginal intercourse may not), and vibration (usually less helpful for men, but sometimes applying a vibrator around the penile corona can be beneficial, and for women, usually around the clitoral area). Educate regarding the normal increase in the refractory period with age for both sexes.
The partner is requesting sex but does not remember they recently had sex.	Manage this in the same way as nonsexual requests (i.e., gently redirect to another activity): "Sure, perhaps later or tomorrow. Why don't we go for a walk?" Depending on the speed of forgetting, this answer may need to be repeated.
The partner states they no longer have sexual attraction toward their partner, despite caring deeply for them.	Without any pressure that they <i>should</i> continue a sexual life together, consider gently reminding them that research is very clear that both men and women have many motivations for sex—at least half of them have nothing to do with sexual attraction, per se, but have to do with emotional closeness, love, and caring.

## PREMISE

Continued from page 69

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### Sexual frequency and satisfaction may positively influence future cognition.

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# Physicians are key to reducing unnecessary dental antibiotic prescribing

It may surprise you to learn that one indication driving a high number of unnecessary prescriptions by medical doctors is the treatment of dental conditions.<sup>1</sup> This is doubly concerning because antibiotic prescribing by dentists remains high and continues to increase postpandemic.<sup>2</sup>

This should be an easy fix since antibiotic guidelines are available for dentists, but the systemic issue of limited access to dental services or coverage results in many people receiving initial dental care from a physician. In addition to often being the first professional point of contact for patients, physicians are trusted advisors about antibiotic use for our dental colleagues.

A few key strategies that can reduce unnecessary antibiotic use and its complications for oral health

indications are presented in the **Box**. These are also summarized by Choosing Wisely Canada<sup>3</sup> and at [www.bugsanddrugs.org](http://www.bugsanddrugs.org).

Antibiotics are of no value and are not indicated for toothache, which generally results from damage to the soft tissue or nerve inside a tooth caused by decay or trauma.<sup>4</sup> Toothache pain is due to inflammation, not infection. Accordingly, antibiotics don't help, but NSAIDs can ease symptoms. Definitive treatment involves removal of the damaged or diseased dental pulp in a dental surgery.

**There is no evidence that antibiotics before dental procedures prevent prosthetic joint infections.**

A dental abscess is a localized infection of the dental pulp; as with most skin abscesses, definitive treatment involves drainage and surgery to remove infected tissue. Antibiotics are of no additional benefit unless there are systemic symptoms or spreading infection or the patient is significantly immunocompromised.<sup>5</sup>

Physicians are often asked about perioperative prophylaxis for dental procedures in orthopaedic and cardiac patients. Notably, a history of joint replacement is *not* an indication for antibiotic prophylaxis. Infections of orthopaedic implants are uncommon and are largely not caused by mouth flora. Most

bacteremia of oral origin occurs with activities of daily living, including brushing, flossing, and chewing. There is also no evidence that antibiotics before dental procedures prevent prosthetic joint infections, so spare these

patients the risk of adverse effects in the absence of benefit.<sup>6,7</sup>

Antibiotic prophylaxis is not needed for people with nonvalvular cardiac devices, such as pacemakers, implantable defibrillators, shunts, repaired septal defects, and stents.<sup>8,9</sup> Indications where antibiotic prophylaxis is still recommended include only prosthetic heart valves, a history of infectious endocarditis, cardiac transplant with valvular regurgitation, unrepaired cyanotic congenital heart disease, and repaired congenital heart disease with residual shunting or regurgitation.

In the rare cases where perioperative prophylaxis is indicated, only one preoperative dose is required. The frequently observed practice of prescribing for a full

**BOX.** Key ways to safely reduce antibiotic prescribing for oral health indications.

## Choosing Wisely Canada:

- Don't prescribe antibiotics for irreversible pulpitis (toothache).
- Don't prescribe antibiotics for acute dental abscess without signs of systemic infection.
- Don't give prophylactic antibiotics prior to dental procedures to patients with total joint replacement.
- Don't give prophylactic antibiotics to patients with nonvalvular cardiac or other indwelling devices.

## Bugs and Drugs:

- Limit preoperative antibiotics to a single dose.

week carries no additional benefit but confers a much higher risk of selecting for antibiotic resistance or developing *Clostridioides difficile* infection.

Delayed access to dental surgery contributes to overprescribing. Access to dental care can be a significant challenge in remote regions, and a lack of universal dental care means it can be an issue anywhere in BC.<sup>10</sup> Recently, the federal government funded the Canadian Dental Care Plan. Dental practitioners accepting the plan are readily searchable, and physicians can facilitate early referral for urgent care with this tool: [www.sunlife.ca/sl/cdcp/en/member/provider-search](http://www.sunlife.ca/sl/cdcp/en/member/provider-search).

Physicians in BC have significantly reduced unnecessary prescribing for many indications. We hope that awareness of the challenges in dental prescribing will

*This article is the opinion of the BC Centre for Disease Control and has not been peer reviewed by the BCMJ Editorial Board.*

contribute to a lower risk of antibiotic resistance and antibiotic-related complications for patients with dental conditions. ■

—David M. Patrick, MD, FRCPC, MHSc  
**Professor, School of Population and Public Health, UBC  
 Medical Epidemiology Lead for Antimicrobial Resistance, BCCDC**

—Kate O'Connor, RN  
**Nurse Educator, Community Antimicrobial Stewardship, BCCDC**

—Edith Blondel-Hill, MD, FRCPC  
**Medical Microbiologist/Infectious Disease Specialist, Interior Health**

—Lynsey Hamilton, MSc  
**Knowledge Translation and Exchange Specialist, BCCDC**

—Fawziah Lalji, PhD  
**Professor, Faculty of Pharmaceutical Sciences, UBC**

—Hannah Lishman, PhD  
**Senior Scientist, Community Antimicrobial Stewardship, BCCDC**

—Clifford Pau, DMD, MSc  
**Clinical Associate Professor, Faculty of Dentistry, UBC**

—Nick Smith, MPH  
**Project Manager, Community Antimicrobial Stewardship, BCCDC**

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**Dr Frances Mary  
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1924–2025

It is with deep sadness that we announce the death of Dr Frances Mary Forrest-Richards, age 101, in Victoria, BC, on 14 January 2025.

Frances defied convention with her intelligence, hard work, and determination to become a medical doctor at a time when few women did so. Specializing in psychiatry, she dedicated her professional life to supporting veterans, students, and private patients over a long career and actively mentored junior doctors, particularly encouraging young women to take up the profession.

Frances was a beloved mother to Megan (Tassos), John (Mary Lou), and Elizabeth (Trevor); devoted grandmother to Clara (Alistair), Katherine (Rishi), Alexis, Kate (Kevin), and Graham; and

delighted great-grandmother to Hector, Niovi, Sophia, and Emile. Her husband and lifelong partner Dr A. Gerald Richards (17 December 1921–13 October 2013) shared her love of adventure, music, art, and literature, as well as having a profession in common.

Frances's wit, ready retort, and curiosity with everyone she encountered made her an engaging companion. She left a lasting impression on all around her.

Frances will be sorely missed, but those who knew her will be grateful for having been touched by her energy, enthusiasm, generosity, and *joie de vivre*, which endured until her last days.

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# Turning the other cheek: Portraits of doctors and scientists don't show a left-cheek bias

Doctors' absence of portrait-posing bias appears consistent with the important roles of emotional empathy (left-cheek poses) and scientific rationality (right-cheek poses) in medical practice.

Annukka K. Lindell, PhD

**ABSTRACT:** When posing for a portrait, most people offer the left cheek. Doctors, however, show no such asymmetric bias. Why? The answer appears to lie in the silent social signals communicated by the two sides of the face. Because the left hemiface is contralaterally controlled by the emotion-dominant right hemisphere, it is anatomically more expressive than the right hemiface. Research confirms that left-cheek portraits convey greater emotion and that people intuitively offer the left cheek when asked to express emotion. In contrast, people offer the right cheek when asked to conceal emotion, with right-cheek portraits judged to be more scientific. Doctors' absence of portrait-posing bias thus appears consistent with the important roles of both emotional empathy (left-cheek poses) and scientific rationality (right-cheek poses) in medical practice.

**W**hen posing for a portrait, most people adopt a *Mona Lisa* pose, offering their left cheek [Figure 1]. From Renaissance paintings<sup>1</sup> to high-school photos<sup>2</sup> to selfies uploaded

to social media,<sup>3</sup> left-cheek bias is evident across time periods, irrespective of medium. However, unlike most of the population, portraits of doctors and scientists don't show a left-cheek bias.<sup>4,5</sup> Given that the two sides of the face typically appear quite symmetrical and are equally likely to suffer blemishes or disfigurement, why would most people favor the left cheek, yet doctors appear unbiased? The answer may lie in the silent social signals communicated by the two sides of the face.

## Left-cheek bias for portraits

Fifty years ago, McManus and Humphrey<sup>1</sup> first noted a left-cheek bias in portraits. Their examination of 1474 single-subject paintings, dating from the 16th to the 20th centuries, found that sitters were more likely to be depicted in left-cheek (68% female, 56% male) than right-cheek (32% female, 44% male) poses. The finding was sufficiently novel to warrant publication in *Nature* and has since been repeatedly replicated in other collections of painted<sup>6</sup> and photographic portraits,<sup>2</sup> including selfies<sup>7</sup> and photos uploaded to Instagram.<sup>8</sup>

McManus and Humphrey<sup>1</sup> offered numerous speculations to account for the asymmetric portrait-posing preference. Perhaps it reflects a mechanical bias? As most of the population is right-handed, right-handed artists may favor left-cheek poses because left profiles are easier to compose (smooth abductive arm movements



**FIGURE 1.** Portrait of Lisa del Giocondo by Leonardo da Vinci (1503–1506; Louvre Museum; public domain).

facilitate drawing a left-cheek profile in a single arc<sup>6</sup>). The artistic setup may also favor left-cheek poses, as right-handed artists hold their palette using the left arm and typically view the sitter over their palette rather than over their moving painting arm. Though intuitively appealing, subsequent research has ruled out such mechanical accounts, finding that the left-cheek bias persists across both left- and right-handed artists,<sup>6</sup> is evident in photographic portraits,<sup>2</sup> and is reversed in artists' self-portraits.<sup>9</sup>

Alternately, the left-cheek bias could reflect a perceptual phenomenon: perhaps

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Dr Lindell is a senior lecturer in the Department of Psychology, Counselling and Therapy at La Trobe University in Melbourne, Australia.

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Corresponding author: Dr Annukka K. Lindell, a.lindell@latrobe.edu.au.

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## BEYOND MEDICINE

viewers prefer portraits showing models in left-cheek poses. Such a perceptual preference would be consistent with human cortical anatomy. The right hemisphere plays the dominant role in face processing, with the fusiform face area right-lateralized in most right-handers.<sup>10</sup> When sitters are depicted in left-cheek poses, the majority of their facial features appear on the left side of the image, which projects immediately to the right hemisphere, enhancing face-processing efficiency. Again, however, research has ruled out this account, as it cannot explain why the left-cheek bias is reversed in artists' self-portraits<sup>6,9</sup> or is stronger for females than males.<sup>1</sup> Instead, it seems there is something very special about the left cheek itself.

### Emotion and the left-cheek bias

Having ruled out mechanical and perceptual accounts, Nicholls and colleagues<sup>6</sup> offered a novel suggestion to explain why people favor their left cheek in portraits: emotion. As the lower two-thirds of the left

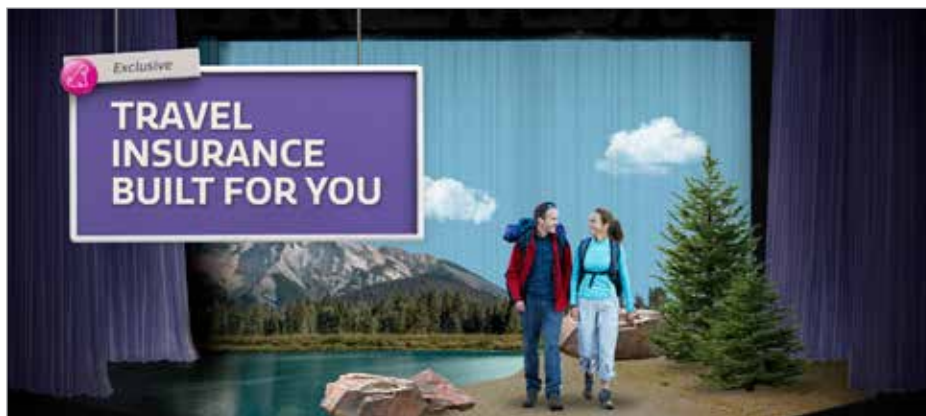
hemiface is contralaterally controlled by the emotion-dominant right hemisphere,<sup>11</sup> the left cheek is anatomically more expressive than the right<sup>12</sup> and moves more than the right cheek when we express emotion, irrespective of valence.<sup>13</sup> Thus, whether smiling or sneering, the left side of the face is physiologically more expressive than the right.

Though few people are consciously aware that the left side of the face expresses stronger emotion, we appear to intuitively understand this anatomic asymmetry. When Nicholls and colleagues<sup>6</sup> asked people to pose for a photo as a loving family member expressing as much emotion as possible, they offered the left cheek. Yet when asked to pose for a photo as a member of the Royal Society (the British fellowship of scientists and scientific academy), concealing as much emotion as possible so as not to appear smug or arrogant, people instead offered the right cheek. The fact that we offer the left cheek to express and the right cheek to conceal emotion implies an intuitive understanding that the left cheek is

more emotionally expressive than the right.

Given that the left hemiface is anatomically more expressive,<sup>12,13</sup> left-cheek poses communicate stronger emotion than right-cheek poses. Research confirms that people perceive left-cheek portraits as more emotive and rate models in left-cheek poses as more emotionally expressive than identical models in right-cheek poses.<sup>14,15</sup> Critically, this bias persists even when the portraits have been mirror-reversed, making a left-cheek pose look like a right-cheek pose and vice versa; the left cheek's greater physiognomic expressivity is evident despite perceptual manipulations.<sup>14,15</sup> Thus, the relationship is bidirectional: people offer the left cheek to express emotion, and viewers perceive left-cheek poses as more emotionally expressive (see Lindell<sup>16</sup> for a review).

Nicholls and colleagues<sup>6</sup> consequently propose that emotion underlies the left-cheek bias for portraits. As social mores allow female expression of emotion but discourage similar male expression,<sup>17</sup> males are less inclined to express emotion.<sup>18</sup>



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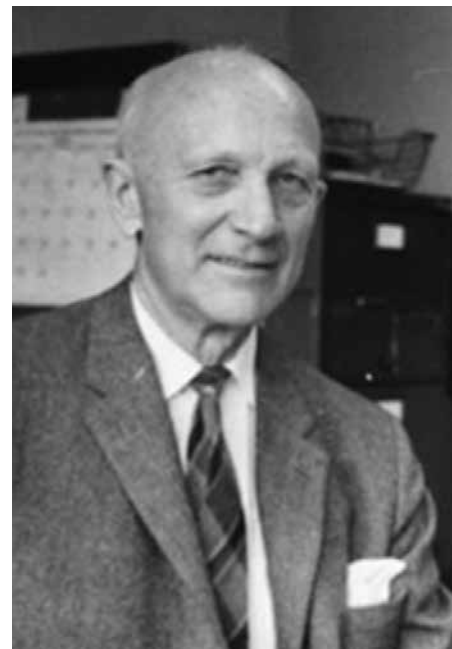


An emotion-based account thus explains why the left-cheek bias is stronger for females than males. Consistently, research shows that people who rate themselves as more emotionally expressive are more likely to pose offering the left cheek.<sup>14</sup> An emotional account also explains the reversed bias seen in self-portraits:<sup>9</sup> prior to the advent of photography, artists offering their left cheek to a mirror would see it reflected back as a right-cheek pose, explaining why artists show a left-cheek bias for portraits of others but a right-cheek bias for self-portraits.<sup>6</sup> The left-cheek bias seen across media, from Renaissance paintings<sup>1</sup> to selfies uploaded to social media,<sup>3</sup> is thus argued to stem from an underlying motivation to communicate emotion.

### Doctors and scientists buck the trend

Scientists and doctors fail to follow the left-cheek bias for portraiture. Nicholls and colleagues first noted that the Royal Society's collection of portraits of scientists (featuring luminaries including Brahe, Einstein, and Newton) shows no cheek bias, arguably conforming to the "popular conception of scientists as unemotional logical rationalists."<sup>6</sup> Subsequent research has shown that people in right-cheek portraits do appear more scientific;<sup>5</sup> indeed, identical models are seen to look more like chemistry students when offering the right cheek and more like English students when offering the left cheek, even when mirror-reversed.<sup>19</sup> Academics' web page portraits conform to these stereotypic expectations, with mathematicians, chemists, and engineers showing a right-cheek bias, whereas English academics offer the left cheek.<sup>20</sup> Thus, the cheek shown influences perceived academic specialization, with right-cheek portraits appearing more scientific.

How, then, do doctors pose? Do they favor the left cheek, enhancing emotional expressivity, or strengthen their scientific standing by offering the right [Figures 2 and 3]? Just like the scientists in the Royal Society,<sup>6</sup> portraits of doctors show no cheek bias. Churches and colleagues<sup>4</sup> examined



**FIGURE 2.** Neurosurgeon Wilder Penfield. **LEFT:** Portrait of Wilder Penfield, director of the Montreal Neurological Institute, 1934–1960. Date: 1934CA; type: NEG B/W (McGill University Archives; public domain). **RIGHT:** Portrait of neurosurgeon Wilder Penfield in 1958 (United States National Library of Medicine; public domain).



**FIGURE 3.** Physician Hippocrates of Kos (460–377 BC). **LEFT:** Portrait of Hippocrates from *Hippocratis Aphorismi*, König, Strasbourg, 1756. **RIGHT:** Engraving of a bust of Hippocrates by Paulus Pontius after P.P. Rubens *ex marmore antique*, 1638. Copyrighted work available under Creative Commons Attribution 4.0 International licence (CC-BY-4.0) <http://creativecommons.org/licenses/by/4.0/>. Wellcome Library, London. Wellcome Images; [images@wellcome.ac.uk](mailto:images@wellcome.ac.uk); <http://wellcomeimages.org>; HIPPOCRATES {460?-377 B.C.}.

## BEYOND MEDICINE

5914 web page portraits of “physicians and surgeons” available via the “Find a doctor” links on two large US health websites, with the portraits presumably chosen to present a strong first impression that helps patients select a doctor. While there is a common conception that surgeons are less emotive than physicians,<sup>21</sup> portrait-posing biases for the two groups were no different, with neither surgeons ( $N = 1288$ ) nor physicians ( $N = 3392$ ) showing a cheek bias. Thus, doctors are distinguished by their lack of posing bias, unlike the vast majority of portrait collections.<sup>16</sup> The absence of bias appears consistent with the important roles of both emotional empathy and scientific rationality in medical practice.

### Conclusions

When posing for a portrait, the pose you adopt communicates more than your best side. Because the left side of the face is anatomically more expressive,<sup>12</sup> left-cheek portraits convey more emotion,<sup>14,15</sup> while right-cheek portraits appear more

scientific.<sup>5</sup> Although the majority of portraits show a left-cheek bias,<sup>16</sup> doctors buck the trend, showing no bias.<sup>4</sup> Depending on the impression you wish to convey, it may be time to turn the other cheek. ■

### Competing interests


None declared.

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