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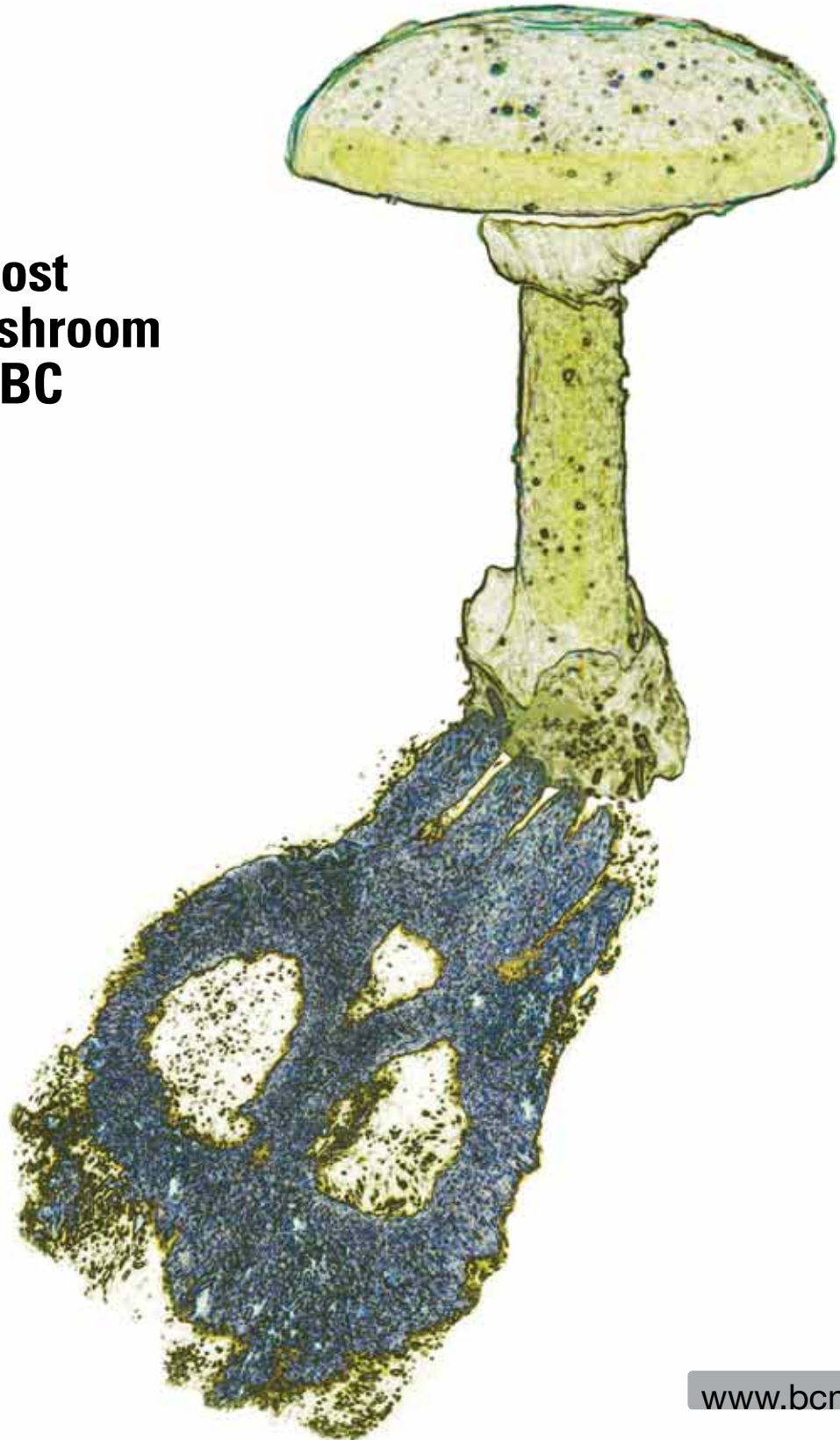
**Cannabis use by adolescents:
Practical implications for clinicians**

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BCM J
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**The world's most
poisonous mushroom
is growing in BC**





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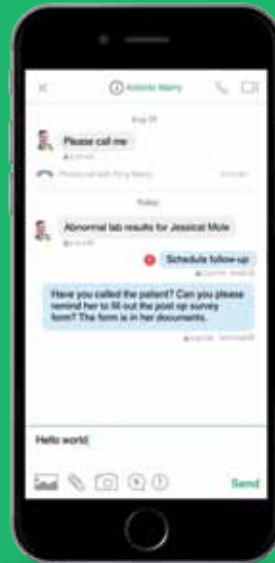
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ON THE COVER

The expanded range of *Amanita phalloides*—commonly called death cap mushrooms—into many regions of BC puts foragers at risk. Recognition of amatoxin poisoning is essential to preventing future fatalities.

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

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Make the call

“Hello Mr Smith, I’m Dr Richardson and I have been assigned as your physician during your hospital stay,” I stated as I approached a frail, cognitively and hearing impaired elderly gentleman on the ward. “You have pneumonia, and we are going to try and make you better,” I explained.

“What? You have to take my leg off?” he asked, somewhat surprised.

“No, Mr Smith, you have pneumonia, and we are going to make you better,” I restated in a louder voice.

“Well, you gotta do what you gotta do,” he said somewhat resigned to his fate.

Fortunately, Mr Smith improved with IV antibiotics and was discharged with both legs intact, much to his relief. My point is that good communication is a big part of being an effective physician. Not only are informed patients more accepting of necessary treatments, but I would argue that their clinical outcomes also improve.* Good communication takes time, and before granting my halo please realize I often fail miserably in this department.

My aging mother has spent most of the last few months accessing and consuming the health care dollars she contributed through her lifetime of MSP premiums. She is currently in the midst of her third protracted hospital stay involving numerous tests and procedures. This has highlighted another area of communication for

Good communication is a big part of being an effective physician.

me—the often forgotten job of keeping families informed. My mother doesn’t have any cognitive issues so her care team is able to communicate with her directly. However, when I ask about her treatment plan she often shrugs her arthritic shoulders claiming it isn’t clear to her. The cleaning staff who are in the area, while very good at their job, fall a little short when asked about the next step in treating heart failure. In addition, attempting to get further information from the various nurses who come on and off shift is very difficult. I so ap-

preciate when one of her physicians takes a moment to call me and update me on her condition and next steps. Sadly, telephone contact like this is quite rare. My recent experience has encouraged me to keep the families of my patients, particularly those in hospital, more informed. I have always found family members incredibly thankful for a brief update about further investigations, treatment plans, and potential length of stay. This information prepares them for the worst or allows them to make plans for potential discharge or a change in level of care. I find these phone calls take only a few minutes, but they are appreciated by all and well worth the effort.

So, one of my resolutions for 2019 is to call relatives less sporadically and more regularly. I encourage you to do the same. Happy New Year to you all.

—DRR

*I have no proof of this and I am certainly not going to perform a low-response survey study as evidence (see my September 2018 editorial concerning such studies).

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Email jail

I feel like I am not unusual in sometimes planning to just shoot off an important or timely email when I have the required 2 minutes, especially when I know I might forget about it or just not get to it later. Just 2 minutes.

Perhaps you've shared this scenario: You have written your quick but eloquent missive and are standing up while pressing *send* on your way to your next consult, when you see that big beige box appear across your screen: "You have exceeded the storage limit for your mailbox. You may not send or receive emails."

In the privacy of my office, seeing that message will almost always be accompanied by a loud expletive-laden frustrated groaning blustering, "AAAARGGGHH, email jail!" emanating from what feels like the depths of my own motherboard. A task that should have taken 2 minutes either has to be aborted or put on hold, or I have to sit down and spend time deleting larger emails, then emptying the trash, then finding my draft, and then attempting a resend. If the mailbox cleanup did not suffice, then I have to go back and pick what must be dumped forever.

My emails live in an institutional account in an academic practice. I really, truly understand and respect limitations of shared storage space. I was fortunately once granted a glorious increase in allowable space, and I delete and archive regularly, although I am suspicious of archiving because I was burned once when *all* of my archived files disappeared with my trusty old computer (or became inaccessible) when the hardware was being updated. My archived emails had apparently been set up to be saved separately using older software or something-something-acronym-laden-IT-words something. But the cold hard result was that I didn't have them anymore.

If I am answering emails on my phone, the notification that alerts me that my emails haven't been sent due to my exceeding my mailbox limit is much less prominent, and the emails may nest in my outbox while I, blissfully unaware of their purgatorial fate, wait patiently for answers to emails my recipients haven't received.

It is often important to be able to store and search emails. I cannot print and file all of the emails that may be important in the future. In a world where physicians like me work with or within a hospital administrative structure for years or generations longer than the administrators on the current letterhead, we may have the most or even only institutional memory. Many of those memories are embedded in my email threads, and they will often be the source of information closest to the truth of decisions, plans, mistakes, and promises made.

I also run a practice where photographs are important. Patients living in the far reaches of the province understand the nonconfidential nature of email but consent to sending pictures of wounds and tissue expander progress because, on balance, that is how they can most effectively and safely communicate important questions or concerns. This practice is imperfect and reprimandable, but the proper route, which involves secondary websites and complex workarounds, involves levels of encryption and registration that are, in practice, not achievable by most of my patient families. We don't have a PACS system in our health region that allows patient photos to be sent, archived, and confidentially accessed like radiological images, so when a family sends them to my email, I save them as soon as I can to my individual institutional photo archive behind our firewall or print them for the patient chart, and then, in both cases, immediately delete the images from my in-

box. This disposition requires me to be at my hospital office desktop. But there are days when I may receive 15 to 20 MB of photos, and I am not able to be at my desk, and I have to choose to delete them, save them to my laptop, or remain in email jail. Because of the firewall, I can't save them separately in a fashion that provides sufficient confidentiality. I need to find a better way.

So, I am now on the reduce-the-size-of-emails bandwagon. There are days when I get over 100 emails. Every time someone sends an email that is more than 500 KB, that adds to the total. I get notices of rounds, administrative news, and meetings every single day, including on weekends, many in which there are legitimately a few sentences of important information, but they are delivered via a PDF attachment with decorations, photos, and large announcement fonts that turn it into a 2 MB email. Announcements from the Department of Surgery are usually forwarded again at the divisional level, so the duplication doubles the megabytes. I recently printed a letter announcing a lovely award nomination that had four lines of content in it, but was a 5 MB attachment.

I encourage everyone to start applying the environmental movement's "reduce" portion of the three Rs to emails.

First, do I really need to receive the email in the first place? Large group emails often don't need to come to me the first time, let alone be answered with reply all. And honestly, if you need to really emphasize something within email text, instead of attaching a word file, I'm okay if you use a few ALL CAPS; I won't accuse you of yelling. Say what you need to in the body of the email, and make the subject line logically searchable. If I don't need to see details smaller than

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Continued from page 7

the pixilation of a small image, use the option that allows you to reduce image size. All of us with limited storage would be very appreciative if you could keep attachments and photos

small, and use them only when necessary. Please don't embed photos or fancy logo attachments in ways that I can't un-embed or that aren't really necessary. Don't forward attachments I don't need, and take every opportu-

nity to reduce the size of attachments when you do forward.

I will continue to do my best to archive and delete, keep printing to a minimum to save trees, and avoid jail.

Emptying the trash, thanks.

—CV

letters to the editor

When MDs treat other MDs: Sometimes less is more

In medicine, the opportunity to care for a colleague is a unique and rewarding one. However, it can be difficult to balance the desire to provide prompt care with the risks of over-investigation and treatment. Here we present the case of a retired surgeon turned patient that exemplified some of these challenges and provided us with a learning opportunity that we'd like to share with readers.

An 81-year-old male surgeon was evaluated for chest pain, palpitations, and a troponin elevation. Acute coronary syndrome (ACS) was promptly diagnosed and standard therapies, including a coronary angiogram, were requested. Subsequently, laboratory tests revealed an acute kidney injury (serum creatine 404 $\mu\text{mol/L}$), supported by the presence of hyperkalemia (K^+ 5.8 mmol/L). The on-call nephrologist was consulted; the patient's K^+ was pharmacologically treated, a Foley catheter was placed, a renal ultrasound was requested, and the angiogram was canceled. Several hours later, follow-up laboratory investigations were entirely normal. It was then determined that the original tests were reported in error, and likely no acute kidney injury was ever present. Unfortunately, our patient sustained trauma from the Foley, and

the angiogram needed to be delayed owing to bleeding concerns on his ACS medications.

Medical errors are not uncommon occurrences,¹ and most relate to human factors.² A variety of decision support systems and quality improvement protocols exist to reduce mistakes.³ Errors made by analytical equipment are less common and are on the decline.⁴ In this case, the error related here not only resulted in patient harm but also led to needless investigations, prolonged hospitalization, and specialist referral. (In 2005, the average cost of hospitalization for ACS in Canada was \$80 000.⁵) Thankfully, our patient recovered quickly and experienced no long-term morbidity. He graciously accepted our apology. As a retired surgeon, he wisely reminded the cardiology trainees to interpret laboratory results in the appropriate clinical context! It was a teachable moment in many respects.

—Thomas M. Roston, MD,
FRCPC

—Pol Darras, MD, MSc, FRCPC

—Morris Pudek, PhD

—David A. Wood, MD, FRCPC

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Re: Residential care disparities

I recently came across a report while on a public health elective in my fourth year of medical school. Admittedly, I am new to medicine, but I was truly shocked by the data presented by the Office of the Seniors Advocate BC. These provincial data were powerful, concluding, "if you are a resident living in a licensed care facility operated by a *contracted* provider versus one operated by a health authority, you are 32% more likely to be sent to the emergency department, 34% more likely to be hospitalized, have a 32% longer length of stay, have a 47% greater likelihood that you will become an 'Alternate Level

of Care' (ALC) patient, and be 54% more likely to die in hospital."¹

I went looking for these data because of a trend I had been seeing throughout my hospital-based electives. In my short career in medicine to date, I have encountered a number of patients with preventable admissions and have seen many negative consequences of the designated ALC label, something I'm sure more experienced physicians could relate to. Preventable transfers from contracted care facilities to hospital not only increase the demand on hospital physician and health authority resources (\$17 million and over 16 000 beds annually),¹ but also result in poor outcomes for BC's vulnerable senior population. Contracted care facilities are not performing at the level of health authority facilities, and the Seniors Advocate report provides an excellent analysis attempting to get to the root cause. This is an important issue with hospital costs and congestion increasing. Reducing unnecessary hospitalization for seniors by decreasing the disparity between health authority and contracted care facilities is a worthy goal both for the taxpayer and for improving the lives of seniors.

—Sarah Fraser, BSc
Kelowna

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Re: Pseudoscience, anti-science, and woo

Dr Cadesky wrote a powerful editorial on the importance of stories in patient education [*BCMJ* 2018;60:343]. While I wholeheartedly agree on the effectiveness of using personal narrative to drive social change, I wish to also point out the importance of physicians' language in engaging patients. Dr Cadesky encourages "[mentioning] our wheelchair-bound patients who have polio to vaccine-hesitant parents."

As a physiatrist, I regularly work with patients who use wheelchairs. Many will tell you that these devices are not binding, but rather opening. Wheelchairs may help our patients do things many able-bodied individuals take for granted—move about on our sidewalks and in our parks instead of being stuck at home, conserve the energy it takes to walk with a disability so that it can be better spent on time with family, and participate in sports

like wheelchair basketball for social and health benefits.

The language we as physicians use has a powerful influence on how patients see themselves, how families see patients, how our colleagues and medical learners see patients, and how patients feel their physicians see them. Thus, language can help empower our patients, or it can alienate them. I encourage my fellow physicians to consider their own unconscious biases toward their patients who are differently abled, and to reflect how this plays out in the words they use in clinical settings. Maybe we need to change the language we use in our stories, too.

—Ranita Manocha, MD, FRCPC
Calgary, AB

Re: Diabetes in BC

Dr Ur, in his editorial for the November 2018 diabetes theme issue [*BCMJ* 2018;60:436-438], suggests we are grossly undertreating diabetes in BC, and that British Columbians deserve better.

Epidemiological evidence does not support this assertion. Data from the Canadian Institute of Health Information¹ found that Alberta and BC have the lowest rates of diabetes

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Nutrition in Primary Care Update and Controversies

April 6, 2019

SFU Harbour Centre, Vancouver



This program is designed to enhance primary care providers' knowledge of applied nutritional biochemistry and the associated research literature pertaining to several conditions commonly encountered in clinical practice. Various levels of evidence will be presented for evaluation and discussion, in order to facilitate improved communication with patients about health promotion, disease prevention and preferences for treatment.

Information and online registration: www.isom.ca/event/npc-bc/

This Group Learning program has been certified by the College of Family Physicians of Canada for up to 5.75 Mainpro+ credits

An endangered species: How to save ourselves

The North Atlantic right whale. The spotted turtle. The community-based doctor. These are all species at risk.

The signs are clear: long wait lists;¹ offices that move or close;² retiring doctors who can't find replacements³ and orphan their patients; fewer doctors choosing community-based practice, especially those with longitudinal relationships; burnout, incivility, and suicide.

Health care is always dynamic, but it feels like change—and the pressures it brings—is accelerating exponentially. The cost of living and doing business in British Columbia is increasing as both personal and commercial rents are rising faster than the medical payment schedule. While we advocate for networks that allow improved patient access to doctors who know them, relationships are already fragmented by in-person and virtual episodic-care clinics. Executive physicals, wellness spas, and alternative providers further stress our system in the cases of inappropriate investigation, diagnosis, and treatment. All of this leads to the cycle of increased demands for services and more complex visits for doctors.

We have seen new graduates reject traditional styles of practice while longing for a system that supports them to practise the high-quality relationship-based care they were trained for and desire. We can hardly blame our colleagues who choose positions with fewer administrative burdens—don't we all dream of a future free from interminable forms, faxes, and phones?

What we need is a new model that allows doctors, and, for that matter, all health care professionals, to practise to their scope and spend more time with patients. I won't pretend to have

the answers for how to reinvigorate community-based care that allows doctors to practise the way we were trained, but here are some principles that I believe could help our species.

New food sources

Traditionally the fee-for-service system has been based on swings and roundabouts: straightforward visits balanced by longer, more complex ones. But with competition for lower complexity services, this survival

What we need is a new model that allows doctors to practise to their scope and spend more time with patients.

model no longer holds. Rather than dig in our heels, we should cede this territory and embrace the potential of artificial intelligence, while letting nurse practitioners and physician assistants practise to their scope. This, of course, requires a new way of funding doctors to focus on the valuable types of care that only we can provide. Such an ecosystem would be more harmonious and would allow us to make the best use of our skills. It would likely involve team-based care and may not fit nicely in the fee-for-service box, although we should remain agnostic about the particular funding model while work on this continues.

Sustainable habitat

Doctors have traditionally taken on the burden for a large part of health care infrastructure, paying for work-space, supplies, staffing, insurance, and other costs. As collaborative practices become more prevalent, we need to look at separating the funding for care from the funding for infrastruc-

ture. As always, this should be a choice: some doctors with an entrepreneurial spirit may want to remain involved in day-to-day operations and enjoy the associated business autonomy. Others may want to focus on clinical care and perhaps work part-time in multiple settings that provide rewarding and varied opportunities. Again, we should not advocate for a particular option but rather for doctors to have the autonomy to decide how they balance clinical and administrative duties.



Flock together

We have seen elsewhere what happens when the interests of small groups are put above those of the entire species. While there may be times when we do not get what we feel we deserve on a particular issue, letting smaller disputes erode our overall relationships with each other weakens us as a profession. Our brains are wired to attend to changing stimuli, so we must work hard and not lose sight of the fact that we have much more in common than not. No matter where we practise, what we practise, or our stage of practice, we all work together to care for our patients, our communities, and each other.

We are as strong as we are united. Tribalism and identity politics within our profession are the fastest paths to extinction. Rather, let us come together as a mosaic and encourage diverse thoughts so that we can hear all ideas and respect each other's unique views in the context of a whole profession. We are at a tipping point with

the viability of community medicine in peril. As we stand together in a changing climate there may be some projects we can quickly act on. The divisions of family practice and medical staff associations are acting locally, along with pilot projects through the Joint Collaborative Committees. And while negotiations on the next Physician Master Agreement will address these issues, such change will not be quick.

As an organization, Doctors of BC is working hard to achieve a more positive future. In return for your trust, there is accountability. I personally promise to continue to inform you whenever there is an agreement or announcement that affects you. This also means that between announcements there will be periods of relative silence; please do not mistake these for inactivity.

These are some of my thoughts, and I encourage you to share yours with me. No one person has the answers, but by listening to each other and working better together I am confident we will find the solutions to save our species.

—Eric Cadesky, MDCM,
CCFP, FCFP
Doctors of BC President

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in Canada. Diabetes Canada also confirmed this incidence rate² and even proposed that by 2020, BC, at 25.4%, will have the second lowest prevalence of diabetes and prediabetes in Canada, after Alberta (23.6%) and will remain below the Canadian average (26%).

BC has the lowest rates of obesity, the highest rates of physical activity, and the highest per-capita consumption of fruits and vegetables in Canada. Perhaps we're already doing well compared to other provinces? Some might wonder, maybe we are not sufficiently screening for diabetes in BC? Not if what Diabetes Canada says is reliable, when they report that among all Canadian provinces, BC has the highest rate of screening for diabetes in Canada.³ Canada has great variability, across provinces, how many diseases impact the population. In terms of diabetes hospital admissions, Quebec and BC have the lowest rates in the country, below the Canadian and OECD averages.¹

Dr Ur's article, "Challenges to managing type 2 diabetes in British Columbia: Discordant guidelines and limited treatment options" not surprisingly, is highly critical of the Therapeutics Initiative.

Diabetes is a major cause of morbidity in British Columbia, but there are also myriad other health care issues. It is only reasonable that scarce funds are not wasted on very expensive new patented medications when generic ones may suffice.

—John Sehmer, MD, MSc
Vancouver

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Author replies

In his letter, Dr Sehmer disputes our assertions regarding the limited treatment options for diabetes in BC, yet he cites epidemiological data on incidence rates, obesity, and physical activity, none of which are relevant to our argument, and none of which we dispute.

British Columbia is indeed fortunate to have a somewhat lower (though still alarming) incidence of diabetes, and complex social, economic, and demographic factors are at play here. The problem is what happens to British Columbians after they are diagnosed with diabetes, and it is simply a matter of public record that therapeutic options for diabetes in our province are limited in comparison to the rest of the country. Of course, even in BC, they are not limited for fortunate individuals like government and university employees who have extended employment insurance benefits that provide them with access to modern evidence-based medications that other provinces offer to their less-wealthy residents.

Those who are excluded in BC are the poor and the old, and I do not believe that offering them additional therapeutic options would constitute wasting scarce funds.

Multiple recent trials have demonstrated outcome benefits (CVD, total mortality) for these newer, more expensive medications. Benefits that have never been demonstrated

Continued on page 12

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for older cheaper drugs (as concerns for their harms grow).^{1,2}

—Ehud Ur, MBBS, FRCPC
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Impact of donor origin on survival after orthotopic heart transplantation

Heart transplantation is the definitive management for select patients with end-stage heart failure in BC. Due to an ongoing organ donor shortage, organs are sometimes allocated from distant locales. These organs may be perceived as less desirable due to donor risk factors and ischemic times. We compared survival after heart transplantation in BC between 1 December 1988 and 21 October 2014 stratified by donors originating from BC, other Canadian provinces, and the US.

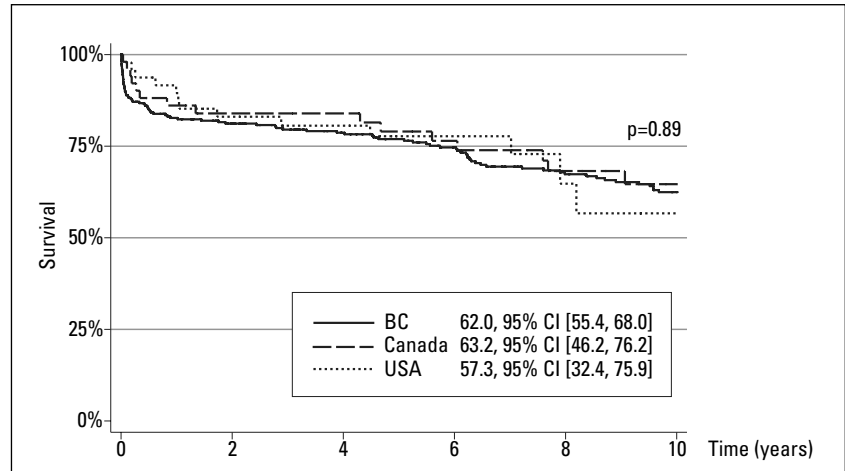


Figure. Survival following orthotopic heart transplantation stratified by donor geographic origin.

Among 382 patients, 297 (77.7%) recipients and 238 (62.3%) donors were male. The median recipient age was 55 years and the median donor age was 33 years. Median ischemic time was lower in BC donors (168 IQR [107.5, 228.0] min) compared with Canada (243 IQR [204.5, 291.0] min) and the US (244 IQR [217.3, 278.8] min) ($P < 0.01$). Overall 10-year survival was 62.1%, 95% CI [56.3, 67.4]. There was no difference in 10-year survival when comparing donors from BC, Canada, and the US (**Figure**) despite significantly different ischemic times. Multivariate Cox regression analysis found no relationship between origin and mortality

after controlling for recipient age, donor age, and cold ischemic time.

Among patients undergoing orthotopic heart transplantation in BC, carefully selected distant-donor organs result in similar long-term outcomes despite increased ischemic times. Incorporating these findings into organ allocation protocols may extend criteria for donor selection, thereby increasing the donor pool and organ availability.

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¹ MD's voluntary departure rate for 2018 was 5.3%. This is lower than MD's voluntary departure rate for 2017, which was 6.4%. The industry average voluntary departure rate for 2017, according to the 2017 Gartner Turnover Survey, was 13.2%. Industry average voluntary turnover has remained consistent with a rate of 14.3% in 2015, a rate of 14.8% in 2016 and 13.2% in 2017.

Year	Industry Average Voluntary Turnover (Gartner Turnover Survey)	MD's Voluntary Turnover
2015	14.3%	3.1%
2016	14.8%	5.2%
2017	13.2%	6.4%

² MD compared the management expense ratio (MER) for MD mutual funds and MD Precision Portfolios™ (applies to Series A fees only) with the average mutual fund MERs for comparable funds, using data from Investor Economics as of December 31, 2017.

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Cannabis use by adolescents: Practical implications for clinicians

It is not clear whether marijuana will turn out to be medicinal at all. Looking for data that might shed some light on the question, the author undertook a review of recent literature and performed a qualitative structured analysis of narratives from 100 adolescent patients who smoke cannabis daily.

A.M. Ocana, MD, CCFP, ABAM

On 17 October 2018, Canada joined nine American states and Uruguay by enacting legislation to legalize, regulate, and restrict access to cannabis for non-medical purposes. So far, legalization has had mixed reviews.

The good news is that teen use appears to be dropping, now that there are serious penalties for selling to minors.¹ The rate of violent crime has decreased by 10%,² and tax revenues have increased, giving some states over US\$100 million annually to spend on programs for mental health and addiction.³

The bad news is that there are more accidental overdoses and deaths,⁴ more cannabis-related convictions for driving under the influence, and more fatal crashes.⁵ Furthermore, high taxes on cannabis have left plenty of room for the black market to continue to thrive.⁶

The most troubling trend is that overall use is increasing in the US.⁷ In Colorado, where there are more marijuana dispensaries than there are Starbucks and McDonald's combined, legal

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This article has been peer reviewed.

Cannabis use by adolescents: Practical implications for clinicians

Over 99% of cannabis is derived from only two species with radically different chemical composition and medicinal properties. The primary chemical index that separates the strains is the THC (tetrahydrocannabinol) to CBD (cannabidiol) ratio.

Cannabis sativa

C. sativa-dominant strains are higher in THC. Sativa is chosen for its psychostimulant properties. It lifts mood and improves cognitive and executive function.



Cannabis indica

C. indica strains have less THC, allowing the CBD to dominate. It has primarily sedative effects. It improves sleep, relaxes muscles, relieves pain, and assuages anxiety.

When speaking to your patient about cannabis use, ask:

- Which strain of cannabis do you use?
- When you use, what are the positives?
- How many days a month do you use?
- When you use, what are the negatives?

A.M. Ocana, MD, CCFP, ABAM
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sales increased by 33% in the last year and by 700% since 2012.⁸ This makes the US cannabis market larger than that for coffee, wheat, or corn⁹ and explains why the three largest cannabis stocks now have a market capitalization of over US\$30 billion and growing.¹⁰

Cannabis usage

Cannabis is the most commonly used illicit drug globally. According to Statistics Canada, nationally, 14% of

Canadians aged 15 years and older reported some use of cannabis products in the surveyed period (February to April 2018) (Figure 1).¹¹ Approximately 8% of all users used some form of cannabis daily or weekly.¹¹ These are the important metrics because they are most closely correlated to health risks.^{12,13}

If you're looking at this scientifically, you might have an issue with the correlation of use to health risks,

because one “daily user” may smoke all day, every day, and another “daily user” may have a few puffs before bed. Nevertheless, the metric of “how many times a week do you smoke” is still valuable, because it allows you to subdivide users into three groups:

- Recreational: less experienced, use less than once per week, more likely to present with drug-induced psychosis and panic attacks.
- Social: moderately experienced, use mostly on weekends (1 to 2 times per week), more likely to experience short-term impairment in cognition and productivity, least likely to present to you clinically.
- Medicinal: most experienced, self-medicate physical but also psychological symptoms, most likely to experience withdrawal and long-term sequelae such as amotivation and chronic depression.

Understanding cannabis

If we are to make any sense of cannabis clinically, we must first appreciate what the drivers are for youth using cannabis, and why they so passionately defend its use.

The North Shore ADHD and Addiction Clinic, based in North Vancouver, British Columbia, provides longitudinal care under the Medical

Services Plan. To help better understand cannabis use among adolescents, we identified 100 charts in our clinic’s EMR of patients who met the following criteria:

- Age: 13 to 25 years old.
- Diagnosis: Cannabis use disorder, *DSM-5* 304.3.
- Date of first visit: January 2015 to October 2017.
- Inclusion criteria: Self-reported smoking cannabis > 20 days per month.
- Positive drugscreen for cannabinoids.

We used qualitative content analysis using a standard approach.¹⁴ Patients were asked standardized questions as part of a comprehensive mental health and addiction assessment at our clinic.

The data were anonymized and deidentified of any demographic information and exported from our EMR, Accuro, to a spreadsheet and then into narrative analysis software, QSR NVivo 11 for Mac. Coding and thematic organization was done by two blinded researchers from our clinic. Numeric data fields included a random numerical identifier and number of days smoked per month. Narrative fields included type of cannabis smoked and patient-rated *Cannabis indica* and *Cannabis sativa* positive and negative effects.

Clinical scenario: The reality of heavy cannabis use

Monday morning, you walk into your office to meet an intelligent 20-year-old postsecondary student. She has been struggling with depression and difficulty concentrating, and is now on academic probation. She is brought to you by supportive parents after a brief episode of drug-induced paranoid delusions. Upon further questioning, she tells you that she finds school boring and she spends most of her waking hours on her phone, playing video games, and smoking cannabis.

You, like most physicians you know, after summing up the available data, have developed a generally negative view on cannabis as a cure-all, are avoiding discussing your views with patients because you don’t feel well-enough informed, or are taking a wait-and-see approach.

Now is the time to take a deep dive into cannabis.

Cannabis botany

Despite the huge variety of cannabis available, over 99% is derived from only two species with radically different chemical composition and medicinal properties. They are essentially polar opposites: *C. sativa*, which is a stimulant, and *C. indica*, which has primarily sedative effects.

While extensive cross-breeding has entangled the species over the years, phytochemical, genetic, and clinical research continues to support their separation.¹⁵

Cannabis chemistry

The primary chemical index that separates *C. sativa* and *C. indica* is the THC (tetrahydrocannabinol) to CBD (cannabidiol) ratio. *C. sativa*-dominant strains are higher in THC. *C. indica* strains have relatively less THC effect, allowing the CBD effect to dominate.¹⁵

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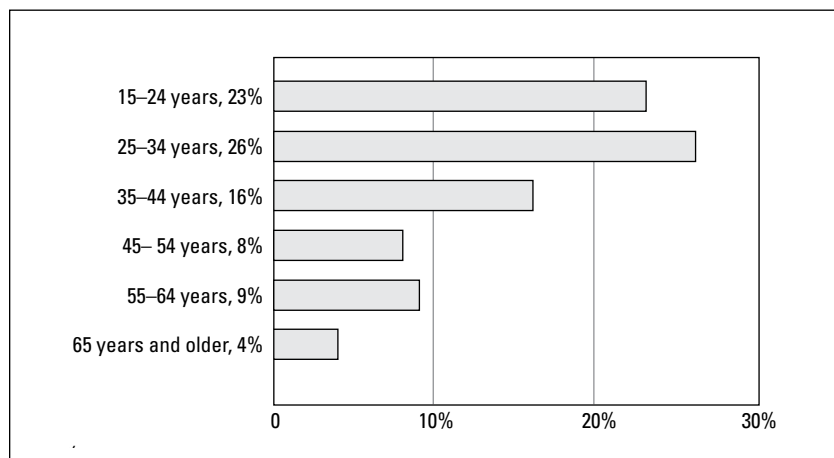


Figure 1. Percentage of cannabis use by Canadians, February to April 2018, by age group.

Source: Statistics Canada (<https://www150.statcan.gc.ca/n1/daily-quotidien/180418/cg-b002-eng.htm> - [wb-contwww150.statcan.gc.ca/n1/daily-quotidien/180418/dq180418b-eng.htm](https://www150.statcan.gc.ca/n1/daily-quotidien/180418/dq180418b-eng.htm)).

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Results from US federal drug detection laboratories in Colorado indicate that the average *C. sativa* strain has a THC to CBD ratio of 250:1, whereas the average *C. indica* strain has a ratio of 100:1.

Hybrids vary in their composition of THC, CBD, and other cannabinoids. They are referred to by the dominant cannabinoid ratio inherited from their lineage, and they are often given colorful names such as Acapulco Gold, Northern Lights, or Purple Kush.¹⁶ Even today, no one really knows if THC and CBD are the most relevant cannabinoids. Significant data support the inclusion of multiple other active chemicals such as cannabitrinol and terpenes in some strains.¹⁷

Cannabis neurobiology

The different strains of cannabis exert their psychoactive effects relative to which cannabinoid receptors are stimulated or inhibited. The CB1 receptor is densely distributed predominantly throughout the brain, while the CB2 receptor affects immune tissues and cells in the periphery.

These receptors subsequently modulate neurotransmission in multiple circuits:

- The increase in peripheral serotonergic tone is associated with pain relief, sedation, anxiolysis, and in the extreme, hallucinations.
- The stimulation of mesolimbic dopaminergic circuits is associated with the reward and psychostimulant effects.¹⁸
- The decrease in glutamatergic neurotransmission and the stimulation of GABA and various other permutations of circuits are associated with antinausea, mood-stabilizing, and antiseizure properties. Glutamate inhibition also explains how *C. indica* produces the “turning off my brain” effect that is so prized for its ability to promote sleep.¹⁹

Cannabis as self-medication

Adolescents don’t choose to become addicted to cannabis. However, when they experience improved sleep or mood, or lessened pain, cannabis becomes their best friend and self-medication of choice, the synthesis of which usually cements their opposition to further discussion.

Self-medication is the most consistent theme in our patients’ narratives. As opposed to recreational users, chronic daily users specifically modulate three key factors to obtain their desired therapeutic effects:

- Strain (*C. sativa* versus *C. indica*)
- Amount used
- Day or evening use

Specifically, *C. sativa* is chosen for its psychostimulant properties. It lifts mood and improves cognitive and executive function. *C. indica* is generally experienced as sedating. It improves sleep, relaxes muscles, relieves pain, and assuages anxiety (Figure 2 and Figure 3).

This narrative from a 19-year-old daily cannabis user is typical of the cohort: “I smoke *sativa* during the day. It is more stimulating and it helps me get things done. I smoke *indica* before bed. It relaxes my muscles and eventually helps me sleep. Psycho-

logically, it slows down my thinking process and I feel subtly happier, and calm. The problem is, I wake up in a daze and I need a coffee to get out the door.”

Practical implication for clinicians

These two strains of cannabis have radically different chemical composition, medical properties, and neurobiological effects. They are essentially opposites, a crucial insight unknown by most clinicians.¹⁵ Therefore, it behooves clinicians to know the difference and specify the strain. Similarly, research that has not segmented the data by strain are uninterpretable.

When speaking to your patient about cannabis use, ask:

- Which strain of cannabis do you use?
- How many days a month do you use?
- When you use, what are the positives? What are the negatives?

In doing so, you will gain credibility, laying the foundation for an ongoing therapeutic alliance.

Heavy cannabis use is associated with multiple comorbidities. Screening for depression, anxiety, panic, ADHD, trauma, psychosis, and mania may help tease out the underlying cause for

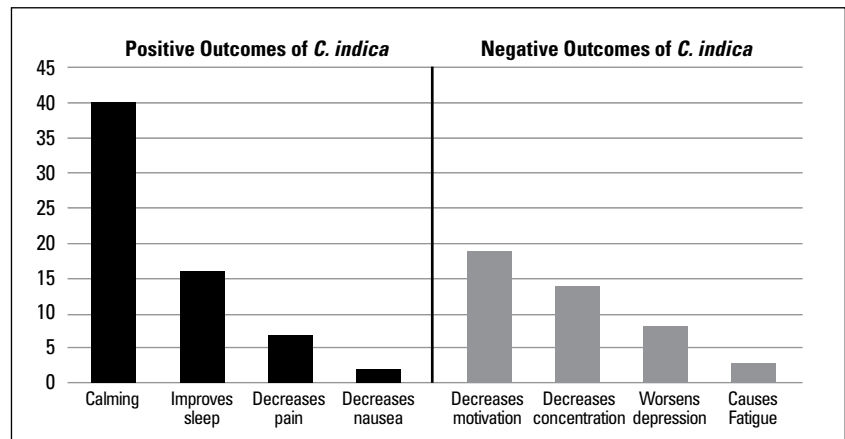


Figure 2. Number of references to positive and negative outcomes of *C. indica* use among 100 patients (age 13–25 years) with cannabis use disorder. Question: “What are the positive outcomes (both short- and long-term) of the product(s) you use? What are the negative outcomes?”

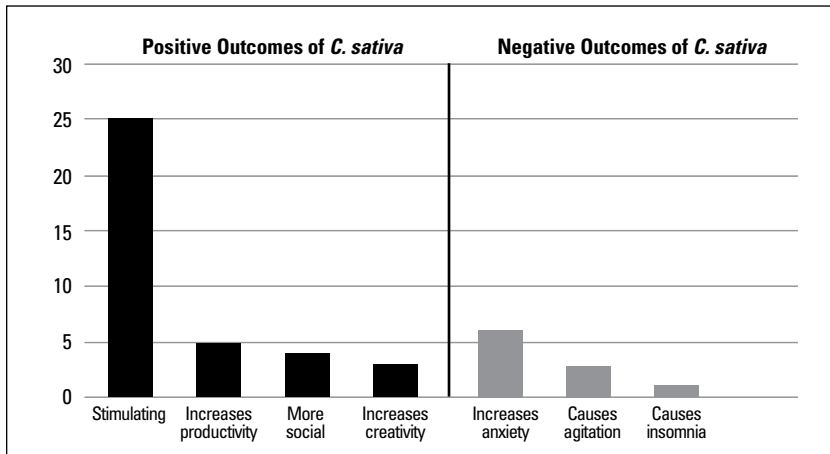


Figure 3. Number of references to positive and negative outcomes of *C. sativa* use among 100 patients (age 13–25 years) with cannabis use disorder. Question: “What are the positive outcomes (both short and long-term) of the product(s) you use? What are the negative outcomes?”

the affect dysregulation for which cannabis is the cure. A family history of substance use is not uncommon.²⁰

Dealing with misinformation

As explained in the new video on the CMA website (www.youtube.com/watch?v=fMsypYm9Kho), “Cannabis may be legal, but it is not harmless because it can hurt your health, cause dependence, impair attention, memory, and ability to make decisions, and make it hard to think, study, work, or cope.”^{21,22} Listing these facts to your patients will not likely be very fruitful because they may be operating under a number of false beliefs and rationalizations that contradict them. The three most commonly held false beliefs about cannabis are that it is not harmful, it is not addictive, and there are no withdrawal symptoms.

False belief 1: Cannabis is not harmful

The misperception that cannabis is not harmful is captured by *Monitoring the Future*, a cross-sectional survey of more than 250 000 American high school students that documents the steady decrease in perceived harmfulness of cannabis in the last 10 years.²³

It’s true that, relatively speaking, the morbidity, mortality, and economic harm to society associated with other legal drugs such as alcohol and tobacco dwarf those associated with marijuana use.²⁴ However, it’s not relative harm that matters, but absolute harm, specifically to the most vulnerable—adolescents with mental health challenges.

The first and most expensive harm of cannabis legalization, from the point of view of health authorities, will be felt in emergency departments from the increase in poisoning, adverse events, and drug-induced psychosis. Researchers in Colorado found that the annual number of visits associated with a cannabis-related diagnostic code, accompanied by a positive marijuana urine drug screen, more than quadrupled between 2005 and 2014 (from 146 to 639).²⁵

That trend will continue because legalization has dramatically increased the number of novice users, who are more likely to underestimate the potency of their cannabis and are therefore responsible for most cannabis-induced ER visits. The symptoms exhibited by these patients include nausea, vomiting, suspicion/paranoia, agitation, psychosis, and occasion-

al respiratory depression, which, in combination with other drugs, can be life threatening.

Edible cannabis products pose the greatest risk to the inexperienced.²⁶ Their presentation is purposefully misleading. They are often unlabeled and packaged as candy in the shape of lollipops or gummy bears. Health Canada, in consultation with experts, has published guidelines that will require edibles to be sold in fixed dosages and, for the moment, edibles remain off the market.²⁷

Fixed dosages unfortunately do not make much difference to novices who still have not titrated dose to effect. Getting edibles right is difficult for any user because the cannabinoids in edibles are absorbed through the GI tract, thus having a slower onset and longer-lasting effects. Given no way to predict the time of onset or gauge the intensity of effect, first-time users often eat too much initially or do not wait long enough for effects to take place before having more, sometimes leading to a hospital visit. It would be helpful to know, and as such be able to warn users about, which strains are particularly psychosis-inducing.

False belief 2: Cannabis is not addictive

The 20-year-old patient in our clinical scenario may point out that only 10% of those who experiment with cannabis get addicted to it—less than cocaine, methamphetamine, or even alcohol.²⁸ This is true, but half of all those who use cannabis regularly become heavy users. And your patient by her own admission is a heavy user. You ask whether she experiences any negative effects, and she admits to the following:

- Significant impairment in her cognition, associated with social anxiety, academic underfunction, and decreased occupational productivity, at least in the short term.
- Noticeable dysphoria upon quitting,

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which prompted her return to continued use.

Since continued use (despite negative consequences) is the de facto criteria for a substance use disorder, it would be fair to say that cannabis is addictive after all.²⁹

This would be a good time to discuss SMART goals with your patient, an acronym that refers to patient-initiated changes that are Specific, Measurable, Agreed upon, Realistic, and Time based. Motivational interviewing might also be effective because it encourages accountability and exploration of patient motivation for using versus quitting.³⁰

False belief 3: There is no withdrawal from cannabis

True, the experience of withdrawal is often less with cannabis than with other drugs. Cannabinoids are fat soluble and therefore stored in adipose tissue, including that of the testes and ovaries. Cannabis also has active metabolites, the combination of which results in slower decay of serum levels of cannabinoids, thus decreasing the experience of withdrawal.³¹

However, the experience of withdrawal has changed over the years as the potency of cannabis has increased markedly. Forty years ago the average potency of smoked flower was 3% to 5% THC. In Colorado in 2015, the average THC level in legal cannabis was 18.7%, with some products containing 30%. Shatter, a crystalized cannabis extract, is 80% THC.³² Higher potency cannabis results in higher serum cannabinoids levels, some of which decay quickly upon cessation of use, thus increasing the experience of withdrawal, dependence, addiction, and relapse.³² At the moment, no one knows which strains are the most addictive.

Here is a typical narrative from a daily cannabis user who recently quit: “When I cut pot out completely, I became more anxious and found that

I could not sleep, and that bothered me. When I started smoking again, I felt better, but then I felt like I was addicted and that’s not really what I wanted.”

Addressing adolescent cannabis use disorder is a process. Inviting your patient to two or three further visits will give you the time to align and address the challenges together.

Managing the impact of cannabis legalization

Overall Canada’s approach to cannabis legalization gets high scores for prevention and harm reduction. Approaching this as a public health challenge, the federal government has sponsored cannabis education flyers, youth-oriented television ads, and videos on the Internet. The CMA has partnered with the Centre for Addiction and Mental Health and a number of other entities and has created sensible guidelines for safer consumption.³³ Local programs in British Columbia have done a masterful job of bringing mental health concepts into schools and creating a system of youth-oriented mental health clinics, known as Foundry.

What Canada lacks, however, is a cohesive information technology (IT) system to measure and compare the impact of different strains of cannabis, or the impact of treatment with cannabis compared with other interventions (e.g., the benefits of cannabis versus opiates to control chronic pain). More importantly, according to Harvard economics professor Michael Porter, there is no way to compare the economic benefits of different interventions until we can collect patient-centric metrics—at the point of care, across the entire care journey.³⁴ Without such predictive analytics, it is impossible to determine, for example, the best approach to the opiate crisis. Should we prioritize training more addiction specialists, teaching firefighters to administer naloxone, paying family physicians to integrate

mental health into workflow, or supporting the patient medical home?

At the moment, mental health and addiction present an expensive, painful, and unmanaged burden on society. We could probably do better if we knew what to do.

Acknowledgments

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Competing interests

None declared.

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The world's most poisonous mushroom, *Amanita phalloides*, is growing in BC

The expanded range of death cap mushrooms—previously found on the roots of imported European trees but now found in association with native Garry oaks—puts amateur foragers at risk, and recognition of amatoxin poisoning is essential to preventing future fatalities.

ABSTRACT: Amatoxins in *Amanita phalloides*, commonly known as the death cap mushroom, are responsible for 90% of the world's mushroom-related fatalities. The most deadly amatoxin for humans is α -amanitin, a bicyclic octapeptide that irreversibly binds RNA polymerase II, thus preventing protein synthesis and causing cell death. Three recent poisoning cases in British Columbia show how the death cap can be easily mistaken for edible mushrooms such as the puffball and the paddy straw mushroom. Since being introduced from Europe to the west and mid-Atlantic coasts of North America, *A. phalloides* has spread to south coastal BC, and has the potential to spread to vast areas of the continent. Following ingestion of *A. phalloides*, there is a latency period (6 hours) followed by intoxication, classically described as triphasic: a dysentery phase (6 to 24 hours), a false recovery phase (24 to 72 hours), and a hepatorenal phase (4 to 9 days) consisting of multisystem organ failure, seizures, coma, and death.

Treatment is based on decontamination and liver transplantation if

acute liver failure occurs. Management of the symptomatic patient consists of providing supportive care, promoting renal elimination of amatoxins, interrupting enterohepatic recirculation of amatoxins, and administering proposed antidotes. Although no established antidote for *A. phalloides* has been identified, N-acetylcysteine and silibinin have

shown some benefit in a retrospective survival analysis. With the expanded range of *A. phalloides* in BC, physicians should be alert to the possibility of amatoxin poisoning and include it in the differential diagnosis of a patient presenting with gastroenteritis or hepatotoxicity and a history of ingesting foraged mushrooms.

The world's most poisonous mushroom is growing in British Columbia



Amanita phalloides, commonly known as the death cap mushroom, is responsible for 90% of the world's mushroom-related fatalities.

CLINICAL PRESENTATION IS TRIPHASIC:



6-24

HOURS

Dysentery phase



24-72

HOURS

False recovery phase



4-9

DAYS

Hepatorenal phase

Management of symptomatic patients includes supportive measures, promoting renal elimination of amatoxins, and early consultation with a liver transplant centre.

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A *manita phalloides*, known commonly as the death cap mushroom, causes life-threatening hepatorenal dysfunction when ingested. Considered the most poisonous mushroom in the world, *A. phalloides* contains amatoxins, a group of bicyclic octapeptides that are responsible for 90% of global mushroom-related fatalities. One cap of *A. phalloides* is sufficient to cause death in an adult.¹⁻³

The death cap was first introduced to British Columbia on the roots of imported European trees and has since spread to North American oak trees.^{4,5} Death caps are now found increasingly in urban settings. In 2017 the Canadian Forest Service and Oak Bay parks department reported that death caps in the Victoria area sprouted earlier and in greater numbers than in previous years.⁶ The spread of this invasive species has led to cases of morbidity and mortality from ingestion of the mushroom and an ongoing risk of misidentification. Health care providers need to be aware of this risk, as prompt recognition and appropriate management are critical for positive patient outcomes.

Distribution

A. phalloides is not native to North America. First identified in Europe, the species has now traveled to Australia, Asia, Southern Africa, and the Americas on the roots of imported trees.⁵ The first confirmed collec-

tion of *A. phalloides* in North America was in northern California at the Hotel Del Monte in 1935, a location famous for its exotic and unusual gardens.⁵ Since then, the death cap has been introduced to multiple sites in the Pacific Northwest.

A. phalloides specimens were first collected in BC in 1997 from under European chestnut trees at Lake Errock in the upper Fraser Valley. The first identification of *A. phalloides* in Victoria was in 1998 from under a large European beech tree on the landscaped grounds of Government House, the residence of BC's lieutenant governor. *A. phalloides* was detected in Vancouver in 2008 under European hornbeam trees that had been planted by the city in the 1960s.⁴ Since these first specimens were collected, there have been numerous reports of *A. phalloides* found in Vancouver and the Fraser Valley, on Southern Vancouver Island, and on the Gulf Islands.

As an ectomycorrhizal fungus, *A. phalloides* forms an obligate symbiotic relationship with the roots of trees, which have been mostly nonnative, broad-leaf trees.^{4,5} This association may have limited the mushroom's spread so far. However, in Victoria *A. phalloides* has now been found in association with native BC Garry oak trees, which may allow the mushroom to expand its range even further.⁴ Pringle and colleagues estimate the speed of *A. phalloides* spread among native California coastal oak at 5 km per year on average (range 3 to 9 km/year).⁵ Additionally, predictive climate suitability mapping shows that most of south coastal BC is appropriate habitat for *A. phalloides*⁵ (Figure 1).

Mushroom foragers and health care providers should be aware of the expanded range for this highly toxic mushroom in order to prevent fatalities from the death cap in the future.⁷

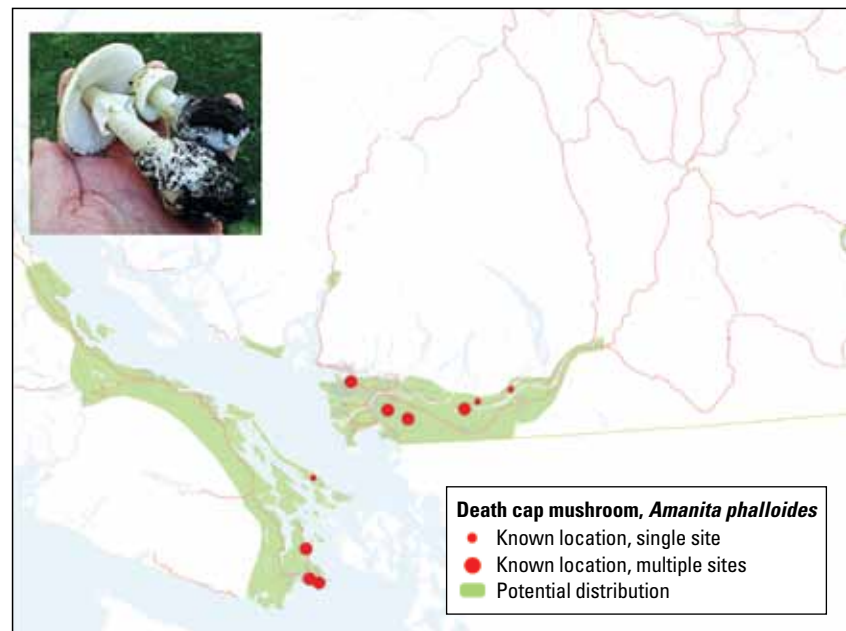


Figure 1. *Amanita phalloides* distribution in BC.

Map: © Province of British Columbia. All rights reserved. Reproduced with permission of the Province of British Columbia. Image: Adolf Ceska, used with permission.

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Identification and misidentification

A. phalloides typically grows from June to November in BC and looks different depending on its stage of maturity. The immature mushroom may be totally encased in a “universal veil,” giving it the egg-like appearance of a puffball mushroom if not cut in half to reveal the growing mushroom inside. As the mushroom matures, the universal veil ruptures and remains in the ground as a membranous sac (volva). The cap may grow up to 16 cm in diameter, becoming broad and slightly convex. The cap can be white or have a green or yellow hue, and is often darker in the centre. *A. phalloides* specimens typically feature white gills and spores, a ring of tissue (annulus) near the top of the stalk, and a volva at the base⁸ (Figure 2).

Death caps can easily be misidentified as an edible variety of mushroom, as seen in three cases of amateur foragers who mistook the death cap for other species. In 2003 a 43-year-old man in Victoria consumed an immature death cap he thought was a puffball mushroom. In 2008 a 63-year-old woman in Vancouver consumed a mature death cap she assumed was a paddy straw mushroom, a common variety in Asia but one not native to North America. Both patients recovered following hospitalization. In 2016 a 3-year-old boy died after consuming a death cap foraged from a residential street in Victoria.⁴

Toxicity

Three classes of toxins are present in *A. phalloides*: amatoxins, phallotoxins, and virotoxins. Of the three, amatoxins exert the greatest effect, and the most toxic for humans is α -amanitin.^{1,2,8} Like all the major amanitins (α , β , γ), α -amanitin is a bicyclic octapeptide that irreversibly



Figure 2. *Amanita phalloides* specimens at various stages of growth.

Image: Paul Kroeger, used with permission.

binds RNA polymerase II, thus preventing protein synthesis and causing cell death. None of the amatoxins are destroyed by cooking, drying, or freezing. The presence of organic anion transporting polypeptide 1B3 (OATP1B3) in hepatic sinusoidal membranes results in the active transport of toxin into hepatocytes, causing massive centrilobular necrosis and vascular degeneration.^{2,9} Amatoxins are primarily eliminated by renal excretion, with a portion undergoing biliary excretion and enterohepatic recirculation.⁹ The kidneys may also be affected and show signs of acute tubular necrosis and hyaline casts in the tubules.²

Triphasic clinical presentation

Symptoms following the ingestion of nonfatal mushroom species generally occur within 6 hours. In contrast, symptoms of *A. phalloides* poisoning arise 6 to 24 hours after ingestion. Symptoms occurring within 6 hours of ingestion do not exclude the possibility of *A. phalloides* ingestion, however, as multiple species of foraged toxic mushrooms are often ingested together.³ After this initial latency period, there are three phases in the clinical presentation of *A. phalloides* poisoning.

Most patients present in the first (dysentery) phase, which is character-

ized by abdominal pain, vomiting, and severe, cholera-like diarrhea that may contain blood and mucus, and often results in profound dehydration.^{2,10} The second (false recovery) phase occurs 24 to 72 hours after ingestion with the patient demonstrating symptomatic improvement despite clinical signs and biochemical markers of liver damage progressing, peaking at 60 to 72 hours after ingestion.¹¹ The third (hepatorenal) phase occurs 4 to 9 days after ingestion and is characterized by acute liver and multisystem organ failure that can lead to convulsions, hemorrhage, coma, and death.^{2,3}

Diagnosis and management

Amatoxin mushroom poisoning can be fatal. The best prognosis results from prompt recognition and appropriate management. The foundation of diagnosis is an accurate history and recognition of the toxidrome. Specimens or photographs of the mushroom consumed can help confirm the diagnosis, but often samples are partially decomposed or do not represent the ingested species. Assays to detect amatoxins are not available locally.³

For asymptomatic patients, gastrointestinal decontamination with activated charcoal should be considered, even if the patient presents several hours after ingestion.⁹ For symptomatic patients, management

should include providing supportive care, promoting renal elimination of amatoxins, interrupting enterohepatic recirculation of amatoxins, and administering proposed antidotes (Table).¹²⁻¹⁴ In addition, early consultation with the local poison control centre and a liver transplant centre is advised.

No established antidote for amatoxin poisoning has been identified. Several have been proposed, but their efficacy is not proven. A meta-analysis of 2108 hospitalized patients with amatoxin poisoning found therapies with silibinin or the hepatoprotectant N-acetylcysteine (NAC) were the most effective in a retrospective survival analysis.²

Silibinin (extract of milk thistle) inhibits OATP1B3 and prevents uptake of amatoxins into hepatocytes.⁹ While intravenous silibinin (Legalon SIL) has been used in Europe for many years, in Canada it is only available through the Special Access Programme. Oral silibinin is available at health food stores, but it may be inactivated when given with acti-

vated charcoal. High-dose penicillin G and cyclosporine are other potential antidotes as they inhibit OATP1B3 and thus can prevent transport of amatoxin into hepatocytes. Penicillin has been one of the most commonly

used therapies, despite showing limited benefit in a retrospective survival analysis.² Although the risks associated with high-dose penicillin (hyponatremia, seizures) are more significant than other proposed therapies, penicillin use can be considered

for hepatoprotection if IV silibinin is not an option.⁹

N-acetylcysteine is thought to limit hepatic damage through its free-radical or oxygen scavenging capabilities. Due to the benign side-effect

Death caps can easily be misidentified as an edible variety of mushroom.

profile of NAC, the benefits of its use are thought to outweigh any risks.^{7,13}

Once acute liver failure occurs, liver transplantation is the only definitive treatment.^{1,3,10,14}

Summary

The physician's role in preventing fatalities from *A. phalloides* ingestion lies in prompt recognition of amatoxin poisoning in a patient. Clinicians should be particularly alert if the patient reports consuming foraged puffball mushrooms or paddy straw mushrooms, as both of these mushrooms are known to resemble the death cap. With the expanded range of *A. phalloides* in BC, physicians should include amatoxin toxicity in the differential diagnosis of a patient presenting with gastroenteritis or hepatotoxicity and a history of ingesting foraged mushrooms. Management of the symptomatic patient involves providing supportive measures, promoting renal elimination of amatoxins, interrupting enterohepatic recirculation of amatoxins,

Table. Managing symptomatic amatoxin poisoning after *Amanita phalloides* ingestion.

Provide supportive care	<ul style="list-style-type: none"> Aggressively replace fluids and electrolytes. Patients may be severely dehydrated. Correct hypoglycemia and coagulopathy.^{1,3,9,10,13}
Promote renal elimination	<ul style="list-style-type: none"> Establish and maintain brisk urine output with a minimum of 1.5 mL/kg/h, weighing the risks and benefits in patients who may not tolerate aggressive volume loading.⁹ Although hemodialysis cannot remove amatoxin, it may be necessary as part of supportive care.^{2,7,10}
Interrupt enterohepatic recirculation	<ul style="list-style-type: none"> Administer multiple doses of activated charcoal.^{1,3,9,10} Consider other interventions supported by anecdotal evidence: giving patients nothing by mouth, administering octreotide to sequester amatoxins in the gall bladder, initiating percutaneous biliary drainage.^{9,14}
Administer proposed antidotes	<ul style="list-style-type: none"> Consider administering agents that block OATP1B3: intravenous silibinin, high-dose penicillin, cyclosporine.^{2,7,9} Consider administering the hepatoprotectant N-acetylcysteine.^{2,7,9,13}
Consult	<ul style="list-style-type: none"> Contact local poison control: In BC, call the Drug and Poison Information Centre at 1 800 567-8911 (24 hours). Contact liver transplant centre.

administering proposed antidotes, and consulting with the local poison control centre and a liver transplant centre. **BCMJ**

The best prognosis results from prompt recognition and appropriate management.

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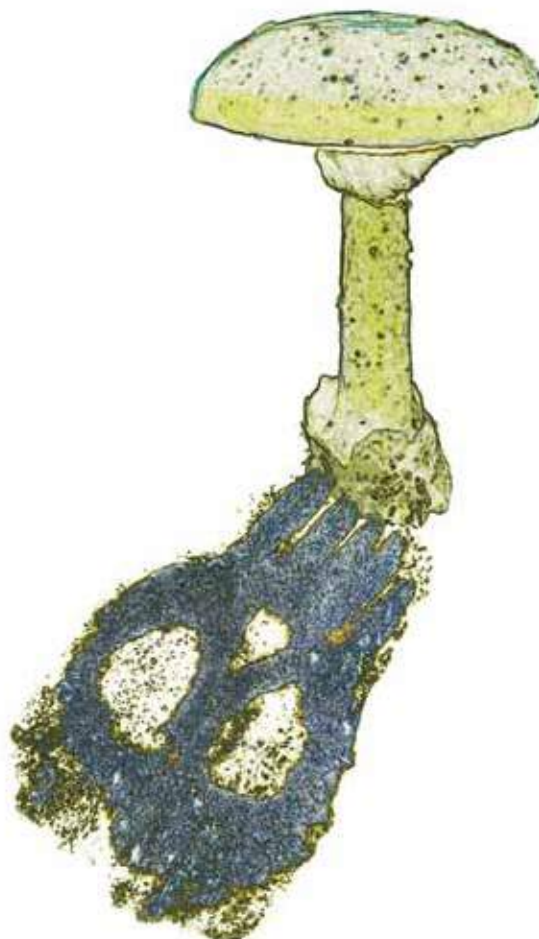
Competing interests

None declared.

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Evaluation of a cognitive behavior therapy program for BC primary care patients with mild to moderate depression with or without anxiety: Bounce Back, 2008–2014

A telephone-supported self-help mental health program was found to be clinically effective after data were analyzed from the first 6 years of operation.

ABSTRACT

Background: Family physicians have an important role to play in accessing and coordinating community mental health services and supports for patients affected by mood disorders such as depression and anxiety. Bounce Back is a program introduced in British Columbia in 2008 to help physicians meet the mental health needs of their patients while lessening the demand on the health care system. The program offers cognitive behavior therapy to patients with mild to moderate depression with or without anxiety who might benefit from a low-intensity intervention. Clinical measures such as the Patient Health Questionnaire are used to determine patient eligibility and for ongoing assessment of mental health status. Patients are ineligible if they require more intensive mental health services (e.g., they have bipolar disorder or cognitive impairment) and may become ineligible while in the program if their

clinical presentation changes. Workbooks for the program include carefully sequenced questions designed to bring about change in how participants think and in what they do to improve how they feel. Coaches trained by registered psychologists provide motivational support by telephone and communicate with the referring health professional to provide updates on the status of the patient. In 2017 a study was undertaken to evaluate the clinical effectiveness of this program using data from the first 6 years of operation.

Methods: Data were collected for 25 338 patients with closed cases who were referred to Bounce Back from 1 July 2008 to 31 March 2014. Clinical outcomes were explored in terms of improvement, remission, and recovery from depression and anxiety over time. Recovery was defined using criteria from the UK National Health Services program, Improving Access to Psychological Therapies, and presented as a

percentage of patients who had scored in the subclinical range at completion after scoring in the clinical range at assessment. Means and standard deviations were calculated for patient age and clinical measure scores.

Results: More women than men were referred to Bounce Back (74% vs 26%) and the mean age at referral was 44.5 years. Four groups of patients were identified: declined (patients who did not receive further assessment or coaching), inappropriate (patients deemed ineligible for the program), incomplete

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(patients who received some service but did not complete the program), and completed (patients with pre-intervention and postintervention scores for all clinical measures). When preintervention and postintervention scores were compared, patients were found to have significant reductions in symptoms of depression and anxiety. A recovery rate of 68.5% was calculated, based on 5537 participants who initially had symptoms of depression, anxiety, or both, and 3794 participants who no longer had clinical symptoms after completing the program.

Conclusions: Study findings show Bounce Back is associated with positive outcomes for patients with mild to moderate depression with or without anxiety and that the program's clinical effectiveness is in line with initiatives assessed by other studies. While the study had some limitations regarding the grouping of patients, only patients completing the program had both preintervention and postintervention data, and the results would therefore not be affected by other possible grouping methods, suggesting the outcomes for the completed group would remain unchanged. Like other large-scale initiatives being implemented to provide low-intensity mental health treatments, Bounce Back allows for earlier and easier access to services and better matching of service intensity to need.

Background

The impairment caused by depression and anxiety cannot be underestimated. Data from the Canadian Community Health Survey¹ revealed a 1-year prevalence of 5.4% for mood disorders and a lifetime prevalence rate of 12.6%. Of those affected, 50% report some degree of impact on their ability to work and 35% report significant interruptions to employment in the past.² The negative impact of depression on job performance has been estimated to exceed that caused by chronic conditions such as arthritis, hypertension, back problems, and diabetes.³ Further, mood and anxiety disorders are strongly associated with chronic health conditions,⁴ showing a bi-directional relationship in which these disorders both contribute to and result from physical illness and pain.⁵ Despite the collective efforts of national, provincial, and local governments, timely and appropriate access to high-quality mental health services remains a critical issue in Canada and a treatment gap exists.

Primary care is the cornerstone of the health care system and the access point for the majority of Canadians with mental health challenges. In a study examining the records of over 300 000 Canadian patients who had at least one encounter with a primary care provider, 14% had a diagnosis of depression.⁶ In another Canadian study, 20% of all general practitioner visits were found to involve mental disorders.⁷ Individuals with mild to moderate depression with or without anxiety identified in a primary care setting may not obtain a referral to specialized mental health services because their symptoms are not severe enough, leaving the primary care provider with limited options. Given the need to improve the detection of mental health and substance use problems and the prevalence of mild to mod-

erate depression, family physicians have an important role to play in accessing and coordinating community mental health services and supports, a critical issue recognized by the British Columbia Practice Support Program (www.gpsc.bc.ca/what-we-do/longitudinal-care/incentive-program/mental-health-initiative) and addressed to some extent by programs such as Bounce Back.

Bounce Back program

Bounce Back was launched in 2008 by the Canadian Mental Health Association (CMHA) BC Division using a \$6-million grant from the BC Ministry of Health. The objective was to develop community-based infrastructure for improving access to cognitive behavior therapy (CBT) interventions that would help family physicians meet the mental health needs of their patients while lessening the demand on the health care system. With a brief format that is well suited to primary care, CBT is known to be an efficacious intervention for depression and anxiety,⁸ and many CBT-based programs around the world have demonstrated effectiveness in non-randomized studies.⁹

The Bounce Back program operating in BC today is free to patients referred by a general practitioner, nurse practitioner, or psychiatrist. As of January 2017, over 40 000 referrals to Bounce Back had been received from more than 2000 physicians and clinics across the province. Since 2015, Bounce Back has also been implemented in several health regions in Manitoba and Ontario.

Eligibility. Patients are screened for eligibility upon referral and then during an initial assessment. Bounce Back is not designed for individuals experiencing severe symptoms, so eligibility criteria are in place to ensure that

only patients who might benefit from a low-intensity intervention can access the program. Once enrolled, patients continue with the program unless their clinical presentation worsens in a way that means more-intensive mental health services are required.

Patients were excluded from the program if they had:

- A diagnosis of bipolar disorder or psychosis (past or present).
- A diagnosis of personality disorder.
- Any diagnosed cognitive impairment or organic brain syndrome.

Patients were also excluded if they were misusing drugs or alcohol, or if they had active suicidal ideation. (See www.bouncebackbc.ca for current referral form.)

Workbooks. The CBT intervention offered by Bounce Back is delivered in a series of workbooks based on a self-help resource developed in Scotland: *Overcoming Depression, Low Mood and Anxiety: A Five Areas Approach*.¹⁰ The workbooks describe CBT strategies using jargon-free text written at a grade 8 reading level, and include carefully sequenced questions designed to bring about change in how participants think and in what they do to improve how they feel.

Coaching. The workbooks are complemented by telephone coaching provided by paraprofessionals: individuals trained by registered psychologists employed by CMHA to deliver Bounce Back as a supported self-help intervention.¹¹ These coaches do not engage directly in psychotherapy with the participants but instead provide motivational support as participants learn from the workbooks. Coaches receive ongoing clinical consultation support from registered psychologists retained by Bounce Back as well as program adherence rating for quality control purposes.

Clinical measures. Bounce Back relies on clinical measures to assess mental health: the Patient Health Questionnaire 9 (PHQ-9), the Generalized Anxiety Disorder 7 (GAD-7) questionnaire, and the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q).

The nine-item PHQ-9 measures the persistence of each symptom in the *DMS-IV* diagnostic criteria for major depressive disorder. Scores range from 0 to 27, with levels of severity classified as minimal (0 to 4), mild (5 to 9), moderate (10 to 14), moderately severe (15 to 19), and severe (20 to 27). Scores from 5 to 27 may require treatment, depending on the patient's duration of symptoms and functional impairment. Several studies support the validity and reliability of the PHQ-9 and have found it can be administered over the phone.^{12–14} The PHQ-9 is commonly used to screen for depression in primary care settings.^{15,16}

The seven-item GAD-7 questionnaire screens for anxiety and assesses severity in clinical practice and research. Scores range from 0 to 21, with levels of severity classified as minimal (0 to 4), mild (5 to 9), moderate (10 to 14), and severe (15 to 21). Several studies have demonstrated good reliability and validity for the GAD-7 when used in a general population.¹⁷

The 16-item Q-LES-Q asks patients to rate aspects of life, including their physical health, mood, work, household activities, and social relationships.¹⁸ Item scoring ranges from 1 (very poor) to 5 (very good) and reflects the degree of enjoyment or satisfaction experienced during the past week. Total scores are indicative of overall quality of life.

In addition to these three clinical measures, Bounce Back patients are assessed using participant self-ratings

for mood (1 = very poor, 10 = very good) and physical health (1 = very poor, 5 = very good) in the past 2 weeks.

Service flow. Once a referred patient is accepted and a coach is assigned, an initial telephone assessment occurs. The coach administers the PHQ-9, GAD-7, and Q-LES-Q and asks the patient for mood and physical health ratings. Information on suicide risk is collected and, if present, reported to the registered psychologists serving as clinical consultants, who assess risk and confirm eligibility. If Bounce Back is deemed suitable for the patient, two introductory workbooks are provided and the patient continues with the program, eventually receiving additional workbooks and up to four more standard telephone sessions. During these short sessions (15 to 20 minutes each), coaches help the patient understand workbook materials and goal setting. Coaches also identify further areas of need, address questions, and motivate patients to stay on track. The patient may choose to exit the program at any point. The PHQ-9, GAD-7, and Q-LES-Q are administered during the completion session, and mood and physical health ratings are obtained. Within 6 months of completion, the patient is entitled to two “booster” sessions to maintain the gains made in the program. Throughout the program, coaches communicate with the referring health professional to provide updates on the status of the patient and to report any changes in suicide risk that may require further care.

Need for evaluation

In 2017 Bounce Back was known to be a well-established part of primary care in BC, but the effectiveness of the program had not been evaluated. To address this research gap, a study

was undertaken to determine whether participants who completed the Bounce Back program experienced a significant reduction in depression and anxiety symptoms and showed an improvement in overall quality of life.

Methods

Data were collected for 25 338 patients with closed cases who were referred to Bounce Back from 1 July 2008 to 31 March 2014. These patients had been screened for Bounce Back using the eligibility criteria that applied at that time: they were age 19 or older, they were experiencing mild to moderately severe symptoms of depression as defined by a score of 19 or lower on the PHQ-9,² and they were able to use the self-help materials and take part in telephone coaching³ (i.e., they could read English, had a telephone, and could communicate using it). Clinical outcomes were explored in terms of improvement, remission, and recovery from depression and anxiety over time. Improvement was defined as reduction of symptoms and increases in general health calculated using the difference between preintervention and postintervention scores on clinical measures and the effect size of the difference. PHQ-9, GAD-7, and secondary outcome score differences were calculated as preintervention scores subtracted from postintervention scores for each individual. Paired sample *t* tests were used to calculate a mean difference and 95% confidence interval. Effect size (Cohen's *d*) was calculated by dividing mean difference scores by the paired sample standard deviation.

Recovery was defined using criteria from the UK National Health Services program, Improving Access to Psychological Therapies (IAPT).^{16,19} Participants were considered clinically depressed if they had a PHQ-9 score of 10 or higher,

and were considered to have anxiety if their GAD-7 score was 8 or higher. Participants diagnosed at assessment with clinical depression, anxiety, or both were considered recovered at completion if they scored below the clinical cutoff on both the PHQ-9 and GAD-7. Recovery was presented as a percentage of patients who had scored in the clinical range at assessment and then scored in the subclinical range at completion.

No identifying patient data are stored in the database other than initials. When a date of birth is entered, the database automatically converts it to age, and the actual date of birth is not stored in the database. No ethics approval was obtained for this study.

Data were analyzed using GNU PSPP software.²⁰ Means and standard deviations were calculated for patient age and clinical measure scores. One-way analysis of variance (ANOVA)

was used to determine differences between groups at baseline, with Scheffé's method as a post hoc test for multiple comparisons.

Results

Four groups of patients were identified based on the services they received and how their cases were closed (Figure 1). These groups were designated as declined, inappropriate, incomplete, or completed.

The declined group (*n* = 8100) included eligible patients who did not receive any further assessment or coaching after explicitly or implicitly communicating a wish not to proceed or after contact with the patient was lost.

The inappropriate group (*n* = 1931) included patients deemed ineligible for the program based on referral form criteria (*n* = 1233) or coach assessment (*n* = 637), and patients who

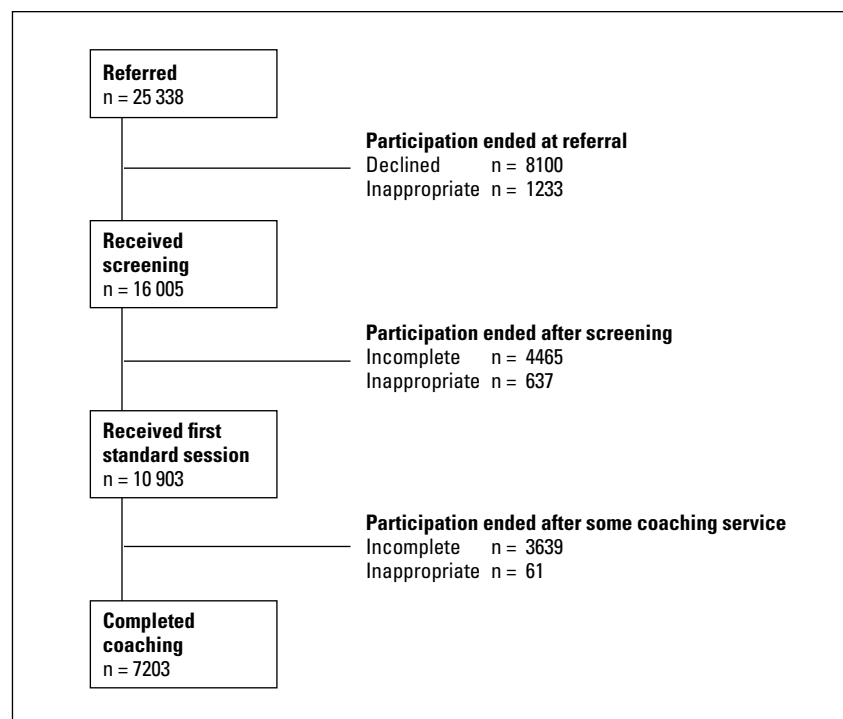


Figure 1. Services received and how cases were closed for patients referred to Bounce Back program, 2008–2014.

Evaluation of a cognitive behavior therapy program for BC primary care patients with mild to moderate depression with or without anxiety: Bounce Back, 2008–2014

Table 1. Characteristics of 25 338 patients referred to Bounce Back program, 2008–2014.

	Completed group n = 7203	Incomplete group n = 8104	Inappropriate group n = 1931	Declined group n = 8100	All patients n = 25 338
Mean age in years (SD)	48.2 (14.3) ^a	43.7 (14.6) ^b	41.5 (17.0) ^c	42.5 (15.4) ^c	44.5 (15.2)
Female	77% ^a	74% ^b	72% ^{b,c}	71% ^c	74%
Depression medication used	43% ^a	48% ^b	53% ^c	43% ^a	45%
Anxiety medication used	31% ^a	34% ^b	37% ^b	30% ^a	32%
Both medications used	24% ^a	26% ^b	30% ^c	22% ^a	25%

Note: Values not sharing a superscript letter are significantly different at $P < .001$.

became ineligible during the program (n = 61).

The incomplete group (n = 8104) included patients who received some service but did not formally conclude the program with a coach; they either explicitly left the program or were assumed to have worked independently on the intervention materials.

The completed group (n = 7203) included patients with preintervention and postintervention scores for all clinical measures.

Patient characteristics

An analysis of patient characteristics found that the average age of referral to Bounce Back was 44.5 years, and that more women (74%) than men (26%) were referred (**Table 1**). ANOVA results for both age and sex showed there were significant differences among groups at alpha level .05. Specifically, Scheffé's post hoc criterion for significance indicates that patients in the completed group were older than those in other groups by 4.6 to 6.7 years (group mean differences), and patients in the inappropriate group were significantly younger by 1.0 to 6.7 years. The completed group consisted of 3% to 6% more women than other groups. Depression medications were used by 45% of all study participants, anxiety medication by 32%, and 25% used both medications. (Medication use data were col-

lected via the referral form, although no additional detail as to the nature of the medications was collected.)

There were significant differences in medication use among groups. In the inappropriate group, there was a 5% to 10% higher proportion of depression medication use and a 4% to 8% higher proportion of combined medications use compared with all other groups. A smaller proportion of patients in the completed group were on medication compared with those in the incomplete group, but there was no significant pairwise difference in medication use between patients in the completed and declined groups.

Baseline scores

Clinical measure scores for all patients at referral and assessment dif-

ferred (**Table 2**). PHQ-9 referral scores had 64% missing data overall due to incomplete referral forms. For other measures, data were over 94% complete for patients in the incomplete and completed groups. At referral, the mean PHQ-9 score for the entire sample was 12.96 (SD5.07) on a 27-point scale, with the inappropriate group having a higher mean than the other groups (mean16.4, SD 6.0, $P < .001$).

For clinical measures taken at the assessment session by the coach, there were statistically significant pairwise differences among all groups for all measures except for GAD-7. Overall at baseline, patients in the completed group showed lower PHQ-9 scores and better ratings for mood, physical health, and life satisfaction than those in the incomplete group. Of note is the

Table 2. Baseline scores for clinical measures of patients referred to Bounce Back program, by group, 2008–2014.

	Completed group mean (SD)	Incomplete group mean (SD)	Inappropriate group mean (SD)	Declined group mean (SD)
Referral PHQ-9	12.3 (4.8) ^a	12.7 (4.9) ^b	16.4 (6.0) ^c	12.8 (4.8) ^b
Assessment PHQ-9	11.2 (5.0) ^a	11.7 (5.2) ^b	16.1 (8.3) ^c	
GAD-7	9.8 (4.9) ^a	10.2 (5.2) ^b	9.5 (7.6) ^a	
Q-LES-Q	43.9 (8.0) ^a	42.4 (8.2) ^b	36.8 (8.0) ^c	
Mood rating	5.2 (1.6) ^a	5.1 (1.7) ^b	3.8 (1.8) ^c	
Health rating	3.1 (1.1) ^a	3.0 (1.1) ^b	2.4 (1.1) ^c	

Note: Values not sharing a superscript letter are significantly different at $P < .001$.

relatively large difference between patients in the completed group and the inappropriate group on all measures. For anxiety, however, patients in the incomplete group showed the highest mean scores compared with other groups (group mean differences between 0.4 and 0.7 points).

Preintervention and postintervention scores

The preintervention and postintervention scores of patients who completed the program with a coach indicate significant improvements in symptoms of depression and anxiety, as well as quality of life and mood (Table 3). All paired mean differences were found to be statistically significant at $P < .001$ and clinically important with Cohen's $d > 1$. Fewer clinical cases of depression were identified in participants completing the program: 17% (1231/7203) at postintervention assessment compared with 62% (4470/7203) at preintervention assessment. Similarly, fewer clinical cases of anxiety were identified: 20% (1422/7181) at postintervention assessment compared with 64% (4604/7181) at preintervention assessment. Of 5537 participants who were either depressed or anxious or both initially, 3794 no longer showed clinical symptoms after the program,

Table 3. Clinical measure scores from preintervention and postintervention assessment of 7203 Bounce Back patients in completed group, 2008–2014.

	Preintervention mean (SD)	Postintervention mean (SD)	Mean difference (95% CI)	Effect size (Cohen's d)
PHQ-9	11.2 (5.0)	5.5 (4.4)	-5.6 (-5.8 to -5.5)*	1.13
GAD-7	9.8 (4.9)	4.7 (4.1)	-5.1 (-5.2 to -5.0)*	1.08
Q-LES-Q	43.9 (8.0)	52.0 (8.6)	+8.0 (7.9 to 8.2)*	1.02
Mood rating	5.2 (1.6)	7.2 (1.6)	+2.0 (1.9 to 2.0)*	1.03
Health rating	3.1 (1.1)	3.4 (1.0)	+0.31 (0.28 to 0.33)*	0.30

*Statistically significant at $P < .001$.

meaning an IAPT recovery rate of 68.5%. At an individual patient level, the mean difference between preintervention and postintervention PHQ-9 and GAD-7 scores showed a 5-point decrease or the equivalent of a one-category reduction in symptoms. Other clinical measures also showed improvement.

When outcomes were stratified by baseline severity, effectiveness was shown to be more prominent in participants with more severe initial symptoms (Figure 2). For PHQ-9 ratings, mean score reduction ranged from 0.51 ($d = 0.19$) in the minimal depression group to 12.35 ($d = 2.13$) in the severe depression group. Similarly, for GAD-7 ratings, mean score reduction ranged from 0.76 ($d = 0.34$) in the minimal anxiety group to

9.54 ($d = 1.89$) in the severe anxiety group. However, as baseline severity increased, the variability in effectiveness increased as well.

Conclusions

In analyzing the first 6 years of administrative data from Bounce Back, we found that patients who completed the program demonstrated significant improvement in secondary outcomes, including overall quality of life, and significant improvement in the primary mental health outcomes of depression and anxiety measured by PHQ-9 and GAD-7, with a recovery rate of nearly 69%. This is higher than the 46% to 56% recovery rates reported for some stepped-care initiatives in the UK.^{19,16} The Bounce Back effect sizes were also signifi-

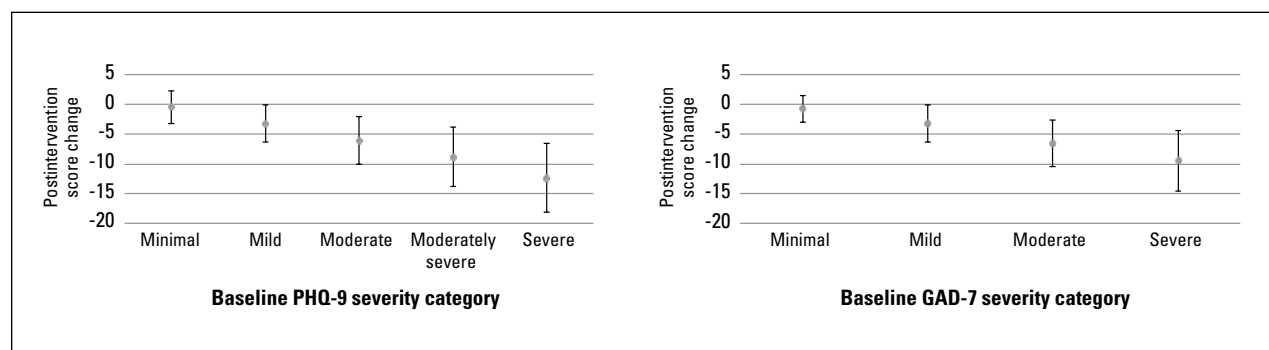


Figure 2. Change in PHQ-9 scores (left) and change in GAD-7 scores (right) by baseline severity (mean, SD) for Bounce Back patients in completed group. A negative change in postintervention score indicates improvement in symptoms.

cant. Hans and Hiller⁹ found that for patients completing face-to-face CBT interventions for depression, effect size was $d = 1.13$ (95% CI, 1.02–1.24), the same as our result based on PHQ-9 score changes. Other studies cited by Hunsley and colleagues⁸ found that for generalized anxiety disorder, treatment effect sizes were $d = 0.92$ and $d = 0.89$, less than the Bounce Back result of $d = 1.08$.

The higher anxiety mean scores among patients in the incomplete group could be due to a lack of anxiety-specific materials or due to levels of anxiety among participants that impeded continuing with the program. (In 2016 more workbooks for the core anxiety module were introduced in an attempt to improve outcomes for participants diagnosed with anxiety.)

Overall, the amount of improvement increased relative to baseline severity, a finding that is consistent with the stepwise increase in effectiveness observed in meta-analyses by Driessen and colleagues²¹ and by Bower and colleagues.²² There are likely other factors contributing to these improvements as well, including regression-to-the-mean effects, as pointed out by Hunsley and colleagues.⁸ However, as with other effectiveness studies using within-group analyses for preintervention and postintervention patients, it was not possible for our study to quantify the influence of other factors the way randomized controlled trials can.

Study limitations

This study had some limitations.

The administrative data for Bounce Back were collected for service delivery rather than research and were subject to changing definitions. The four groups used for this evaluation (declined, inappropriate, incomplete, and completed) did not permit identification of specific, clinical rea-

sons for patients disengaging with the intervention. Other groupings are possible that may affect baseline characteristics and attrition patterns. However, only patients completing the program had both preintervention and postintervention data and the results would therefore not be affected by other grouping methods, suggesting the outcome data for the

completed group would remain unchanged. Additionally, because this was not a randomized controlled trial, other reasons may account for the observed improvements.

The materials used in the Bounce Back program during the study may also have been a limiting factor. The mean age of participants completing the study was older than in other studies (age 48 versus age 38⁹), and while this may indicate that diagnosis is late in BC, it may also indicate that program materials were better suited to older participants. Adapted program materials for youth were introduced after younger patients became eligible for Bounce Back in December 2016.

Positive impact

Bounce Back has had a positive impact on the lives of BC residents with mild to moderate depression with or without anxiety by improving their symptoms and quality of life. Our study results showing the clinical effectiveness of Bounce Back are in line with results from other CBT effectiveness studies.

Patients who completed the Bounce Back program demonstrated significant improvement in secondary outcomes, including overall quality of life, and significant improvement in the primary mental health outcomes of depression and anxiety.

Our results also show that while the intervention can be effective for individuals experiencing severe symptoms, the variability in improvement is larger as well. The inability of patients to engage with program materials while dealing with concurrent disorders or active suicidal ideation supports excluding them from low-intensity intervention such as Bounce Back, and should prompt the primary care physician to seek more appropriate treatment.

Like large-scale initiatives being implemented elsewhere^{23,24} to expand the delivery of low-intensity mental health services within stepped-care models, Bounce Back is allowing for earlier and easier access and better

matching of service intensity to need, and thus reducing the mental health treatment gap. **BCMJ**

Competing interests

Dr Lau received consultancy fees and financial support from the Canadian Mental Health Association, BC Division, for serving as a scientific and clinical advisor and conference presenter for the Bounce Back program. Ms Davis was employed as program administrative coordinator for the Bounce Back program during the writing of this article.

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Resources for BC health care providers and people living with chronic pain

Websites, social media platforms, and patient self-management programs concerning pain provide physicians and patients with nonpharmacological options to manage chronic pain.

Judy Dercksen, MD

Chronic pain can present in many forms, from migraines to plantar fasciitis, and the number of people suffering from pain, currently one in five, is expected to increase. Websites and social-media platforms focused on pain can enhance chronic pain management for many people.¹ Past president of the American Academy of Pain Medicine, Dr Lynn Webster, put it best, “Complex problems require complex solutions.” Webster pointed out that, “In the USA in 2000, there were 1000 multidisciplinary programs. Today there are 200.” Incongruously, as the number of pain clinics in the USA has decreased, the annual number of opioid prescriptions for pain relief has increased.²

In a policy statement released in July 2017, Doctors of BC called for improvements in chronic pain management.³ Of note, the statement pushed for improved access to chronic pain specialist services, which currently can have wait times of up to

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This article has been peer reviewed.

2 years. Family doctors can help patients while they wait, and since close to 90% of patients have some form of digital access,¹ they can access free pain websites such as those from Pain BC (www.painbc.ca), Self-Management BC (www.selfmanagementbc.ca), and Pain Improvement (www.painimprovement.com), all of which are geared to augment office-based pain management. Such self-management programs have proven benefits.⁴

Professor Patrick McGowan recognized 30 years ago that patients need to take charge of their own health. Expanding on programs studied at Stanford, he created the Self-Management BC program launched by the University of Victoria in 2002. McGowan, director of the program, “felt the need to lower the risk of patients having to face the crippling consequences of poorly managed chronic diseases.” McGowan estimates that between 3000 and 3500 people participate in the program every year, and that half of the patients are seeking improved pain control.

Having worked as a family doctor for over 30 years, I understand how easy it is to neglect certain aspects of chronic pain management. In a busy clinic, it is challenging to address the complex needs of patients suffering

with chronic pain. I have learned that the most valuable resource can be the informed patient. Patients who are taught skills to cope with their symptoms are more likely to take charge of their own health.⁵

Many physicians are not aware of Self-Management BC’s new telephone-based program aimed at supporting patients in their homes, the Health Coach Program, which thousands of patients with all types of chronic diseases have participated in. The program is supported by recruited volunteers who are given a 2-day training course and paired with patients. The volunteers call the patients once a week for 6 months to provide support.

I learned of this program from a patient who was referred to me by a chronic disease nurse in our community. The patient’s pain and anxiety had noticeably improved by the time I saw her, and she attributed the improvement to the support she received from her coach.

Other self-management programs also exist (see Box). Charles Labun, coordinator of the Interior Self-Management Program, notes that the various Self-Management BC programs have been well received by

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patients in the province. The education and support provided increase patient readiness for change. Chronic pain requires a multimodal attack, and even if patients are unable to afford private services, like physiotherapy, massage, or chiropractic treatments, self-management programs augment office-based medical care.

Family physicians and health care providers can reassure patients, once any serious pathology has been excluded, that accessing the available free programs could help them improve their pain. By improving pain control, it is possible to decrease the risk of substance abuse and improve the quality of the lives of families living with people suffering from chronic pain.

When a patient presents with severe, even unbelievable pain, a trusting doctor-patient relationship is essential, as fear and anxiety increase pain. Patients are often terrified that their medications are going to be withdrawn or reduced. Recent evidence supports the finding that the vast majority of older patients with moderate to severe pain are undertreated,⁶ and physicians are reluctant

to prescribe opioids to patients who have addictions (or a history of addictions) even if they have moderate to severe chronic pain.⁷ Dr Lynn Webster has highlighted the challenges physicians face with the opioid regulations: “We as physicians are forced to be the judge and law enforcement.

Appropriate treatment reduces the risk of patients in chronic pain suffering because of undertreatment or turning to drugs available illegally.

... We are required to be in an adversarial role for our patients. This is the antithesis of healing and jeopardizes the doctor-patient relationship.”

Instead, physicians can emphasize the need for partnership in their patients’ care. They are in the ideal position to stress the importance of self-management programs as part of a pain plan. As patient self-efficacy improves, opioids can be reduced or, when indicated, switched to safer

options, like buprenorphine. Appropriate treatment reduces the risk of patients in chronic pain suffering because of undertreatment or turning to drugs available illegally.

BC offers a wide variety of invaluable tools. I have found the RACE phone line to be a readily accessible gold mine of information. The addictions specialist I spoke with has helped me transition patients from high doses of morphine and hydro-morphone to buprenorphine. I have patients with addiction problems now coping so well with their pain that they are able to attend mental health and addiction counseling. The General Practice Services Committee’s Practice Support Program and website have also improved physicians’ abilities to manage pain. Pain BC provides education, support lines, and online physician and patient workshops. Self-Management BC has group meetings for patients, online workshops, and telephone coaching. The Divisions of Family Practice website includes a number of resources and division-created tools for pain management. The Northern Interior Rural Division of Family Practice, hoping to see more activation of these resources in areas of Northern BC and Williams Lake, has sponsored a program aimed at increasing awareness of the ways to help patients and families improve their quality of life. Painimprovement.com is geared toward patients who are not computer savvy. Podcasts and simple navigation choices help guide patients through a pain-management journey that will support resources provided by Pain BC and Self-Management BC.

The battle against chronic pain has to be fought on all fronts. The complex problem of chronic pain and addiction is inadequately managed with medication alone. Physicians need not feel alone in this struggle. Until more multidisciplinary clinics are available, self-management resources can go a long way in cut-

CHRONIC PAIN RESOURCES	
Pain BC (www.painbc.ca)	Pain education for providers and patients (including teens), toolboxes, support forums, coaches, and self-management programs.
Self-Management BC (www.selfmanagementbc.ca)	Chronic disease self-management programs, personal coaches, and group meetings for BC residents.
Pain Improvement (www.painimprovement.com)	A step-by-step self-management pain program with pain education.
Rapid Access to Consultative Expertise (RACE) (www.raceconnect.ca)	Rapid access to consultants via telephone or app. Addiction specialists provide valuable advice on opioid prescribing.
General Practice Services Committee (www.gpsc.bc.ca)	Practice-support programs and clinical tools for health professionals.
Divisions of Family Practice (www.divisionsbc.ca)	Provincial resources and division-created tools for chronic pain management.

ting a path through the jungle of pain management.

Competing interests

None declared.

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**Dr Neil Carlisle Barber
1934–2018**



Dr Neil Carlisle Barber, 84, of Creston, BC, passed away peacefully, embraced by his family, on 2 November 2018. Born in Manchester, England, Neil attended Cambridge University and qualified as a medical doctor in 1959. He and his young family then spent 3 years in northern Kenya, where he served diligently as the only doctor for a remote area. After also working as a doctor in Swansea, Wales, for 2 years, Neil and his family immigrated to Quesnel, BC, in 1965. Neil embraced the Cariboo and it embraced him. He devoted the remainder of his medical career to this region, specializing as an internist and becoming a founding member of the International College of Hospice/Palliative Care in 1995, where he was instrumental in bringing a multibed hospice unit to Quesnel. He is fondly remembered by patients and medical staff alike as a gentle, intelligent, devoted doctor who treated everyone with compassion, grace, and strength. Neil retired in 2002, and in 2008 he and his wife, Eva, moved to Creston, BC, where he continued his commitment to palliative care by serving on the local Hospice Society Board and successfully bringing two hospice rooms to the Creston Valley Hospital.

Neil is survived by his daughter, Theresa (David) Metzger, and his

sons, Marcus (Janice) Barber and James (Ila) Barber. He is also survived by his sisters, Julie (Richard) Williams and Linda Allatini (Anthony) Wilson and his grandsons, Wes (Alaina), Daniel, Michael, William, and Jon. Neil joins his beloved wife of 60 years, Eva, who passed away in 2017.

A special thank you to the nurses and doctors at the Creston Valley Hospital, and to Father Sylvester Obi Ibekwe of the Holy Cross Catholic Church, for their loving care and support during Neil’s final days. Funeral services were held at the Holy Cross Catholic Church in Creston on 23 November (www.gfoliverfuneralchapel.com/notices/Neil-Barber). Neil was laid to rest beside Eva at the Forest Lawn Cemetery in Creston, BC. Memorial donations may be made to the Eva and Neil Barber Memorial Fund at the Creston-Kootenay Foundation, Box 701, Creston, BC, V0B 1G0 (proceeds to benefit the Creston Valley Hospital palliative care rooms) or to the Holy Cross Catholic Church at Box 299, Creston, BC, V0B 1G0.

—Theresa Metzger, BSc
Camano Island, WA

Obituaries continued on page 36

Recently deceased physicians

If a BC physician you knew well is recently deceased, consider submitting a piece for our “Obituaries” section in the *BCMJ*. Include the deceased’s dates of birth and death, full name and the name the deceased was best known by, key hospital and professional affiliations, relevant biographical data, and a high-resolution photo. Please limit your submission to a maximum of 500 words. Send the content and photo by e-mail to journal@doctorsofbc.ca.

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Dr James Alan Pretty 1945–2018



Dr James Alan Pretty passed away peacefully at Irene Thomas Hospice on 1 August 2018. Alan was courageous and graceful in facing death from a glioblastoma multiforme. His dignity in death was a reflection of his life as a son, brother, husband, father, physician, leader, teacher, colleague, and friend.

Alan graduated from UBC in 1970 at the top of his medical class. He interned in San Diego. He studied internal medicine at VGH and in Edinburgh before he was lured into family practice, initially as a locum, at Hilltop Medical in White Rock in 1973. In a very short time, Hilltop Medical and the Peace Arch Hospital community recognized that an exceptional individual had arrived. He settled into the community with ease. Despite his extraordinary intellect he always treated his fellow physicians as equals (even though we were not). He was a physician role model. He was an excellent listener, compassionate to his patients, and a good communicator. His clinical medicine was above reproach, and his patients loved him. Medicine was his passion. He spent several years as medical director at Peace Arch Hospital and always had the respect of his fellow physicians, administrators, and the hospital board. He was able to navigate those treacherous waters without compromise but with respect from all sides.

Alan recognized early that computerization of medical records was important in good quality medical care. As a result he was instrumental in Hilltop Medical becoming fully computerized by 1997, well ahead of the curve across Canada. He was on the steering committee of the software company developing medical records for computers in those early days, and he took university computer programming classes to better understand the process, often with classmates 20 or more years younger. During the twilight years of his medical career, Alan traveled to the Northwest Territories to work as a locum (mainly in Hay River). He came to adore the North, with its beauty and solitude, and the northern communities' culture and ambience. When Alan traveled he always made enduring friends, and this included the medical, nursing, and support staff in the North. He embraced frontier medicine.

Early to rise and never one to waste a moment, Alan had many impressive interests outside of medicine. He learned to sail in San Diego, and this skill took him to the South Pacific into the treacherous waters off Indonesia and Southeast Asia. He was away for a number of months on a small sailboat with one other adventurous soul. He was a skillful woodworker and built furniture and kayaks. He planned and built his own homes. He spent many hours kayaking off BC's coast with friends. He was an expert skier. He was on the ski patrol at local mountains and enjoyed the Whistler terrain. He was a naturally talented painter. He was a scuba diver.

Alan traveled extensively both with his family and as a volunteer physician in Africa, South America, and Southeast Asia with organizations delivering care to the less fortunate of our world. During these times he would take Spanish classes, sometimes for weeks. One of his volunteer assignments required that he learn

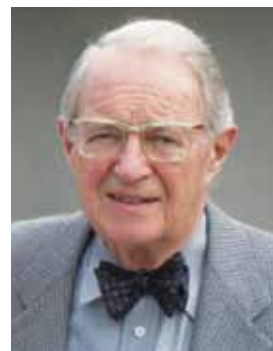
to ride a motorcycle as a means of transport. He fell in love with motorcycles, bought a couple, and ventured through the Pacific Northwest, sometimes with his wife, Joan, sometimes alone, and sometimes with his biking buddies. And of course he took a motorcycle repair course so that he could do his own repairs.

He idolized his family. He adored Joan, his wife of 47 years, who was his best friend and confidante. Joan and Alan were devoted parents to Drew (Ashley) and Katie (Chris). They are entitled to be very proud of both of them. He adored his two grandchildren, Jayden and Kennedy. He also will be greatly missed by his sister, Eileen Cook of Calgary.

Alan was an incredible human. The world is a better place as a result of his being. He will be missed. He was a life role model for all of us. Despite all his amazing talents, his mischievous smirk will be missed the most.

—Grant Gibbings, MD
White Rock

Dr Alexander Leiper Robertson 1925–2018



Dr Alexander Leiper Robertson was born in the family home at the corner of Rumble Street and Patterson Avenue in Burnaby on Robbie Burns's birthday. Alex completed his pre-med BA at UBC in 1949 and was promptly accepted into medical school at the University of Western Ontario in London. After second year he elected

obituaries

to take a sailing sabbatical to refine his maritime skills and to earn his fare in the family bakery. One year later, refocused, he returned to complete his medical degree in 1952.

In the course of his medical studies, his Plymouth Brethren connections introduced him to a dazzling debutante, Doris Nugent. Cupid did not waste any arrows! He and Doris fulfilled their matrimonial vows on 24 March 1956, and the magical union endured 62 years, until Alex's death. Initially, the newlyweds rented an apartment in Vancouver. After their first son, John, was born 1½ years later, they constructed their architecturally designed home on Braemar Avenue in Burnaby with a \$5000 mortgage; raised their three children, John, Rosemary and Mark; and lived there for the next 54 years.

After graduation, Alex returned to the West Coast to set up his family practice in Burnaby. There, he had privileges at Burnaby Hospital, where he also served as chief of staff. Early in his career he crossed paths with Dr Kurt Gottschling at the Salvation Army Outpatient Medical Clinic, where Alex was volunteering and Kurt was in the final weeks of his internship. On 1 July 1961 they formed a professional association that flourished until Alex retired in 1990 on his 65th birthday. Over almost 3 decades of association, Kurt had high praise for his colleague: "Like in any public office, people in charge sometimes meet with difficult problems. With wisdom and persuasion, Alex managed them all. He was smart, knowledgeable, and wise. He had empathy for the downtrodden. His sympathetic nature was well known and appreciated by his patients. He was moral, conscientious, and guided by his Christian faith."

It did not take long before Alex and Kurt had acquired more associates and were challenged for space. In 1972 Dr Cliff Silverthorne joined the group. His business expertise and po-

litical moxie were instrumental in locating a favorable site for expansion. Over the years the Royal Oak Medical Clinic was the office location for Drs Bond, Hiller, Wagar, Jones, Dublin, Hanam, and Foggin.

Alex was a man who embodied the word *gentleman*. As a physician, his gentle and healing ways and quiet words of comfort and compassion earned the loyalty and love of his patients. Alex always had a listening ear for his friends and family and made a point of seeking out those who were perhaps forgotten by others.

Alex was also a man of faith and great personal integrity. He was a faithful supporter of youth and university work through the Inter-Varsity Christian Fellowship (specifically Pioneer Pacific Camp and SFU IVCF), as well as the Union Gospel Mission.

Alex had a passion for gardening, golf, sailing, traveling, and his family. This was witnessed by the neatness and beauty of his yard, sailing journeys on *Tradewind II*, golfing on Fridays with his Killarney Park buddies, and the annual May long-weekend family getaways.

Alex and Doris have left an amazing legacy in their five remarkable grandchildren, Emily, Camille, Fiona, Michael, and Cameron. Alex is deeply missed by his family, friends, and colleagues. It is only fitting that his lifelong partner in practice has the final word: "We loved Alex and we know that he loved Jesus as his Lord and Savior. He will dwell in the house of the Lord forever."

—Rosemary Bell

—John and Mark Robertson

—Kurt Gottschling, MD

—Ruth Albrecht, MD

—John Albrecht, MD

BC Medical Journal Writing Prizes



J.H. MacDermot Writing Award

The *BCMJ* invites writing submissions from student authors, and each year awards a prize of \$1000 for the best medical student submission accepted for print and online publication. Students are encouraged to submit full-length scientific articles and essay pieces for consideration.

The J.H. MacDermot Writing Award, sponsored by Doctors of BC, honors John Henry MacDermot, who served as editor for 34 years (1932–1968), overseeing the publication's transition from the *Vancouver Medical Association Bulletin* to the *BCMJ* in 1959. Dr MacDermot also served as BCMA president in 1926.

BCMJ Blog Writing Prize

To encourage med students to take their first foray into medical writing, the *BCMJ* awards an additional writing prize of \$250 twice per year for the best 200- to 400-word blog submission accepted for online publication.

For submission guidelines and contest deadlines, please visit www.bcmj.org/submit-article-award.

Work-related asthma

Asthma affects about 7.5% of the adult population.^{1,2} Work-related asthma, one of the most common conditions encountered in occupational disease,³⁻⁵ comes in various forms and occurs when workplace exposures cause or aggravate respiratory conditions.

Work-related asthma can be categorized as either occupational asthma or work-aggravated asthma (sometimes referred to as work-exacerbated asthma), and accounts for 5% to 20% of new adult-onset asthma.^{1,3-5} Occupational asthma can be due to sensitization to one or more agents or irritants in the workplace. Asthma related to sensitization to a chemical in the workplace is referred to as sensitizer-induced occupational asthma. Through repeated exposure to potential sensitizers (often for months or years), workers can develop sensitization, and upon re-exposure, may experience asthma symptoms. Workers often report typical symptoms of asthma at the workplace, with improvement away from the workplace.

Exposure to an irritant, in the absence of sensitization, can also induce a form of asthma termed irritant-induced asthma or reactive airways dysfunction syndrome (RADS). The classic criteria for RADS include:

- A history of new-onset asthma.
- Symptom-onset related to a single high-level exposure.
- Onset of symptoms within 24 hours of exposure.
- Exposure to a high concentration of gas, fumes, or a spray-known irritant.
- Airway hyper-responsiveness or reversible airflow obstruction.

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

Recovery can be prolonged (more than 3 months) or can lead to persistent asthma.⁵

Work-aggravated asthma is pre-existing asthma aggravated or exacerbated by work exposure to irritants.

More than 300 substances have been identified as being causally associated with asthma, the majority being sensitizers.^{1,2,4} Common sensitizers seen in BC include plicatic acid (Western Red Cedar) seen in sawmill workers and diisocyanates seen in spray painters, chemical manufacturing, foundry, and other industries. For a list of agents associated with occupational asthma by occupation, visit www.csst.qc.ca/en/prevention/reptox/occupational-asthma/Pages/occupational-asthma.aspx.

Diagnosis

Asthma is a heterogeneous clinical syndrome primarily affecting the lower respiratory tract characterized by episodic or persistent symptoms of wheezing, dyspnea, and cough. The diagnosis of asthma requires these symptoms and demonstration of reversible airway obstruction using spirometry and/or methacholine challenge testing. A negative spirometry result does not necessarily exclude the diagnosis of asthma, and if clinical suspicion remains high, either repeat spirometry or methacholine challenge may be indicated.^{1,2}

After a diagnosis of asthma has been made, the next step is to determine if it is work-related. Of note, spirometry testing may be negative away from the workplace/exposure. As a result, peak flow metres or spirometry testing may need to be completed in relation to the workplace to confirm the work relationship. Fur-

ther testing to confirm sensitization may sometimes be required and may be carried out by specialists in occupational medicine. If you would like your patient to be seen by a consultant specialist from WorkSafeBC Occupational Disease Services, please indicate this on your Form 8/11 and an occupational disease medical advisor will be in touch with you.

A claim for asthma requires objective evidence such as that confirmed through pre- and post-bronchodilator spirometry, pulmonary function testing, and/or methacholine challenge testing. In the case of work-aggravated or irritant-induced asthma, with appropriate medical treatment and appropriate mitigation of work triggers, many workers can continue in their job. However, if occupational asthma is strongly suspected, particularly sensitization-related occupational asthma, removal from the workplace is the recommended course of action. If a worker is unable to continue working at their present place of employment due to work-related asthma and the claim is accepted, vocational rehabilitation is the next course of action. While fit-tested respirators may mitigate symptoms from irritants, even exposure to a small dose of a sensitizer, once sensitized, may produce symptoms and respirators may not be of benefit.

For more information or assistance

If you would like to speak with an occupational diseases medical advisor, or you have further questions regarding an asthma claim, please contact a medical advisor in your nearest WorkSafeBC office.

— **Brian E. Ng, MD, MPH, CCFP**
WorkSafeBC Medical Advisor

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The lived experience of people with dementia

The most common degenerative brain disease causing dementia was identified by Dr Alzheimer in 1906. The Alzheimer Society of Canada was not founded until 1978. The society initially focused on educating the public that dementia was not a normal part of aging. The first support group for people with dementia was not formed until 1993, and it was 2003 before a person with dementia sat on the society's Board of Directors.

Books about dementia initially focused on the disease, the caregiver's journey, and perspectives about the patient's journey. Only in the past few years have memoirs been written by people with dementia. This pattern is a symptom of the stigma supporting the idea that a person with dementia dies inside a living body.

Medicine has done little to reduce this stigma; written material focuses on losses from the disease seen from a professional perspective. It is time for medical professionals, and society in general, to learn from qualitative studies about the experience of people actually living with dementia.

A meta-synthesis (from 2018) of the lived experience was derived from 626 individuals in 34 studies from various countries.¹ The introduction is particularly meaningful:

"The way certain conditions and phenomena are understood and conceptualized, shape professional approaches to treatment and sociocultural perceptions of those experiencing them. This in turn has implications

in terms of the experience of individuals living with a condition."¹

The study found three major themes. First, people with dementia live with constant change due to the loss of cognitive capacity and altered perceptions of the physical environment. Second, they strive for continuity by using a variety of coping skills. Those who adapt well have their iden-

Education and training in dementia care must emphasize the obligation we have to maintain not just the basic biological and physical needs of people with dementia, but also the higher needs—social activity, sense of belonging, self-esteem, and meaning in life.

tity invested in more than cognitive skills, and demonstrate resilience. The third theme is the double-edged impact of the environment, which consists of interpersonal relationships and the physical environment. A positive environment allows people with dementia to continue participating in life, and includes caregivers who facilitate retaining control and a sense of agency—key to a person's experience of dementia.

This echoes Kitwood's research into maintaining personhood in dementia.² He concluded that personhood is "a standing or status that is bestowed upon one human being, by others, it implies recognition, respect and trust." Kitwood describes the following ways in which people act that undermine a person with dementia's personhood: ignoring (conversing with others as if

the person is not present), infantilizing, disempowering (no unsupervised walking), objectification during personal care, withholding, and imposing. Through recognition, collaboration, negotiation, facilitation, validation, celebration, as well as adapted physical environments (dementia villages) we can enable people with dementia to continue to live meaningful lives.

In a systematic review of 27 studies on positive experiences with dementia,³ the authors found three themes across the experiences. First, they focused on aging well (as opposed to focusing on their dementia) by seeking pleasure and enjoyment and continuing to do what was important to them with the support of their loved ones. Second, they faced their challenges with hope and humor as opposed to focusing on loss. Third, they gave thanks through life review and cited personal growth from the illness, including preserving their identity.

Education and training in dementia care must emphasize the obligation we have to maintain not just the basic biological and physical needs of people with dementia, but also the higher needs—social activity, sense of belonging, self-esteem, and meaning in life. Maslow's hierarchy of needs has been adapted for dementia and serves as a reminder that care must focus on more than basic needs.⁴

While I am not trying to romanticize dementia, these studies indicate that how dementia is managed has a significant impact on how people with dementia perceive themselves and their life. As physicians, the care we provide must recognize personhood. As citizens, we should advocate for community services and facilities that allow people to continue to lead meaningful lives. While there

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This article is the opinion of the Geriatrics and Palliative Care Committee, a subcommittee of Doctors of BC's Council on Health Promotion, and is not necessarily the opinion of Doctors of BC. This article has not been peer reviewed by the BCMJ Editorial Board.

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currently is no cure for dementia, we can positively influence the lives of people living with the disease.

—Romayne Gallagher, MD,
CCFP(PC), FCFP

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college library

Tools for tracking down guidelines

Locating clinical practice guidelines can be challenging. Many are simply posted on the Internet rather than being published in scholarly journals; thus, they escape the notice of medical databases such as Medline. Additionally, the US National Guideline Clearinghouse (www.ahrq.gov/gam/updates/index.html) was shut down in 2018 after US federal funding was cut. So what is left? Here are some recommended sources.

CMA CPG Infobase (www.cma.ca/En/Pages/clinical-practice-guidelines.aspx) is a free directory of guidelines from the last 5 years by Canadian health organizations. Given that the small number of Canadian clinical practice guidelines can be hard to find in the larger volume of international content, a Canadian source such as this is crucial.

ECRI Institute. The ECRI Institute is building a free directory of clinical practice guidelines, the ECRI Guidelines Trust (<https://guidelines.ecri.org>). US National Guideline Clearinghouse records were not made available, so the new directory must be built from the ground up. The directory includes summaries and links to full-text documents, and ratings on trustworthiness. Free registration is required.

International Guideline Library. The International Guideline Library (www.g-i-n.net/library/international-guidelines-library) is a public directory from the not-for-profit Guidelines International Network. The linking function requires a membership, but consider using

the site as a search tool and then locate the full-text guidelines using a title search in Google, or ask your library for a copy.

College librarians are available to locate guidelines for registrants of the College of Physicians and Surgeons of British Columbia.

Medline. While incomplete, Medline remains a worthwhile site for locating clinical practice guidelines. Using PubMed.gov (www.ncbi.nlm.nih.gov/pubmed), in the search results, limit the Article Types to “Guideline.”

National Institute for Health and Care. Results from the UK’s National Institute for Health and Care Excellence’s Evidence Search (www.evidence.nhs.uk) can be filtered for guidelines.

Finally, explore the guidelines cited in point-of-care tools such as DynaMed, UpToDate, or BMJ Best Practice, and try using Internet search engines such as Google.

College librarians are available to locate guidelines for registrants of the College of Physicians and Surgeons of British Columbia. You are invited to call the library at 604 733-6671 or email medlib@cpsbc.ca.

—Karen MacDonell
Director, Library Services

This article is the opinion of the Library of the College of Physicians and Surgeons of BC and has not been peer reviewed by the BCMJ Editorial Board.

Toxic lead exposure via an unusual source: New BC reporting regulations may prevent similar cases

Exposure to lead in Canada has fallen dramatically with its removal from paint, gasoline, plumbing, and other consumer and industrial products. Nevertheless, lead toxicity still occurs.

A 64-year-old male was seen in emergency rooms throughout the Lower Mainland over the course of 5 months, complaining of abdominal pain, dizziness, weight loss, and nausea. Intensive workup for abdominal pathology, including CT, MRI, and upper- and lower-gastrointestinal scopes, was negative. Bloodwork showed a normocytic anemia.

After nearly two dozen medical visits, a consulting internist considered lead toxicity as a unifying diagnosis and ordered a blood lead analysis, which showed significantly elevated blood lead at 5.60 umol/L (115.94 ug/dL). The BC Drug and Poison Information Centre was contacted, and chelation therapy with succimer was arranged; the patient's symptoms resolved over the next few months, and his blood level decreased to 0.99 umol/L (20.5 ug/dL).

The patient had been taking an ayurvedic herbal remedy purchased in India to treat his type 2 diabetes. A laboratory analysis determined that each tablet contained approximately 12.5 mg of lead. The patient had been taking two tablets daily for many years, yielding a sustained daily exposure of 25 mg.

The patient discontinued taking the herbal remedy, and 3 months later his presenting symptoms had not returned; blood lead levels however, re-

bounded slightly as equilibrium was reached between excretion and bone stores. Health Canada was notified regarding the herbal medication and issued a foreign product alert detailing the risk (<http://healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2018/68602a-eng.php>).

As of 1 January 2019, laboratories testing BC patients and paid for by public insurance are obliged to report all analyses of lead and mercury in blood and urine to the BC Provincial Health Officer.

The two BC laboratories that test clinical samples for metals analyze just over 2600 blood lead, 1800 blood mercury, and 110 urine mercury samples every year. Some of those samples are screening tests based on presumed exposure to metals at the workplace. Few of those tested have results as striking as the patient described above, whose high and ongoing lead exposure resulted in significant morbidity. His case, however, is not unique and points to the need to follow up on high-level metal biomarker test results for the opening they offer into family and community exposures, which in the absence of investigation and testing may pass unnoticed.

As part of new regulations under the BC Public Health Act, as of 1 January 2019, laboratories testing BC patients and paid for by public insurance

are obliged to report all analyses of lead and mercury in blood and urine to the BC Provincial Health Officer, who has delegated the receipt, investigation, and surveillance of results to the BC Centre for Disease Control (BCCDC) acting in concert with regional health authorities. BCCDC will assess trends in testing and in metal biomarker levels by geography and demography, and for those 100 or so results per year above an investigation/action threshold, will contact the ordering clinician and through the clinician the patient, to assess the likely source of exposure. BCCDC will work with the two BC testing laboratories, Doctors of BC, WorkSafeBC, medical health officers, and environmental health officers in health authorities, the Provincial Health Officer, and privacy experts to ensure that the system works effectively in pinpointing to whom and where high-level exposures to mercury and lead occur, in order to trigger early intervention and prevent additional toxic heavy metal exposures.

—David McVea, MD

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

Division maternity care projects: Closing gaps in care through networks and innovation

Maternity patients who do not have a family doctor (or whose family doctor does not provide obstetrical care) can experience significant barriers in accessing consistent care during their pregnancy. Closing gaps in care and breaking down silos between maternity care providers is a significant focus in the work of the Joint Collaborative Committees (General Practice Services Committee, Specialist Services Committee, Shared Care Committee, and the Joint Standing Committee on Rural Issues).

The Shared Care column in the September 2018 issue of the *BCMJ* (“Building interprofessional maternity care in BC”)¹ describes how the Shared Care Maternity Network, now involving 21 divisions of family practice, supports maternity providers in BC communities to improve interprofessional collaboration and create more patient-centred care. Breaking down silos in perinatal care—which is often split between family doctors, registered midwives, and obstetricians—can increase access to care, improve quality, and enhance care provider satisfaction and retention.²⁻⁴

But how does funding and support from the Joint Collaborative Committees (JCC) translate into patient resources and supports at the community level? JCC support has enabled many divisions of family practice to create innovative solutions—including clinics, websites, resources, and referral systems—to ensure that maternity patients have access to clear, barrier-free, culturally safe care

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

and support throughout all stages of pregnancy.

Maternity clinics and care networks

A number of divisions have created maternity clinics and care networks through which patients can access the care they need and benefit from seamless referrals. While some of this work is focused on coordinating and improving care at the division level, many clinics and care networks feature websites to help patients navigate their care.

Burnaby Division of Family Practice. Burnaby Maternity Clinic (www.burnabymaternityclinic.com). A GP-to-GP network through which family doctors provide 24-hour care for maternity patients through the clinic throughout pregnancy, labor, and delivery, and up to 6 weeks postpartum.

Campbell River and District Division of Family Practice. Campbell River Maternity Clinic (www.crmaternityclinic.com). Culturally safe care is a priority. Clinic physicians have participated in cultural safety training, and health coaches from the Kwakwaka’wakw Maternal Child Health Project are available to assist patients with travel and access to appointments and services.

Cowichan Valley Division of Family Practice. Cowichan Maternity Clinic (cowichanmaternityclinic.ca). Nine family doctors and an RN provide care throughout pregnancies, births, and up to 6 weeks postpartum.

Mission Division of Family Practice. Mission Maternity Clinic (www.divisionsbc.ca/mission/initiatives/mission-maternity-clinic). In addition to maternity and postnatal care provided through this clinic, the di-

vision arranges care for new mothers and babies in their attachment clinic until they can be attached to a family physician in the community.

Nanaimo Division of Family Practice. Nanaimo Maternity Docs (www.maternitydocs.com). A network of maternity care physicians who provide seamless pregnancy, birth, postpartum, and newborn care to local patients. The group’s website provides women with resources, supports, and information about their care options.

South Okanagan Similkameen Division of Family Practice (www.pentictonmaternity.com). The South Okanagan Maternity Centre provides Penticton maternity patients with collaborative care from physicians and midwives. The division also created an informative website for all patients and care providers in the South Okanagan, featuring all local options for maternity care and a comprehensive list of resources and supports.

Vancouver Division of Family Practice. The Patient Attachment Initiative referral program prioritizes maternity patients and has successfully matched more than 3461 mothers and babies to family doctors to provide ongoing long-term care.

Maternity care websites and other resources

Some divisions support GPs and patients by creating informative websites and providing lists of resources and supports.

Thompson Region Division of Family Practice (www.divisionsbc.ca/thompson-region/our-impact/maternity-care). The division’s website provides patient resources and maternity care options, including clinic information and care provider biographies.

Vancouver Division of Family Practice. Pregnancy Vancouver (www.pregnancyvancouver.ca) features “Find a Doctor” functionality for patients to connect to a primary maternity care physician, and shares knowledge and resources about pre-natal and postnatal care.

Connecting patient medical homes and primary care networks

Physician networks are a key element of patient medical homes,⁵ enabling doctors to rely on each other for practice coverage and to provide continuous care for patients. Maternity care networks provide a clear example of how physicians can support one another in this way, closing gaps in care for patients through seamless connections between providers—an attribute which will also place them at the foundation of primary care networks as they are built.

Many other maternity networks

and projects are currently underway around the province. As these projects develop, information and stories will be shared on the Divisions of Family Practice website. To learn more, visit www.divisionsbc.ca/provincial/what-we-do/patient-support/maternity-care.

— **Afsaneh Moradi**
Director, Community Partnership and Integration

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Provincial maternity care program

The GPSC Maternity Care for BC program supports, reconnects, and trains family doctors in a clinical learning environment. It helps physicians through mentorship, hands-on experience, and financial support. The program is tailored and flexible to each individual’s learning needs. Learn more at www.gpsc.bc.ca.

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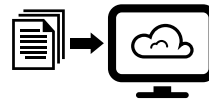
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Vitamin D recommendations for people living with MS

The Multiple Sclerosis Society of Canada released evidence-based recommendations for vitamin D supplementation and maintenance of vitamin D serum levels to help people affected by multiple sclerosis. Research has shown a strong link between vitamin D deficiency and an increased risk of developing MS. The recommendations provide information for at-risk populations as well as people diagnosed with MS. The document also highlights comorbid conditions and information on toxicity associated with vitamin D supplementation. The recommendations are endorsed by The Canadian Network of Multiple Sclerosis Clinics and The Consortium of Multiple Sclerosis Centers.

Canadians are particularly vulnerable to vitamin D deficiency due to our geographical location. Canada has one of the highest rates of mul-

iple sclerosis in the world with 11 Canadians diagnosed with the disease every day. People with biological family members who have MS are at higher risk of developing the disease.

In addition to decreasing the risk of developing MS, vitamin D may beneficially modify the course of MS. Other lifestyle factors that could modify a person's risk of developing MS include past exposure to Epstein-Barr virus, smoking and secondhand tobacco exposure, and obesity. Generally, adults with MS and those at risk for MS should consume between 600 and 4000 IU of vitamin D daily to ensure sufficient intake to achieve the target serum level status.

The MS Society of Canada is investigating vitamin D protocols in each province to determine next steps in their advocacy efforts for Canadians with MS. Visit <https://mssociety.ca/hot-topics/vitamin-d> to read more

about vitamin D and the MS Society's recommendations.

PD Connect: Parkinson disease referral program

PD Connect is a referral program intended to help health care professionals connect individuals diagnosed with Parkinson disease, and their care partners, to Parkinson Society British Columbia's support services at the time of diagnosis or at any point in the disease's progression.

What does PD Connect do for patients?

- Expedites access to community-based support services for individuals who have recently been diagnosed with Parkinson disease.
- Offers proactive consultations and counseling to individuals affected by Parkinson disease, including care partners and family members.
- Empowers social connection through provincial support groups.

Is your insurance know-how up to date?

Navigating the numerous types of insurance out there can be a confusing and even overwhelming process. The layperson's summary below will hopefully make this a less daunting task.

Life insurance pays your loved ones a lump sum in the event you pass away before a certain age. For example, Doctors of BC offers plans with a payout of up to \$5 000 000 in the event of death before age 75, as well as options to be covered permanently (i.e., until you pass away, at whatever age).

Disability insurance pays you monthly if you are no longer able to earn an income (or your full income). The BC government provides "free" coverage for physicians with a payout of up to \$6100 monthly, but a disability income insurance plan could get you up to an additional \$18 900 monthly (as offered by Doctors of BC).

Critical illness insurance pays you a lump sum if you receive a critical diagnosis like cancer or Alzheimer disease. For example, Doctors of BC offers plans that cover 25 critical conditions with a payout of up to \$250 000.

Professional expense insurance, going a step beyond disability insurance, reimburses you monthly for professional expenses (office rent, employee salaries, accounting fees, association dues, etc.) when you face a disability. With a Doctors of BC plan, for example, you could be reimbursed up to \$20 000 monthly for 15 months.

Accidental death and dismemberment insurance pays a lump sum to you in the event of an accident costing you a body part, or to your loved one if you pass away due to an accident.

Insurance policies include many details (the fine print) and optional add-ons (riders). For personalized information to suit your needs, contact Doctors of BC at 604 638-2904 or insurance@doctorsofbc.ca to speak with a licensed, noncommissioned insurance advisor.

—**Jessie Wang**
Medical Student Intern,
Doctors of BC

- Provides quality publications, with information about available education and programs throughout the province.

Referral process for PD Connect:

- Ask the individual with Parkinson disease or their family member for permission to forward their basic contact information through PD Connect to Parkinson Society British Columbia.
- Complete a referral form: www.parkinson.bc.ca/media/135952/pd-connect-referral-form-fillable.pdf.
- Fax the form to Parkinson Society British Columbia at 604 687-1327.

PD Connect staff will contact the referred individual within the time-frame noted on the referral form. If contact with the patient cannot be made, staff will communicate this with the referring health care professional.

For more information and referral forms:

- Call Parkinson Society British Columbia at 604 662-3240 or 1 800 668-3330.
- Fax requests to 604 687-1327.
- Email info@parkinson.bc.ca.
- Visit www.parkinson.bc.ca/resources-services/pd-connect.

BC Indigenous health improves, gap widens

A 10-year undertaking to track Indigenous health in BC has found improvements in five key areas; however, the gap between the health status of Indigenous and non-Indigenous residents continued to widen in three of those areas.

A report released by the First Nations Health Authority and the Office of the Provincial Health Officer summarizes the results of tracking life expectancy, mortality, youth suicide, infant mortality, and diabetes rates between 2005 and 2015.

Key findings include:

- Life expectancy among Status First Nations people improved between 2005 and 2015, but the life expect-

tancy for other residents of BC improved at a faster rate, so the health status gap actually widened.

- The age-standardized mortality rate, which measures death from all causes, improved somewhat since 2005, but the health status gap increased.

- The youth suicide rate decreased, and although the gap with other BC residents did not quite meet the targeted 50% reduction it did decline substantially (by 38%).

- The infant mortality rate decreased

Continued on page 46

Recently published BC guidelines

Thyroid Function Testing in the Diagnosis and Monitoring of Thyroid Function Disorder (2018)

This is a revision of the 2010 version of the guideline. The guideline's scope has expanded to include pediatric and pregnant patients.

Key recommendations:

- Routine thyroid function testing is not recommended in asymptomatic patients (outside of the BC Newborn Screening Program). Testing may be indicated when nonspecific symptoms or signs are present in patients at risk for thyroid disease.
- A TSH value within the laboratory reference interval excludes the majority of cases of primary thyroid dysfunction.
- If initial TSH testing is normal, repeat testing is unnecessary unless there is a change in clinical condition.
- Measurement of fT3 is rarely indicated in suspected thyroid disease.
- Screening for undiagnosed hyperthyroidism or hypothyroidism should not be performed in hospitalized patients or during acute illness unless hyperthyroidism or hypothyroidism is the suspected cause of the clinical presentation or represents a significant comorbidity.
- If a woman is pregnant or planning pregnancy, TSH testing is indicated if she has specific risk factors (see Table 3 in the guideline).

Other key changes:

- A laboratory algorithm has been added to the guideline and outlines changes to ordering. If central hypothyroidism is being investigated "suspicion of pituitary insufficiency" should be included as a clinical indication and a request for fT4 (with or without TSH) should be indicated in the space provided on the standard outpatient laboratory requisition.
- Thyroid function test reports in BC will include trimester-specific reference intervals on all women of childbearing age.

Ultrasound Prioritization (2018)

This new guideline summarizes suggested wait times for common indications where ultrasound is the recommended first imaging test. The purpose is to inform primary care practitioners how referrals are prioritized by radiologists, radiology departments, and community imaging clinics across the province. In some cases, notes and alternative tests are provided for additional clinical context. This guideline is an adaptation of the British Columbia Radiological Society (BCRS) Ultrasound Prioritization Guidelines (2016).

See also the one-page overview: Ultrasound Prioritization Guideline Summary.

To stay up to date with BC Guidelines, visit the What's New section at www.bcguidelines.ca.

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slightly since 2005, but the gap between the population groups increased.

- The diabetes prevalence rate continued to increase for both population groups, but the rate of increase for First Nations people declined, resulting in an overall decrease in the health status gap that exceeded the 33% reduction target.

The Transformative Change Accord: First Nations Health Plan committed First Nations leadership and the Governments of British Columbia and Canada to achieve specific health targets by 2015 on seven core health indicators. The Office of the Provincial Health Officer and the First Nations Health Authority have agreed to continue to jointly monitor the health and well-being of First Nations people in BC for the next 10 years with an expanded suite of 22 indicators of health and well-being, called the Indigenous Population Health and Wellness Agenda.

The 22 indicators that will be tracked and reported on regularly over the next decade include measures developed in consultation with First Nations communities, such as cultural wellness, community strength and resilience, and ecological health. Cultural wellness, for example, will be a combined indicator reporting on traditional language, traditional foods, traditional medicine/healing, and a sense of belonging to one's First Nations community.

The baseline report for the Indigenous Population Health and Wellness Agenda will be released in 2019. Read the full 2018 Report on Indigenous Health and Well-being at www.fnha.ca/about/news-and-events/news/indigenous-health-improves-but-health-status-gap-with-other-british-columbians-widens.

Reminder: Submit GPSC Portal Fees (G14070, G14071)

Family doctors are reminded to submit the GPSC Portal (G14070) or GPSC Locum Portal fee (G14071) at the start of the new year.

Submitting G14070/71 enables GPs to bill the following fee codes:

- G14075 GP Frailty Complex Care Planning and Management Fee
- G14076 GP Patient Telephone Management Fee
- G14077 GP Allied Care Provider Conferencing Fee
- G14078 GP Email/Text/Telephone Medical Advice Relay Fee
- G14029 GP Allied Care Provider Practice Code

To avoid billing refusal, GPs will need to bill G14070/71 as follows:

PHN#: 9753035697
 Patient surname: Portal
 First name: GPSC
 Date of birth: January 1, 2013
 ICD9 code: 780

For more details and the latest billing guides, visit www.gpscbc.ca.

Drawing better than writing for memory retention

Older adults who take up drawing could enhance their memory, according to a new study from the University of Waterloo. Researchers found that even if people weren't good at it, drawing, as a method to help retain new information, was better than re-writing notes, visualization exercises, or passively looking at images.

As part of a series of studies, the researchers asked both young people and older adults to do a variety of memory-encoding techniques and then tested their recall. The researchers believe that drawing led to better memory when compared with other study techniques because it incorporated multiple ways of representing the information—visual, spatial, verbal, semantic, and motoric. The researchers compared different types of memory techniques in aiding retention of a set of words in a group of undergraduate students and a group of senior citizens. Participants would either encode each word by writing it out, by drawing it, or by listing physi-

cal attributes related to each item. After performing each task, memory was assessed. Both groups showed better retention when they used drawing rather than writing to encode the new information, and this effect was especially large in older adults.

Retention of new information typically declines as people age due to deterioration of critical brain structures involved in memory such as the hippocampus and frontal lobes. In contrast, visuospatial processing regions of the brain, involved in representing images and pictures, are mostly intact in normal aging and in dementia.

Melissa Meade, PhD candidate in cognitive neuroscience at Waterloo, conducted this study with Myra Fernandes, a psychology professor in cognitive neuroscience at Waterloo, and recent UW PhD graduate Jeffrey Wammes. The study, "Drawing as an encoding tool: Memorial benefits in younger and older adults," appears in *Experimental Aging and Research*. It is available online at www.tandfonline.com/doi/abs/10.1080/0361073X.2018.1521432?journalCode=uear20.

CME listings rates and details

Rates: \$75 for up to 1000 characters (maximum), plus GST per month; there is no partial rate. If the course or event is over before an issue of the *BCMJ* comes out, there is no discount. Visa and MasterCard accepted.

Deadlines:

Online: Every Thursday (listings are posted every Friday).

Print: The first of the month 1 month prior to the issue in which you want your notice to appear, e.g., 1 February for the March issue. The *BCMJ* is distributed by second-class mail in the second week of each month except January and August.

Place your ad at www.bcmj.org/cme-advertising. You will be invoiced upon publication. Payment is accepted by Visa or MasterCard on our secure on-line payment site.

Planning your CME listing: Planning to advertise your CME event several months in advance can help improve attendance. Members need several weeks to plan to attend; we suggest that your ad be posted 2 to 4 months prior to the event.

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CME ON THE RUN VGH and various videoconference locations, 25 Jan–10 May (Fri)

CME on the Run sessions are held at the Paetzold Lecture Theatre, Vancouver General Hospital, and there are opportunities to participate via videoconference from various hospital sites. Each program runs on Friday afternoons from 1 to 5 p.m. and includes great speakers and learning materials. Topic and date: 1 Mar (geriatrics). Topics include: Dementia management update; A systematic approach to deprescribing; MAID: A family practice approach; Blood disorders in elderly: What not to miss and what to do; Evidence for primary prevention in the elderly; DNAR conversations in the office; Management of hypertension in elderly; Preventing falls in the elderly: What the FP can do. The next sessions are 12 Apr (gynecology and urology); 10 May (internal medicine). To register and for more information, visit ubcpd.ca, call 604 675-3777; or e-mail cpd.info@ubc.ca.

GP IN ONCOLOGY TRAINING Vancouver, 4 Feb–15 Feb (Mon–Fri)

The BC Cancer Agency's Family Practice Oncology Network offers an 8-week General Practitioner in Oncology training program beginning with a 2-week introductory session every spring and fall at the Vancouver Centre. This program provides an opportunity for rural family physicians, with the support of their community, to strengthen their oncology skills so that they may provide enhanced care for local cancer patients and their families. Following the introductory session, participants complete a further 30 days of customized clinic experience at the cancer centre where their patients are referred. These can be scheduled flexibly over 6 months.

Participants who complete the program are eligible for credits from the College of Family Physicians of Canada. Those who are REAP-eligible receive a stipend and expense coverage through UBC's Enhanced Skills Program. For more information or to apply, visit www.fpon.ca, or contact Jennifer Wolfe at 604 219-9579.

UBC RESPIRATORY MEDICINE UPDATE & HOT TOPICS IN CARDIOLOGY

Vancouver, 9 Feb (Sat)

Join us at the Pinnacle Hotel Vancouver Harbourfront for these two annual comprehensive updates hosted by the UBC Divisions of Respiratory Medicine and Cardiology. Register for the conference you primarily want to attend and then feel free to move between sessions. Respiratory medicine target audience: family physicians, respirologists, respiratory therapists, internists, respiratory educators, hospitalists, COPD educators, nurses, residents, and medical students. Topics: updates on COPD and asthma management, diagnosis of interstitial lung disease, the impact of forest fires on our lungs, the role and safety of e-cigarettes, a hands-on chest ultrasound workshop, and more. Cardiology target audience: family physicians, hospitalists, internists, cardiologists, nurses, residents, and medical students. Topics: atherosclerosis, the PAD patient, percutaneous valve management, preventing heart failure, aspirin in primary care, tackling obesity, common ECG abnormalities, and more. Respiratory conference details and registration: ubcpd.ca/course/resp2019. Cardiology conference details and registration: ubcpd.ca/course/cardiology2019. Tel: 604 675-3777; email cpd.info@ubc.ca; ubcpd.ca.

Calendar continued on page 48

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POST GRADUATE REVIEW IN FAMILY MEDICINE

Vancouver, 21–23 Feb (Thu–Sat)

The 54th Annual Post Graduate Review in Family Medicine will be held at the Vancouver Marriott Pinnacle Downtown Hotel. This comprehensive 3-day review course offers an update of knowledge central to the practice of family medicine in both rural and urban settings. Committed to addressing everyday practical issues, speakers present equally on current and special areas of concern to the primary health care professional. To complement a morning of group lectures, afternoons will include a series of elective interactive workshops allowing conference attendees to customize their learning experience. The three main topics for this year are Pediatrics and Women’s

Health (Thu), Internal Medicine and Geriatrics (Fri), and Potpourri (Sat). Accreditation: 16.75 Mainpro+ credits. To register and for more information visit <https://ubccpd.ca/course/post-grad-2019>, call 604 678-3777 or email: cpd.info@ubc.ca.

CHRONIC PAIN MANAGEMENT

Vancouver, 1–2 Mar (Fri–Sat)

The 32nd annual Pain and Suffering Symposium Chronic Pain Management conference is presented by the Foundation for Medical Excellence in cooperation with the College of Physicians and Surgeons of British Columbia. To be held at the Hyatt Regency Hotel, this course is designed to assist clinicians in managing the most challenging of pain patients—patients with complex chronic pain. Complex chronic pain infiltrates multiple dimensions of the patient’s life. Because of this, opioids are less effective in treating a patient’s distress. The conference assumes a basic knowledge of opioid prescribing principles and does not focus on the nuts and bolts. Rather the focus is on defining the proper role of opiates and other modalities in the management of complex chronic pain. For more information, please see the event brochure at <https://tfme.org/wp-content/uploads/2018/09/TheFoundationForMedicalExcellenceBrochure.pdf>. Register online at <https://tfme.org/2019-pain-and-suffering-can/>.

OBESITY SUMMIT

Vancouver, 6 Apr (Sat)

To be held at the Morris J. Wosk Centre for Dialogue, UBC CPD’s 7th annual Obesity Summit aims to connect health care practitioners with specific interests in caring for the obese patient. Expert and guest speakers from the obesity discipline will discuss a broad range of topics on obesity and bariatrics. Target audience: family physicians, surgeons, registered dietitians, nurses, physiothera-

pists, occupational therapists, residents, and others interested in caring for the obese patient. Topics covered: medical and dietary management of obesity, challenging medico-surgical case rounds, preoperative and post-operative patient care, and obesity management with additional medical issues. Course format consists of collaborative didactic lectures and interactive small group workshops and panel discussions. Time has been set aside for networking. Join us at the end of the day for a reception to meet with friends and colleagues. Program details and online registration: <https://ubccpd.ca/course/BCOS2019>. BC Obesity Society Website: <http://bcobesity.net/>. Tel: 604 675-3777; email: cpd.info@ubc.ca; ubccpd.ca.

NUTRITION IN PRIMARY CARE

Vancouver, 6 Apr (Sat)

Nutrition in Primary Care: Update and Controversies 2019 will be held at SFU Harbour Centre. This program is designed to enhance primary care providers’ knowledge of applied nutritional biochemistry and the associated research literature pertaining to several conditions commonly encountered in clinical practice. Various levels of evidence will be presented for evaluation and discussion in order to facilitate improved communication with patients about health promotion, disease prevention, and preferences for treatment. This group learning program has been certified by the College of Family Physicians of Canada for up to 5.75 Mainpro+ credits. At the conclusion of this activity, participants will be able to critique current evidence for nutritional support in several conditions commonly encountered in primary care, including the prevention of dementia and support of cardiovascular health; evaluate claims for potential health benefits or adverse effects resulting from popular weight-loss diets; explain nutritional biochemistry related to specific met-

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abolic pathways and physiological processes influencing stress and adrenal health; and communicate knowledgeably with patients about their preferences for treatment, including the use of specific diets and nutritional supplements. Download the program brochure for additional information. Scholarships are available to undergraduate and graduate medical students. Online registration: <https://isom.ca/event/npc-bc/>. Email: info@isom.ca.

MINDFULNESS IN MEDICINE WORKSHOPS AND RETREATS

Tofino, 26–29 Apr (Fri–Mon)
Cortes Island, 14–19 Jun (Fri–Wed)

Join Dr Mark Sherman for an exploration of mindfulness and meditation and how these practices support the work you do, the life you live, and the person you are. Tofino: Foundations of Theory and Practice Workshop for Physicians and Partners. Cortes Island (Hollyhock): A Physician Meditation Retreat. For more information or to register please go to www.livingthismoment.ca/events.

EMERGENCY AND CRITICAL CARE CONFERENCE

Parksville, 1–2 Jun (Sat–Sun)

Join us in Parksville on Vancouver Island for this year's Vancouver Island "Top 5 in 10" Emergency and Critical Care conference. This course will be held at the Parksville Community Centre and is geared to emergency physicians, family physicians, registered nurses, residents, and students. This event has been expanded to 2 days and will maintain the same great format of 10-minute lectures, fun intermissions, contests, entertainment, and videos. Come laugh and learn. Saturday night mixer with special guest Dr Brian Goldman. Course features at the new venue will now include the critical care component. Great speakers: Drs Grant Innes, Peter Rosen, David Willisroft, and

more. There may also be an APLS preconference course—stay tuned. Accommodation: The Beach Club Resort: <http://bit.ly/viec2019rooms>. Group Code: UBC CPD-Vancouver Island Emergency Conference. Booking deadline: 30 Apr. Program details and registration: <https://ubccpd.ca/course/viec2019>. Tel: 604 675-3777; email: cpd.info@ubc.ca.

PRACTICE SURVIVAL SKILLS Vancouver 15 Jun (Sat)

The 12th annual Practice Survival Skills—What I Wish I Knew in My First Years of Practice conference will be held at the UBC AMS Nest and emphasize practical, nonclinical knowledge crucial for your career. Topics include billing and billing forms, rural incentives, MSP audits, medicolegal advice and report writing, job finding and locums, financial and insurance planning, practice management and incorporation, licensing

and credentialing, and digital communication advice. Target audience: family physicians, specialty physicians, locums, IMGs, physicians new to BC, family practice and specialty residents, and physicians working in episodic care settings. Course format comprises collaborative didactic lectures and interactive small group workshops; plenty of networking opportunities, and practice-based exhibits. Join us in the afternoon for a job fair and networking reception to meet with colleagues and make career connections. Program details and online registration at <https://ubccpd.ca/course/practice-survival-skills-2019>. Tel: 604 675-3777; email: cpd.info@ubc.ca; ubccpd.ca.



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The *British Columbia Medical Journal* is a general medical journal that seeks to continue the education of physicians through review articles, scientific research, and updates on contemporary clinical practices while providing a forum for medical debate. Several times a year, the *BCMJ* presents a theme issue devoted to a particular discipline or disease entity.

We welcome letters, blog posts, articles, and scientific papers from physicians in British Columbia and elsewhere. Manuscripts should not have been submitted to any other publication. Articles are subject to copyediting and editorial revisions, but authors remain responsible for statements in the work, including editorial changes; for accuracy of references; and for obtaining permissions. The corresponding author of scientific articles will be asked to check page proofs for accuracy.

The *BCMJ* endorses the "Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals" by the International Committee of Medical Journal Editors (updated December 2016), and encourages authors to review the complete text of that document at www.icmje.org.

All materials must be submitted electronically, preferably in Word, to:

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BC Medical Journal

E-mail: journal@doctorsofbc.ca
Tel: 604 638-2815
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EDITORIAL PROCESS

Letters to the editor, articles, and scientific papers must be reviewed and accepted by the *BCMJ*'s eight-member Editorial Board prior to publication. The Board normally meets the last Friday of every month, at which time submissions are distributed for review the following month. We do not acknowledge receipt of submissions; the editor will contact authors of articles by e-mail once the submission has been reviewed by the Board (usually within 8 to 10 weeks of submission). The general criteria for acceptance include accuracy, relevance to practising BC physicians, validity, originality, and clarity. The editor contacts authors to inform them whether the paper has been rejected, conditionally accepted (that is, accepted with revisions), or accepted as submitted. Authors of letters are contacted only if the letter is accepted and editorial staff need further information. Scientific papers and other articles typically take 5 to 10 months from the date of receipt to publication, depending on how quickly authors provide revisions and on the backlog of papers scheduled for publication. Manuscripts are returned only on request. The *BCMJ* is posted for free access on our web site.

FOR ALL SUBMISSIONS

- Avoid unnecessary formatting, as we strip all formatting from manuscripts.
- Double-space all parts of all submissions.
- Include your name, relevant degrees, e-mail address, and phone number.
- Number all pages consecutively.

Opinions

BCMD2B (medical student page). An article on any medicine-related topic by a BC physician-in-training. Less than 2000 words. The *BCMJ* also welcomes student submissions of letters and scientific/clinical articles. BCMD2B and student-written clinical articles are eligible for an annual \$1000 medical student writing prize.

Blog. A short, timely piece for online publication on bcmj.org. Less than 500 words. Submissions on any health-related topic will be considered. Should be current, contain links to related and source content, and be written in a conversational tone.

The Good Doctor. A biographical feature of a living BC physician. Less than 2000 words.

Letters. All letters must be signed, and may be edited for brevity. Letters not addressed to the Editor of the *BCMJ* (that is, letter copied to us) will not be published. Letters commenting on an article or letter published in the *BCMJ* must reach us within 6 months of the article or letter's appearance. No more than three authors. Less than 300 words.

Point-Counterpoint. Essays presenting two opposing viewpoints; at least one is usually solicited by the *BCMJ*. Less than 2000 words each.

Premise. Essays on any medicine-related topic; may or may not be referenced. Less than 2000 words.

Proust for Physicians. A lighthearted questionnaire about you. Submit responses online at www.surveymonkey.com/s/proust-questionnaire, print a copy from the *BCMJ* website at www.bcmj.org/proust-questionnaire, or contact journal@doctorsofbc.ca or 604 638-2858.

Special Feature. Articles, stories, history, or any narrative that doesn't fit elsewhere in the *BCMJ*. Less than 2000 words.

Departments

Obituaries. Include birth and death dates, full name and name deceased was best known by, key hospital and professional affiliations, relevant biographical data, and photo. Less than 300 words.

News. A miscellany of short news items, announcements, requests for study participants, notices, and so on. Submit suggestions or text to journal@doctorsofbc.ca or call 604 638-2858 to discuss. Less than 300 words.

CLINICAL ARTICLES/CASE REPORTS/SURVEY STUDIES

Manuscripts of scientific/clinical articles and case reports should be 2000 to 4000 words in length, including tables and references. The first page of the manuscript should carry the following:

- Title, and subtitle, if any.
- Preferred given name or initials and last name for each author, with relevant academic degrees.
- All authors' professional/institutional affiliations, sufficient to provide the basis for an author note such as: "Dr Smith is an associate professor in the Department of Obstetrics and Gynaecology at the University of British Columbia and a staff gynecologist at Vancouver Hospital."
- A structured or unstructured abstract of no more than 150 words. If structured, the preferred headings are "Background," "Methods," "Results," and "Conclusions."
- Three key words or short phrases to assist in indexing.
- Disclaimers, if any.
- Name, address, telephone number, and email address of corresponding author.

Survey studies must have a response rate of at least 50% in order for the paper to be reviewed for publication consideration. Papers with less than this response rate will not be reviewed by the *BCMJ* Editorial Board. We recognize that it is not always possible to achieve this rate, so you may ask the Editor in advance to waive this rule, and if the circumstances warrant it, the Editor may agree to have the paper reviewed.

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When submitting a clinical/scientific/review paper, all authors must complete the *BCMJ*'s four-part "Authorship, copyright, disclosure, and consent form."

1. Authorship. All authors must certify in writing that they qualify as an author of the paper. To be considered an author, an individual must meet all three conditions:

- Made substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data, and
- Drafted the article or revised it critically for important intellectual content, and
- Given final approval of the version to be published.

Order of authorship is decided by the co-authors.

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3. Disclosure. All authors must sign a “Disclosure of financial interests” statement and provide it to the *BCMJ*. This may be used for a note to accompany the text.

4. Consent. If the article is a case report or if an individual patient is described, written consent from the patient (or his or her legal guardian or substitute decision maker) is required.

Papers will not be reviewed without this document, which is available at www.bcmj.org.

References to published material

Try to keep references to fewer than 30. Authors are responsible for reference accuracy. References must be numbered consecutively in the order in which they appear in the text. Avoid using auto-numbering as this can cause problems during production.

Include all relevant details regarding publication, including correct abbreviation of journal titles, as in *Index Medicus*; year, volume number, and inclusive page numbers; full names and locations of book publishers; inclusive page numbers of relevant source material; full web address of the document, not just to host page, and date the page was accessed. Examples:

1. Gilsanz V, Gibbons DT, Roe TF, et al. Vertebral bone density in children: Effect of puberty. *Radiology* 2007;166:847-850.

(NB: List up to four authors or editors; for five and more, list first three and use et al.)

2. Mollison PL. *Blood Transfusion in Clinical Medicine*. Oxford, UK: Blackwell Scientific Publications; 2004. p. 78-80.
3. O’Reilly RA. Vitamin K antagonists. In: Colman RW, Hirsh J, Marder VJ, et al. (eds). *Hemostasis and Thrombosis*. Philadelphia, PA: JB Lippincott Co; 2005. p. 1367-1372.
4. Health Canada. *Canadian STD Guidelines, 2007*. Accessed 15 July 2008. www.hc-sc.gc.ca/hpb/lcdc/publicat/std98/index.html.

(NB: The access date is the date the author consulted the source.)

A book cited in full, without page number citations, should be listed separately under Additional or Suggested reading. Such a list should contain no more than five items.

References to unpublished material

These may include articles that have been read at a meeting or symposium but have not been published, or material accepted for publication but not yet published (in press). Examples:

1. Maurice WL, Sheps SB, Schechter MT. Sexual activity with patients: A survey of BC physicians. Presented at the 52nd Annual Meeting of the Canadian Psychiatric Association, Winnipeg, MB, 5 October 2008.

2. Kim-Sing C, Kutynec C, Harris S, et al. Breast cancer and risk reduction: Diet, physical activity, and chemoprevention. *CMAJ*. In press.

Personal communications are not included in the reference list, but may be cited in the text, with type of communication (oral or written) communicant’s full name, affiliation, and date (e.g., oral communication with H.E. Marmon, director, BC Centre for Disease Control, 12 November 2007).

Material submitted for publication but not accepted should not be included.

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Should possible scientific misconduct or dishonesty in research submitted for review by the *BCMJ* be suspected or alleged, we reserve the right to forward any submitted manuscript to the sponsoring or funding institution or other appropriate authority for investigation. We recognize our responsibility to ensure that the question is appropriately pursued, but do not undertake the actual investigation or make determinations of misconduct.

Tables and figures

Tables and figures should supplement the text, not duplicate it. Keep length and number of tables and figures to a minimum. Include a descriptive title and units of measure for each table and figure. Obtain permission and acknowledge the source fully if you use data or figures from another published or unpublished source.

Tables. Please adhere to the following guidelines:

- Submit tables electronically as Word or Excel files so that they may be formatted for style.
- Number tables consecutively in the order of their first citation in the text and supply a brief title for each.
- Place explanatory matter in footnotes, not in the heading.
- Explain all nonstandard abbreviations in footnotes.
- Ensure each table is cited in the text.

Figures (illustrations). Please adhere to the following guidelines:

- Images must be high resolution; if unsure, send highest resolution possible and we will advise if necessary.
- Number figures consecutively in the order of their first citation in the text and supply a brief title for each.
- Place titles and explanations in legends, not in or on the illustrations themselves.

- Provide internal scale markers for photomicrographs.
- Ensure each figure is cited in the text.
- Color is not normally available, but if it is necessary, an exception may be considered.

Units

Report measurements of length, height, weight, and volume in metric units. Give temperatures in degrees Celsius and blood pressures in millimetres of mercury. Report hematologic and clinical chemistry measurements in the metric system according to the International System of Units (SI).

Abbreviations

Except for units of measure, we discourage abbreviations. However, if a small number are necessary, use standard abbreviations only, preceded by the full name at first mention, e.g., in vitro fertilization (IVF). Avoid abbreviations in the title and abstract.

Drug names

Use generic drug names. Use lowercase for generic names, uppercase for brand names, e.g., venlafaxine hydrochloride (Effexor). Drugs not yet available in Canada should be so noted.

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- Three key words are provided.
- Author information is provided for all authors.
- References in text are in correct numerical order.
- Reference list is in correct numerical order and is complete.
- References list contains up to three authors only.
- All figures and tables are supplied.
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practices available

SURREY—FP

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Well-equipped, well-established, busy turnkey family practice for sale. OSCAR EMR, fibre-optic Internet. Lovely patients, lovely view, lovely setting. Email broadwayfamilypractice@gmail.com.

VICTORIA—FAMILY PRACTICE AVAILABLE

GP retiring, long-established solo family practice available. Start-time flexible (over several months). All equipment, including computer, furniture, included for price of the strata title of 820 sq. ft. office, or rent. Full general practice. Can add obstetrics if wanted. Office is one block from Royal Jubilee Hospital in a medical-rental professional building with recent renovations. If interested, please email ejmathes@hotmail.com or phone 250 598-9223.

employment

ARMSTRONG—FT FAMILY PHYSICIAN

Haugen Medical Group, located in the heart of the North Okanagan, is in need of a full-time family physician to join a busy family practice group. Flexible hours, congenial peers, and competent nursing and MOA staff will provide exceptional support with very competitive overhead rates. Obstetrics, nursing home, and inpatient hospital care are not required, but remain optional. Payment schedule: fee for service. If you are looking for a fulfilling career balanced with everything the Okanagan lifestyle has to offer, please contact Maria Varga for more information at mariavarga86@gmail.com.

NANAIMO—GP

General practitioner required for locum or permanent positions. The Caledonian Clinic is located in Nanaimo on beautiful Vancouver Island. Well-established, very busy clinic with 26 general practitioners and 2 specialists. Two locations in Nanaimo; after-hours walk-in clinic in the evening and on weekends. Computerized medical records, lab, and pharmacy on site. Contact Lisa Wall at 250 390-5228 or email lisa.wall@caledonianclinic.ca. Visit our website at www.caledonianclinic.ca.

NANAIMO—SITE DIRECTOR, FAMILY PRACTICE RESIDENCY PROGRAM

Nanaimo's clinical family practice site and UBC are looking for a creative, enthusiastic physician leader for the role of site director for Nanaimo's Family Practice Residency Program effective 3 June 2019. The site director is responsible for the support and development of resident education and faculty development. The Family Practice Residency Program in Nanaimo has a rich and welcoming culture for family practice residents and is well supported by the local physicians, the UBC Island Medical Program, and the Vancouver Island Health Authority. Inquiries about the position can be emailed to Dr Mark MacKenzie, Director of the UBC Family Practice Postgraduate Program: mark.mackenzie@ubc.ca.

NORTH DELTA—TWO FPS, LOCUM/FT

Looking for two family physicians for our clinic at the Scottsdale Medical Centre to start ASAP as locums, full-time, or associates, with the intention of being partners in the long run. Clinic is located in North Delta (open since 1983). Fully equipped with EMR and paper charts. We have a full-time family practice and a walk-in clinic. Billing split negotiable. Contact medicalclinic07@gmail.com or call 604 597-1606 as soon as possible.

NORTH VAN—FP LOCUM

Physician required for the busiest clinic/family practice on the North Shore! Our MOAs are known to be the best, helping your day run smoothly. Lucrative 6-hour shifts and no headaches! For more information, or to book shifts

online, please contact Kim Graffi at kimgraffi@hotmail.com or by phone at 604 987-0918.

PORT COQUITLAM (HYAMS MEDICAL CLINIC)—FT GP FOR FAMILY CLINIC

Elicare manages five family medicine clinics in the Lower Mainland and is currently seeking physicians interested in working in a family practice located by 1250 Dominion Ave. in Port Coquitlam. PT/FT contracts exist. Split is 70/30. EMR: Plexia, training provided. Relocation incentives are available. Please contact rw@bcdrug.com.

POWELL RIVER—LOCUM

The Medical Clinic Associates is looking for short- and long-term locums. The medical community offers excellent specialist backup and has a well-equipped 33-bed hospital. This beautiful community offers outstanding outdoor recreation. For more information contact Laurie Fuller: 604 485-3927, email: clinic@tmca-pr.ca, website: powellrivermedicalclinic.ca.

RICHMOND (LANSDOWNE MEDICAL CLINIC)—FT GP FOR FAMILY CLINIC

Elicare manages five family medicine clinics in the Lower Mainland and is currently seeking physicians interested in working in a family practice located by 5611 Cooney Rd. in Richmond. PT/FT contracts exist. Split is 75/25. EMR: CHS Advantage, training provided. Relocation incentives are available. Please contact rw@bcdrug.com.

ROYAL COLUMBIAN HOSPITAL, NEW WEST—GPS, SHARED CARE: PT, LONG-TERM

Join the RCH Shared Care team and add variety to your practice! We are family doctors tending to medical issues on psychiatric inpatients. The patient-centred team comprises Shared Care physicians, psychiatrists (MRP), nurses, residents, and medical students. We assess newly admitted patients medically and follow them through their stay. The adult patients (all ages) have a variety of medical problems. Daily visits M-F, timing flexible. Supported by full medical, surgical, pharmacy, diagnostic service-

es; should be willing to learn about psychiatric medications and the interaction of medical and psychiatric health issues. Interested candidates submit cv to: loretta.kane@fraserhealth.ca.

SOUTH SURREY/WHITE ROCK—FP

Busy family/walk-in practice in South Surrey requires GP to build family practice. The community is growing rapidly and there is great need for family physicians. Close to beaches and recreational areas of Metro Vancouver. OSCAR EMR, nurses/MOAs on all shifts. CDM support available. Competitive split. Please contact Carol at Peninsulamedical@live.com or 604 916-2050.

SOUTH VAN/RICHMOND—FP/SPECIALIST

The South Vancouver Medical Clinic seeks family physicians and specialists. Split is up to 80/20. Closing your practice? Want to work part-time? Join us to see only booked patients or add walk-ins for variety. Oscar EMR. Positions in Richmond also available. Contact Dr Balint Budai at tgr604@gmail.com.

SURREY/DELTA/ABBOTSFORD—GPS/SPECIALISTS

Considering a change of practice style or location? Or selling your practice? Group of seven locations has opportunities for family, walk-in, or specialists. Full-time, part-time, or locum doctors guaranteed to be busy. We provide administrative support. Paul Foster, 604 572-4558 or pfoster@denninghealth.ca.

SURREY—PHYSICIAN NEEDED FOR BUSY WALK-IN/FAMILY MED CLINIC

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VANCOUVER (INNER CITY)—PT/FT GENERAL PRACTITIONER

The Vancouver Native Health Society medical clinic is seeking general practitioners to join us in providing primary health care promoting both Indigenous and Western approaches to health and wellness, healing and medicines, and culturally safe care. Payment schedule: sessional. In addition to the provision of general primary care in a community setting, the clinic also has robust addiction medicine and HIV/HCV programs. The VNHS medical clinic is a multidisciplinary comprehensive care clinic responding to the needs of the Indigenous and non-Indigenous community. We welcome applications and inquiries from interested physicians. Contact Recruitment - VNHS at hra@vnhs.info.

VICTORIA—GP/WALK-IN

Shifts available at three beautiful, busy clinics: Burnside (www.burnsideclinic.ca), Tillicum (www.tillicummedicalclinic.ca), and Uptown (www.uptownmedicalclinic.ca). Regular and occasional walk-in shifts available. FT/PT GP post also available. Contact drianbridger@gmail.com.

VICTORIA—PERMANENT/PT FP

Experienced family physician wishing to expand medical team at Mattick's Farm in beautiful Cordova Bay. Fully equipped office, OSCAR EMR, congenial staff, close to schools. Contact phoughton@shawcable.com, phone 250 658-5228.

medical office space

CUMBERLAND (VANCOUVER ISLAND, BC)—OFFICE SPACE FOR GENERAL PRACTICE

Office space available for a family medical practice in Cumberland, BC. If you desire an incredible work-life balance, Cumberland is the perfect community in which to work and raise a family. This office space is currently used as a family medical practice, so setting up can be very easy, along with a captive and growing patient population. Please contact sean@blueoceandentalgroup.com or 250 622-4290 for more details.

SICAMOUS—SPACE FOR GPS

Small family-orientated community, great place to raise a family. Community seeking general physicians. Currently available: 1500 sq. ft. in a shopping plaza next to Interior Health Community Services. Recently used as a dental practice, would make an ideal family medical practice. Contact vic1bc@telus.net or 250 804-3080.

vacation properties

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miscellaneous

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MitoCanada is a patient advocacy organization, established in 2010, focusing on awareness, support, and funding research, and the only Canadian mitochondrial disease charity.

Read the article: bcmj.org/news/mitochondrial-disease-resource



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2 Shares

Proust questionnaire: Dr Bruce Phillips



What profession might you have pursued, if not medicine?

Radio broadcast journalism. Specifically, compiling and reading the news on public radio.

Which talent would you most like to have?

The ability to write stories that move readers emotionally and allow them to see life in astonishingly different ways.

What do you consider your greatest achievement?

As a person of color, my move to Canada from Apartheid South Africa was a spiritual revelation.

Who are your heroes?

People around the world who shoulder the burden of grinding poverty with quiet dignity and grace.

Dr Phillips works as a full-time pediatrician in the BC Children's Hospital emergency department.

What is your idea of perfect happiness?

Being in a quiet shady garden with a glass of wine, contemplating new growth.

What is your greatest fear?

Losing my faculties and becoming a burden to myself, those close to me, and to society.

What is the trait you most deplore in yourself?

My inability to plan my life.

What characteristic do your favorite patients share?

As a pediatrician, I admire those parents who silently, by their mere presence and subtle body language, impart a sense of security and confidence to their children.

Which living physician do you most admire?

Dr Hilton Ling. He was there as the cool role model staff guy when I was doing my surgical rotation as a fresh-faced intern in South Africa. He operated on my brother's hemorrhoids. He was here 30 years later, operating on my spouse's heart at St. Paul's. Thinner of hair but still the cool dude.

What is your favorite activity?

Working in an overplanted, overgrown garden with shady moist spots for moss and ferns. And maybe a glass of wine after.

Which words or phrases do you most overuse?

"Amazing!" Multiple times a day, but as a tribute to my life—never without

really feeling the emotion that goes with it!

What is your favorite place?

A quiet secret clearing in Stanley Park near the tennis courts. A shady tree in a pool of sun, perfect with a book on a summer's day.

What do you most value in your colleagues?

Kindness, respect, empathy, and the feeling that I belong to an intimate family at work.

What are your favorite books?

Rediscovering Charles Dickens and his exquisite use of language and plot. Anything by Salman Rushdie.

What is your greatest regret?

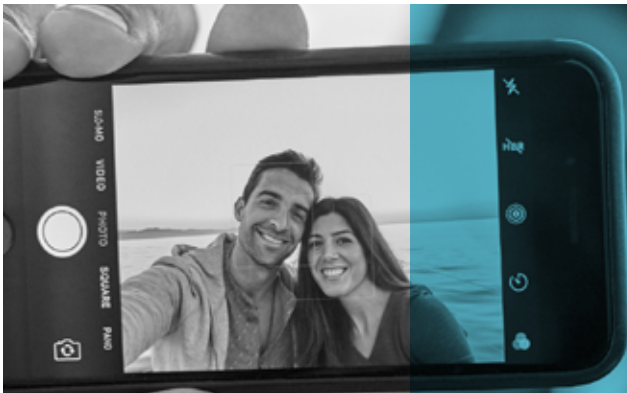
Arriving late to meet my parents at the airport on their visit to Vancouver from South Africa. It was their very first time flying, half a world away from where they started. I found them eventually—huddled, bewildered, and exhausted, and relieved to see me.

What is the proudest moment of your career?

I feel pride every time a learner expresses appreciation for having a comfortable, safe learning environment, which I attempt to provide for them, and seeing them flourish.

How would you like to die?

With acceptance, grace, and dignity.



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