



BCMJJ
BC Medical Journal

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ALSO IN THIS ISSUE

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ON THE COVER

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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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Spot-on studies

“**H**ey DRR, we did a study and the conclusion is that you are incompetent.”

“While this may be true, can I enquire as to your study design?”

“We did a survey study and 67% of respondents agree that you aren’t fit to be the editor of a journal. We did all the statistics and the *P* value is < 0.001.”

“I’m curious how you decided who to survey?”

“Well, Bob and I don’t like you and my wife thinks you are okay, mostly because she doesn’t really know you.”

At the *BCMJ* we review all sorts of submissions for publication and we appreciate all the work that goes into the process of designing and carrying out a scientific study. That being said, one thing that drives us a little crazy (particularly the editor) is low-response survey studies. Surveys are handed out, collected, tabulated, and subjected to rigorous statistical analysis including *P* values, which all looks very impressive. The problem: many of these surveys have response

rates of less than 20% from which no meaningful information can be obtained. The assumption that the greater than 80% of people who didn’t respond would have completed the survey the same way as the respondents is just that—an assumption.

The assumption that the greater than 80% of people who didn’t respond would have completed the survey the same way as the respondents is just that—an assumption.

What if that 80% couldn’t be bothered to complete the survey because they really disliked something about it? Good survey studies are easy to spot. The target population is clearly defined and follow-up contact is done on numerous occasions in an attempt to increase the response rate. The au-

thors also include a discussion in their paper of the limits of their survey study. Here at the *BCMJ* we don’t really look at a survey study unless the response rate is well over 50%.

Now, I don’t want to discourage prospective authors, only to give advice on how to increase the chance of publication. Handing out program evaluation surveys in a haphazard fashion without regard to random sampling techniques or total number of potential respondents is really a waste of everyone’s time and doesn’t lead to conclusions that can be acted upon.

Okay, I’ve said my piece and have ranted enough.

—DRR

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“I have to post this!”

While on social media one night, I was scrolling through photos of food adventurers, fashion bloggers, and exotic travelers, when suddenly a photo of a surgeon holding up a large mass in the OR showed up on my feed. The photo included blood, IV lines, the intubated patient, and all. I took a second look and of course could not resist clicking into the comments. The 25 kg ovarian mass had been removed from a patient who had suffered from abdominal pain for years. What was more shocking is that the photo got 14 000 likes in 1 day.

Were the likes for the surgeon who operated on the patient? Or for the patient, who had suffered for years and now been cured? Or because the photo contained graphic content that satisfied the public’s curiosity about

medicine? I was confused, curious, and intrigued.

I decided to look into the policies regarding medicine and social media, and found an article published in 2017 by the Canadian Medical Protective Association (CMPA) that addressed

What happens when a stranger halfway around the world decides to distribute the photo and claim it as their own, perhaps even posting their own opinion and diagnoses of the case?

this issue.¹ The CMPA suggests that “physicians who share information about their existing patients on social networks are obligated to protect patient confidentiality . . . by ensuring that the posted information is properly de-identified.” The article also mentioned that physicians may share identifiable personal health information if the patient’s consent is obtained and documented consent is signed. The College of Physicians and Surgeons of BC adopted similar professional guidelines last year.²

I know of physicians who will ask for their patients’ permission to take photos of an interesting clinical case for teaching purposes, or for use on their own blogs and social media platforms. If a patient’s consent and agreement were obtained, then it is unlikely any legal action would arise. But what happens when a stranger halfway around the world decides to distribute the photo and claim it as their own, perhaps even posting their own opinion and diagnoses of the case? If online photos were to be redistributed without the knowledge

of the original author, and the patient were to make a complaint and bring forward legal action, the author who originally posted the photos may be liable despite doing their part to maintain patient confidentiality.¹

There are myriad online comments to the interesting clinical cases, with physicians and patients sharing similar experiences or acknowledging the wonders of the human body. I wonder what a patient thinks if their diagnosis or treatment plan differed from those suggested by anonymous comments. Would their faith in their doctor waiver? Or maybe they would add to the conversation to try and garner support?

As social media becomes more prominent, many physicians and patients find it to be a useful tool for sharing information and experiences. It can even act as a support group. As the online community grows, there are also many positive opportunities for professional education and networking, promotion, and public health awareness.

Next time you come across a photo of an interesting clinical case on social media, allow your curiosity to see what the photo is about; maybe even learn something from it. But don’t forget to look at it objectively and consider how social media has become intertwined not only into our personal lives, but also our professional ones.

—YS

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Pseudoscience, anti-science, and woo: This time it's personal

We all have memories of childhood rituals that seemed normal at the time, but feel more suspect upon adult reflection. For me, Saturday mornings were spent gorging on enormous bowls of sugary cereal while a boxy television framed large men in colorful costumes pretending to hurt one another. Yes, my father was a wrestling fan, and whether he believed it was real or theatrical, he wasn't saying.

Looking back on that passive exposure to spandex and violence, I now realize that there were morals implicit in the story arc of every episode. For example, there were two sets of rules. On one hand, the villains were able to use any means they desired in the attempt for victory. They could claw and scratch, kick below the belt, or hit their opponents with hefty foreign objects hidden perilously in their microscopic trunks. The heroes, on the other hand, had to play by the rules. The message was clear: it's not enough to win, it must be done the right way.

But when it comes to talking about health, it feels like we are back in the squared circle. In one corner, we have the scientific community that promotes the best information as we know it and speaks often with reservation, knowing that theories are by definition limited—ideas waiting for a challenge, able to be disproven. We are naturally cautious and restrained. We listen to patients and scrutinize studies. We are a storied profession seemingly reticent to tell stories.

This is problematic, because in the other corner confident promoters of immunity boosters, cancer-preventing supplements, superfoods, and weight loss miracles aim to inform the public on how doctors order the wrong

thyroid tests, ignore fatigued adrenals, and let yeast run amok in innocent intestines. Coincidentally, these promoters not only know the secrets, they sell the solutions as well (and for a great price if you act now!).

Let's use science *and* stories to appeal to people's hearts as well as their heads.

Such attacks on science are found everywhere. Although we take into account how a study is funded, there are those who reject work supported by industry as proof that doctors are in the pocket of Big Pharma. (I suppose the often useless and potentially harmful products that make up the \$6 billion supplement industry are grown organically in orchards where willing workers harvest them for equitable use.)

Millions of lives around the globe have been saved through mass vaccination, yet the antivaccine movement counters with tales of profits-over-people, conspiracies to control individual freedoms, and children afflicted by autism, autoimmune disease, and other injury blamed on vaccination. These antivaccine campaigns have taken on political weight as a symbol of anti-establishment, resulting in outbreaks of mumps, measles, polio, and other preventable—and eradicable—diseases.

Clearly our efforts have not been as effective as they could be. To truly go to the mat for our patients, our neighbors, and our communities, we need to reassess our self-imposed rules. The old adage "Don't bring stories to an evidence fight" misses the point: to achieve the goals of healthier people and societies, stories are exactly what we need.

Certainly we must continue to

hold ourselves to the highest standard and abide by the scientific process. We need to continue working with our patients, complementing



their values with our scientific information and making the best decisions together. But in our advocacy efforts we must also engage more by using the power of stories to support what science is telling us.

Evolution has wired our brains for stories. Stories help us organize information and tie content together, and help us provide the meaning behind the science. They connect us to each other through shared experiences and common values, and they are how we explain the past and predict the future. It is fair play to mention our wheelchair-bound patients who have polio to vaccine-hesitant parents or to show pictures of lethargic children covered in the red spotted rash of measles. We can talk about how Steve Jobs regretted delaying treatment for his cancer to pursue "alternatives." We can still be measured in what we say, but we must do a better job of showing what we mean.

So let's continue to promote the best health practices that we know. Let's leave behind our notions of what constitutes a fair battle. Let's use science in our content and stories in our style to build bridges and appeal to people's hearts as well as their heads.

And if using our stories helps people make better-informed decisions, then that's a worthwhile fight for us all.

—Eric Cadesky, MD
Doctors of BC President

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We welcome original letters of less than 300 words; they may be edited for clarity and length. Letters may be emailed to journal@doctorsofbc.ca, submitted online at bcmj.org/submit-letter, or sent through the post and must include your mailing address, telephone number, and email address. All letter writers will be required to disclose any competing interests.

Re: Water, water everywhere but not a drop to drink

Dr Maheswaran raised the concern of clean-water insecurity for the Indigenous peoples of Canada (*BCM J* 2018;60:195). The effects include infections, mental and physical stress, diabetes, and dental caries.

Mr Mosa and Ms Duffin outlined the history of mercury poisoning of the Grassy Narrows First Nation along the English–Wabigoon river system in Ontario compared to an industrial incident in Minamata, Japan. The poisoning in Ontario was due to mercury contamination from a pulp and paper mill some 50 years ago.¹ The mercury levels downstream of the plant should have returned to normal by now; however, recent tests revealed much higher mercury levels downstream compared with upstream locations, from unknown sources.² The mercury poisoning continues to affect the health, economy, and culture of this Indigenous community.

Federal and provincial governments should act urgently to ensure Indigenous peoples have access to clean, safe drinking water wherever they live in Canada.

—H.C. George Wong, MD,
FRCPC

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Re: Best practices in treating chronic noncancer pain

I was disheartened to see that Dr Peter Rothfels, in his article “Best practices in treating noncancer pain”¹ chose to use United States data and an Ontario study about emergency physician prescribing to back up his claim that, “since the mid-1990s, physicians have been increasingly prescribing higher doses and stronger opioids for their patients, particularly those with chronic noncancer pain.” Being the chief medical officer for WorkSafeBC, I would presume this article is addressed to BC physicians and their prescribing.

Prescribing of opioids varies dramatically across Canada.² BC’s mortality rate of 3.9 pharmaceutical opioid-associated deaths per 100 000 population has remained stable from 2004 to 2013.³ This rate includes all pharmaceutical opioid deaths (including methadone for maintenance), intentional and unintentional, prescribed, and diverted. This pattern is strikingly different from the pattern in Ontario and the United States. The BC coroner, in reviewing prescription opioid deaths in BC from 2009 to 2013,⁴ found that methadone, used as opioid agonist therapy, accounted for

30% of the deaths, and that 25% of the deaths involved codeine. In 97% of these deaths, multiple other prescribed and nonprescribed substances were involved.

Any death that implicates a prescribed drug should be investigated in order to prevent further harm, and physicians should be made aware of the outcomes of these investigations.

The narrative that implies that BC physicians have been prescribing more opioids and in greater doses leading to increased harm is not accurate.

—Romaine Gallagher, MD,
CCFP(PC), FCFP
Vancouver

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WorkSafeBC declined to respond. —ED

Sale of MD Financial Management

The sale of MD Financial Management to Scotiabank has been very unsettling to me and to many of my colleagues. This subsidiary of the CMA has been an integral part of the financial planning and retirement security for Canadian physicians for the past 50 years. An overwhelming number of the physicians I know supported MD Management because it felt safe. The physicians owned the company. The financial agents did not work on commission. They worked solely for us. The fees were the lowest in the investment community. It will be hard to convince us that this will not change. No company spends \$2 billion without a plan for a significant return on their capital investment.

The following excerpt from the MD Financial Management website demonstrates the special relationship it has had with Canadian physicians:

Owned by the Canadian Medical Association, MD Financial Management has the only business imperative of enhancing physicians' financial outcomes by focusing on their distinctive needs and operating in their best interests . . . MD's Advisors work on salary, not commission. Without incentives to sell any particular product, our Advisors provide objective advice that is in our clients' best interests . . . Our priority is for clients to meet their financial goals, not for us to maximize corporate profits.

We were all blindsided by this event. There was no debate, no proposals, and no inclusion of the mem-

bership. Why would the CMA even consider selling this trusted institution that dealt with the financial security of its members?

Questions to the CMA:

1. Why was this done?
2. Why was the membership not consulted? Why didn't the CMA float the idea to the membership long before entering negotiations? (They may talk about financial confidentiality, but that is disingenuous. Confidentiality does not apply to a theoretical discussion that the CMA should have had with their colleagues prior to embarking on the strategy.)
3. What happened to the \$2 billion? What were the commissions paid? Who received them?

The CMA may wish to change its mission statement, as posted on the MD Financial Management website, as it is no longer valid: "MD Financial Management supports the CMA and enhances the CMA-PTMA membership experience by helping members achieve financial well-being from medical school through retirement."

The CMA abdicated this responsibility and it was done in a secretive, noninclusive manner. It may have been legal, but it was also shameful.

I encourage the physicians of BC who share these concerns to communicate with the *BCMJ*, Doctors of BC, and the CMA. If you would like to be added to an email distribution group on this subject, please contact me at kenmarkel@hotmail.com.

—Ken Markel, MD
Richmond

Re: Sale of MD Financial Management; CMA Board Chair replies

Thank you for taking the time to share your thoughts on our decision to sell MD Financial Management. I appreciate this opportunity to provide some further details and hopefully answer some of the questions you raised.

First, I want to say that this was

not an easy decision to make, nor was it a process our members were used to. At the CMA, we're known for our consultations with members and we pride ourselves on it. Understandably, not being able to participate in this process was upsetting for some members and seen as a break from our usual consultative approach. Let me say that we would have much preferred to be able to discuss the sale with members ahead of time, but it simply wasn't possible for the protection of clients and staff and because of the nature of this type of transaction.

I can assure you that we've landed with an organization that can help us serve our clients even better. In fact, a key principle of our agreement is to offer services that are the "same or better." And so, our current products and people are not changing, they're only going to be expanded upon.

I know this is a bold step, but it's also a necessary one. At the end of the day, it would have been very difficult for MD to remain relevant and stay competitive given the way the financial industry is changing. With a new owner, MD will be able to expand its products and services and technology platforms while still providing the objective advice that it's known for. MD's advisors will remain salaried and noncommissioned. MD's main goal remains: to help Canada's physicians and their families achieve financial well-being.

Over the coming weeks, the CMA will be creating an investment board to be the steward of the proceeds of the sale. We'll be working closely with members to map out the best areas where we can effect impactful change and create programs to support physicians and better health in support of the CMA's vision and mission.

I believe, more than ever, that there's a need for a strong, national association to act on the issues that matter to all of us—physician

Continued on page 346

Continued from page 345

burnout, support for medical students and residents, and improved health care. The CMA is now better positioned than ever to be that leader and to be a strong voice for medicine for decades to come.

I do hope I've addressed some of your concerns, but please feel free to contact me at yourvoice@cma.ca with any further questions.

—**Brian Brodie, MD**
Chair, CMA Board of Directors

Re: Nonrecognized qualifications

Evert Tuyp raises some interesting points in his letter about non-recognized qualifications (*BCMJ* 2018;60:240). I appreciated the frank and honest editorial comment attesting that the *BCMJ* doesn't have a robust policy on the topic. I wonder whether the College of Physicians and Surgeons of BC, or for that matter governing bodies such as the College of Family Physicians of Canada, have robust policies either. As this issue clearly affects patient safety, public trust, and physician accountability, one would expect them to.

Any policy should provide evidence that nonrecognized training being used in Canada is validated, ethical, and indeed appropriate for patient needs. I have seen many patients who tell me that they have "already seen the specialist" in a particular town, while I am aware that there is no such specialist there. What they had actually seen were proudly displayed certificates of training that is not recognized in Canada, and patients are often completely unaware that this is the case. Perhaps part of any College policy should be a requirement for such physicians to obtain informed written consent from patients acknowledging that they understand when a certificate and training is not recognized in Canada.

—**Chris Sladden, FRCPC**
Kamloops

Re: Nonrecognized qualifications; College responds

While the College does not collect information from physicians about whether they perform a particular procedure or have a specific expertise or special interest beyond their formal training and academic credentials, it does have an expectation as outlined in the bylaws under the Health Professions Act, and as clearly stated in a practice standard (Advertising and Communication with the Public), that registrants represent themselves and their credentials accurately and truthfully, and that they avoid misleading the public through false or exaggerated claims.

Part 7, Section 7-4(3) of the bylaws states: "A registrant must not identify himself or herself as a specialist unless he or she has certification from the RCPSC or equivalent accrediting body approved by the board."

Part 7, Section 7-4(4) of the bylaws states: "No one other than a registrant who is a certificant or fellow of the RCPSC or who has completed postgraduate training in his or her specialty satisfactory to the registration committee, may indicate on his or her letterhead or office door or otherwise represent himself or herself as holding such specialist qualifications."

Only those registrants who have obtained certification with the RCPSC in a surgical field can refer to themselves as "surgeon."


The College encourages additional training and recognized certification through reputable societies and organizations such as the Canadian Society of Addiction Medicine (CSAM) and the American Society of Addiction Medicine (ASAM). Physicians who provide addiction medicine services come from a variety of professional backgrounds (e.g., family medicine, psychiatry, internal medicine) and, at this time, an established route to certification does not exist

through either of the two national certifying colleges. The College recognizes that there are many diploma and certification-granting organizations that sound more impressive than can be verified through independent accreditation of the training program.

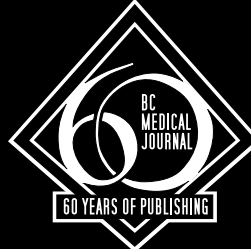
Physicians who have obtained membership or certification from a nonrecognized society, or participated in specialized training in a particular treatment or procedure, should be extra vigilant in ensuring that they are not misrepresenting themselves. For example, a family physician who has obtained additional training in treating sport injuries must clearly indicate on any advertising or promotional material that they are a "family physician with a special interest in sports medicine."

The legislation is clear. Physicians can advertise their professional services provided the content isn't inflated and that it genuinely assists patients in making informed choices about their health and well-being.

—**Heidi M. Oetter, MD**
Registrar and CEO,
College of Physicians and
Surgeons of British Columbia



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BC Medical Journal

BC Children's Hospital furthering development of immunotherapy treatments for kids

BC Children's Hospital has joined CureWorks, an international collaborative of leading academic children's hospitals focused on improving care for children with hard-to-treat cancers by expanding clinical trials and accelerating the development of leading-edge immunotherapy treatments.

Every year in BC, approximately 150 kids are diagnosed with cancer. Thanks to rapid and significant advances in cancer treatments, 80% of kids are now expected to survive. For the remaining 20%, who have cancers that are difficult to treat with traditional therapies, immunotherapy provides new hope.

Working with the newly formed Seattle Children's Hospital-based CureWorks, researchers at BC Children's will further the science of a promising type of immunotherapy called "chimeric antigen receptor (CAR) T-cell therapy," add to the body of knowledge around this innovative treatment, and develop expertise within the research institute and the hospital.

The first CAR T-cell clinical trials will launch this fall at BC Children's and will initially be available to children with certain types of leukemia who are no longer responding to conventional treatment.

Immune-resistant HIV mutations in Saskatchewan

The BC Centre for Excellence in HIV/AIDS (BC-CfE) and Simon Fraser University conducted research in response to reports in Saskatchewan of unusually rapid progression of HIV to AIDS-defining illnesses in the absence of treatment—revealing genetic mutations in HIV strains in that province.

The study, presented at the 2018 AIDS Conference in Amsterdam and published in the scientific journal *AIDS*, shows that HIV strains circulating in Saskatchewan have adapted to evade host immune responses. These HIV strains are being commonly transmitted and, if the resulting HIV infections are left untreated, rapid progress to AIDS-related illnesses may happen.

Researchers on the study—from the BC-CfE, SFU, and the Public Health Agency of Canada, in partnership with Saskatchewan physician-researchers and with funding from the Canadian Institutes of Health Research—were startled at the prevalence of immune resistance mutations. One key mutation was found in more than 80% of Saskatchewan HIV strains, compared with only about 25% of HIV strains found elsewhere in North America. The pervasiveness of such mutations is increasing over time. More than 98% of the HIV sequences collected in Saskatchewan most recently (2015 and 2016) harbored at least one major immune resistance mutation. HIV antiretroviral treatment, however, works equally effectively against immune-resistant HIV strains.

The multi-year analysis compared more than 2300 anonymized HIV sequences from Saskatchewan with data sets from sites across the United States and Canada. Genetic analyses of HIV strains in Saskatchewan showed high levels of clustering—indicating that viruses with similar mutations are being frequently and widely transmitted.

This study is significant as HIV incidence rates in Saskatchewan are among the highest in North America, with 2016 rates in some regions more than 10 times the national average. Saskatchewan's HIV epidemic is also unique in that nearly 80% of infected

persons self-identify as having Indigenous ancestry.

"Smart stent" detects narrowing of arteries

For every three individuals who have had a stent implanted to keep clogged arteries open and prevent a heart attack, at least one will experience restenosis—the renewed narrowing of the artery due to plaque buildup or scarring—which can lead to additional complications.

A team led by UBC electrical and computer engineering professor Kenichi Takahata has developed a "smart stent" that monitors even subtle changes in the flow of blood through the artery, detecting the narrowing in its earliest stages and making early diagnosis and treatment possible. The device uses medical-grade stainless steel and looks similar to most commercial stents. Researchers say it's the first angioplasty-ready smart stent.

Research collaborator Dr York Hsiang, a UBC professor of surgery and a vascular surgeon at Vancouver General Hospital, noted that monitoring for restenosis is critical in managing heart disease.

The device prototype was successfully tested in the lab and in a swine model. The research team is planning to establish industry partnerships to further refine the device, put it through clinical trials, and eventually commercialize it.

The research is described in the May issue of *Advanced Science*.

Matchmaking service combats antibiotic-resistant infections

UBC researchers have matched peptides with antibiotics so they can work together to combat hard-to-treat infections that don't respond well to drugs on their own. The study builds

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on previous research that showed that the peptides are key to making harmful bacteria more responsive to drugs.

The study aimed to find new treatments for infections caused by antimicrobial-resistant bacteria including *Escherichia coli* and the so-called ESKAPE pathogens, a group named from the first-letter of six bacteria species: *Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Enterobacter*. These infections collectively account for more than 60% of all hospital infections, manifesting as abscesses in the skin or infections in internal tissues like the lungs or urinary tract.

Most antibiotics are designed to work on bacteria that are swimming freely in the body. However, in the majority of infections, bacteria grow together on body surfaces in massive communities known as biofilms, shielded by a protective structure. Together, biofilm bacteria adapt to stress by learning to resist the immune system and chemicals, making them extremely resistant to antibiotics and difficult to treat.

The peptides help several antibiotics to work by removing the bacteria's ability to respond to stress and form these resistant communities. To find the best combination of peptide and drug, the researchers tested different options in a laboratory setting. Once they identified possible mixtures, they tested them in mice with abscesses on their skin. In total, they found seven combinations that worked better than antibiotics on their own.

When the peptides worked in combination with the drugs, the researchers observed a reduction in the size of the abscess in mice and the number of bacteria in the infection area. The combinations offered up to 100-fold improvement.

The results are particularly important for patients with cystic fibrosis

who often deal with dense, chronic infections in the lungs. The disease causes mucus to build up around tissues, creating an ideal environment for bacteria to form biofilms and thrive.

Researchers are hoping to commercialize this treatment and have licensed the peptides to ABT Innovations, a UBC spinoff company owned by Dr Bob Hancock.

The research was funded by Cystic Fibrosis Canada, a Canadian Institutes of Health Research Foundation grant, the Canada Research Chair program, and the Alexander von Humboldt Foundation. The study was published in *PLOS Pathogens*.

Novel therapy offers hope for social anxiety

People with social anxiety disorder benefit from group therapy that targets the negative mental images they have of themselves and others, according to a study at the University of Waterloo. Called "imagery-enhanced" cognitive behavioral therapy (CBT), the new group treatment helps relieve symptoms including social performance and interaction anxiety, depression, and stress.

More than 4 million Canadians will develop social anxiety disorder at some point in their lives. Without treatment, the disorder can impair people's functioning at school, work, and relationships.

The 13-session treatment used specialized exercises including video feedback and imagery rescripting, where patients are guided to reimagine the outcomes of past negative experiences and to challenge distorted images of themselves and others. The goal was to see if the successes achieved in a pilot and open trial could be replicated in a different setting, without input from the treatment developers. The results were strikingly similar in treatment retention and symptom improvement, strongly suggesting that imagery-enhanced group CBT is effective.

The study suggests that this new group therapy may work as well as individual therapy, but at half the cost per patient.

The study, "Transportability of imagery-enhanced CBT for social anxiety disorder," appears in *Behaviour Research and Therapy*.

Anger overlooked as feature of postnatal mood disorders

Women in the postpartum period should be screened for anger in addition to depression and anxiety, new research from the University of British Columbia suggests.

Although anger has been recognized as an element of postpartum mood problems for some women, it has not been well studied and is not included in the Edinburgh Postnatal Depression Scale screening tool. In a review of existing research, UBC nursing PhD student Christine Ou found anger to be a significant feature in postpartum mood disturbances.

Ou's analysis, recently published in *Birth*, also found that feelings of powerlessness, a mismatch between reality and expectations of motherhood, and unmet expectations of support contributed to anger in the context of postpartum depression.

Fifteen minutes of exercise creates optimal brain state for mastering new motor skills

A recent study in *NeuroImage* demonstrates that exercise performed immediately after practising a new motor skill improves its long-term retention. The research shows, for the first time, that as little as a single 15-minute bout of cardiovascular exercise increases brain connectivity and efficiency. It's a discovery that could accelerate recovery of motor skills in patients who have suffered a stroke or who face mobility problems following an injury.

To find out what was going on in the brain as the mind and the muscles

interacted, the research team asked study participants to perform two different tasks. The first, known as a pinch task, consists of gripping an object akin to a gamer's joystick (and known as a "dynamometer") and using varying degrees of force to move a cursor up and down to connect red rectangles on a computer screen as quickly as possible. The task was chosen because it involved participants in motor learning as they sought to modulate the force with which they gripped the dynamometer to move the cursor around the screen. This was then followed by 15 minutes of exercise or rest.

Participants were then asked to repeat an abridged version of this task, known as a handgrip task, at intervals of 30, 60, and 90 minutes, after exercise or rest, while the researchers assessed their level of brain activity. This task involved participants simply repeatedly gripping the dynamometer for a few seconds with a similar degree of force to what they used to reach some of the target rectangles in the pinch task. The final step in the study involved participants in both groups repeating the pinch task 8 and then 24 hours after initially performing it, allowing the researchers to capture and compare brain activity and connectivity as the motor memories were consolidated.

Researchers discovered that those who had exercised were consistently able to repeat the pinch task, connecting different areas of the brain more efficiently and with less brain activity than those who hadn't exercised. The reduction of brain activity in the exercise group was also correlated with a better retention of the motor skill 24 hours after motor practice. This suggests that even a short bout of intense exercise can create an optimal brain state during the consolidation of motor memory, which improves the retention of motor skills.

When they looked more spe-

cifically at what was going on, the researchers discovered that, after exercise, there was less brain activity, most likely because the neural connections both between and within the brain hemispheres had become more efficient.

What researchers found especially intriguing was that when they tested participants at the 8-hour mark, there was little difference between groups in skill retention. Both groups were less able to retain the skills they had newly acquired than they were at the 24-hour mark, when the difference between the two groups was once more apparent.

This suggests that sleep can interact with exercise to optimize the consolidation of motor memories.

To learn more about the research, read "Acute cardiovascular exercise promotes functional changes in cortico-motor networks during the early stages of motor memory consolidation" by Fabien Dal Maso and colleagues in the 1 July 2018 issue of *NeuroImage*.

Breakthrough discovery will change treatment for COPD patients

Permanent lung damage caused by chronic obstructive pulmonary disease (COPD) starts much earlier than previously thought, even before patients are showing symptoms.

These are the findings of a study published in *The Lancet Respiratory Medicine*. The discovery, led by Dr Tillie-Louise Hackett, associate professor in the University of British Columbia's Faculty of Medicine, will dramatically change how patients are treated for COPD, the leading cause of hospital admissions in BC and Canada.

Hackett, who is also a principal investigator at St. Paul's Hospital Centre for Heart Lung Innovation (HLI), and her research team found that even patients diagnosed with mild COPD have already lost a significant por-

tion of their small airways (more than 40%) on average.

Currently, patients with mild COPD, as determined by a lung function test, are given minimal or no treatment.

The new findings also suggest previous large clinical trials testing new COPD treatments may have failed because patients already had substantial lung damage.

Lung samples from 34 patients were analyzed using an ultra-high resolution microCT scanner, one of three scanners of this kind in the country. Though the HLI Lung Tissue Registry Biobank at St. Paul's has been collecting specimens for more than 30 years, the recent addition of the microCT scanner made it possible to image samples that are embedded in paraffin in extreme detail.

It is estimated approximately 1 in 10 people over the age of 40 may suffer from COPD. Dr Don Sin, the Canada Research Chair in COPD and a St. Paul's respirologist, said the findings have significant implications. By 2020, COPD is expected to be the third leading cause of death worldwide.

BCEHS Action Plan transforming emergency health services in BC

BC Emergency Health Services (BCEHS) has made significant progress in the first year of implementing the 3-year BCEHS Action Plan.

The bold plan focuses on improving ambulance response times for life-threatening and time-critical 9-1-1 calls, and enhancing services for patients who don't require ambulance transport to hospital.

A newly released progress report on the BCEHS Action Plan describes many of the changes that have already taken place in year 1 of the 3-year plan. Progress includes adding 127 paramedic positions, 20 dispatch

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positions, and 45 ambulance vehicles, as well as other investments to ensure high-quality, sustainable services.

BCEHS has also introduced innovations in its dispatch centres to improve clinical oversight and enhance the patient experience for those who have nonurgent medical issues.

The first year of implementation of the BCEHS Action Plan lays the groundwork for more service improvements in years 2 and 3. As part of year 2, BCEHS has implemented a new clinical response model and will introduce more pathways for patients to be treated in their homes and communities.

BCEHS is responsible for the delivery and governance of pre-hospital emergency medical care and interfacility patient transfer services through the BC Ambulance Service and the BC Patient Transfer Network. BCEHS is supported by the Provin-

cial Health Services Authority. For more information, visit www.bcehs.ca.

University of Winnipeg research aims to identify resistance to breast cancer treatment

A simple test could improve the treatment odds of patients diagnosed with breast cancer, thanks to new research at the University of Winnipeg.

The drug Tamoxifen, used to treat the majority of breast cancer cases, is ineffective in approximately half of all patients who receive it. Dean Reddick, a graduate student in the Master of Science in Bioscience, Technology and Public Policy program, is researching a way to identify these patients before treatment starts.

The research impacts the treatment of estrogen receptor positive (ER+) breast cancer, which accounts for approximately 70% of all breast cancer

cases, and is characterized by estrogen binding to an abnormal number of receptors. Doctors typically prescribe Tamoxifen at the start of any ER+ treatment, thanks to its success rate in patients who are responsive to it.

Key to solving the issue is a protein within cancer cells known as N-Mycristoyltransferase (NMT), which the lab has already discovered activates with increased estrogen receptor activity. Since last September, Reddick has produced 14 different variants of breast cancer cells, each with different localizations of the protein. The plan is now to treat each one and monitor their responses. Although the lab still has further testing to do, Reddick believes the protein is an indicator of responsive cells. Once the indicators are identified, Reddick says within 3 to 4 years a biopsy could be used to determine a patient's resistance level and prescribe appropriate treatment.



Elders of Northern Secwepemc: Clara Camille, Jean William, and Cecelia de Rose



Medication use in Indigenous communities

An Indigenous storytelling project called Coyote's Food Medicines was launched in front of an audience of 4000 Elders at the BC Elders Gathering in July to encourage conversations about wellness and how to manage medications for a healthy life. Secwepemc Elders created the *Coyote's Food Medicines* story using a traditional approach to share knowledge and humor to raise awareness of the issue of multiple medications and their potential impact on health.

Shared Care's Polypharmacy Risk Reduction Initiative (a partnership of Doctors of BC and the BC government), the First Nations Health Authority, and Interior Health worked with Elders, initiating conversations that led to the creation of the Coyote story. In describing the challenges concerning medication use in First Nations communities, Elder Jean William said, "In the past, our Elders didn't take lots of medication, mostly just Aspirin. But now, cupboards look like pharmacy shelves."

The Coyote's Food Medicines project promotes healthy conversations between patients and providers, such as doctors, nurses, and pharmacists, in an effort to prevent side effects and adverse events, such as falls and injuries, from polypharmacy.

Dr Keith White, physician lead for the Polypharmacy Risk Reduction Initiative, says, "We feel this story can provide a platform for discussions among First Nations families and their health care providers, to help initiate regular medication reviews and find options that optimize health and minimize risks of multiple medications."

Copies of the book are available online at www.coyotestory.ca, along with materials to help track medications, and tips on how to talk about medications with health providers.

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Clinical Handbook of Psychotropic Drugs—Clinically relevant drug information at your fingertips

The College Library offers the *Clinical Handbook of Psychotropic Drugs* (CHPD) in two online volumes—one pertaining to adults, and another for children and adolescents. The CHPD contains authoritative drug information based on the latest evidence, gathered from large clinical trials to case reports discussing rare adverse effects. The information is presented in concise reviews and color-coded tables for ease of use at the point of care. A range of clinicians from psychiatrists to family practitioners can benefit from the CHPD.

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.

Each section in the handbook addresses a drug class (e.g., SSRIs), presenting information on drugs within that class at a glance; a variety of treatment options can be quickly scanned to select the best course of action for the patient. The volume devoted to children and adolescents addresses the dosage needs and unique effects that drugs have on that age group.

The CHPD is searchable for specific drugs, and both volumes contain off-label uses for each drug, interactions, nondrug treatments such as bright-light therapy, and printable patient information.

The CHPD is edited by a Canadian team of clinical pharmacists, pharmacologists, and physicians. Canadian-specific prescribing infor-

mation in the CHPD is particularly valuable given that most psychopharmacology publications assume an American readership.

Both volumes of the *Clinical Handbook of Psychotropic Drugs* are available online on the College Library's website, on the Point of Care and Drug Tools page: www.cpsbc.ca/library/search-materials/point-of-care-drug-tools (login required: current CPSID and password).

Contact the College Library if you require further assistance. Phone: 604 733-6671, email: medlib@cpsbc.ca, online request form: www.cpsbc.ca/library-requests.

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Early surgical management of acute cholecystitis: A quality improvement initiative

A modest educational intervention at a community hospital resulted in an 85% increase in early laparoscopic cholecystectomy rates and a 47% reduction in time from admission to surgery.

ABSTRACT

Background: Significant research has shown convincingly that managing acute cholecystitis with early laparoscopic cholecystectomy rather than delayed cholecystectomy is safe and is associated with improved outcomes and lower costs. However, early laparoscopic surgery is not routine, suggesting barriers to uniform adoption of this practice.

Methods: An online survey of practising general surgeons in the Fraser Health Authority was followed by a retrospective audit of all patients presenting to health authority sites with acute cholecystitis from April 2012 to June 2013. A modest educational intervention was then implemented at Langley Memorial Hospital to facilitate adoption of early laparoscopic cholecystectomy. Data were compared from before and after implementation of the educational intervention. Some outcomes considered were times from admission to surgery, duration

of operations, rates for conversion to open surgery, and length of stay.

Results: The retrospective audit found that more than half of health authority patients (54%) did not receive early access to surgery, despite this approach being preferred by most surgeons. The comparison of management approaches before and after the educational intervention at Langley Memorial Hospital showed an 85% increase in early laparoscopic cholecystectomy rates and a 47% reduction in time from admission to surgery.

Conclusions: Improving access to timely surgery is possible and requires engagement of key stakeholders. Policies aimed at increasing rates of early laparoscopic cholecystectomy for treatment of acute cholecystitis must focus on improving surgeon access to surgical resources.

Background

Acute cholecystitis is seen commonly in the emergency room and is a leading cause of gastrointestinal-related hospital admissions.¹ Cholecystectomy is the accepted standard of care to manage cholecystitis; however, the timing of surgery has been the subject of debate. In the past, conservative management with a course of antibiotics was thought to reduce inflammation and facilitate definitive

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This article has been peer reviewed.

surgical management at a later date, usually 6 weeks after the initial presentation. This approach was felt to reduce operative risks and was endorsed as recently as 2013 for grade II (moderate) and grade III (severe) cholecystitis as outlined in the Tokyo guidelines (Table 1).² However, research has shown convincingly that early laparoscopic cholecystectomy (ELC), defined as occurring 24 to 72 hours from time of admission, is preferred for treatment of acute cholecystitis in the modern laparoscopic era.³ Surgery within 72 hours has become a benchmark after being associated with lower costs and better outcomes, namely reduced complication and mortality rates.^{4,5} When compared with delayed laparoscopic cholecystectomy (DLC), early laparoscopic cholecystectomy has been shown to be safe, to have similar or better rates of conversion to an open procedure, and to reduce duration of hospital stay.⁵⁻¹¹ Looking at data from 77 case-control studies, early laparoscopic cholecystectomy was also found to be associated with statistically significant reductions in mortality, total complication rate, bile duct leaks, bile duct injuries, wound infections, conversion rates, length of hospital stay, and blood loss.³ In a Canadian model, performing surgery early was also estimated to save approximately \$2129 per patient.¹² The most recent consensus statement in the 2018 Tokyo guidelines reflects this by extending adoption of early laparoscopic cholecystectomy for both grade II and grade III severity as the ideal preferred approach.¹³

The benefits of early cholecystectomy may extend to patients with symptoms lasting more than 72 hours: a recent randomized controlled trial demonstrated a reduction in length of stay, duration of antibiotic use, and costs when same-admission laparoscopic cholecystectomy was offered to patients with symptom duration greater than 72 hours.¹⁴ Furthermore, delaying cholecystectomy is associated with a higher risk of complications and costs.^{5,9,12} Patients with acute cholecystitis who are discharged without surgery have a 19% risk of a gallstone-related emergency room visit or hospital admission.¹⁵ In addition, among patients with recurrent symptoms, approximately 30% will progress to a more morbid gallstone-related complication such as biliary tract obstruction or pancreatitis.¹⁵ Despite the significant body of literature supporting early access to surgery, there continues to be variation in practice seen even within a single regional health care system, suggesting the presence of institutional barriers impeding uniform adoption of ELC.¹⁶ We sought to investigate further by assessing surgeon attitudes toward early laparoscopic cholecystectomy and current practice patterns, and to determine the impact of an educational intervention at a single site on the rates of early surgery.

Table 1. Severity grading for acute cholecystitis.

Grade	Conditions
III (severe)	Associated with any one of the following: 1. Cardiovascular dysfunction: hypotension requiring vasopressors 2. Neurological dysfunction: decreased level of consciousness 3. Respiratory dysfunction: PaO ₂ /FiO ₂ ratio < 300 4. Renal dysfunction: oliguria, creatinine > 2.0 mg/dl 5. Hepatic dysfunction: PT-INR > 1.5 6. Hematological dysfunction: platelet count < 100 000/mm ³
II (moderate)	Associated with any one of the following: 1. Elevated white blood cell count (> 18 000/mm ³) 2. Palpable tender mass in the right upper abdominal quadrant 3. Duration of complaints > 72 hours 4. Marked local inflammation (gangrenous cholecystitis, pericholecystic abscess, hepatic abscess, peritonitis, emphysematous cholecystitis)
I (mild)	Does not meet criteria of grade III or grade II acute cholecystitis 1. Healthy patient with no organ dysfunction and mild inflammatory changes

Adapted from Tokyo guidelines.²

Methods

In 2014 all practising general surgeons in the Fraser Health Authority were approached to complete an online survey about surgeon attitudes, preferences, and practice patterns regarding management of acute cholecystitis. This was followed by a retrospective database audit of records for all patients presenting with acute cholecystitis in Fraser Health between April 2012 and June 2013 who underwent a surgical intervention from April 2012 to December 2013. Baseline data were collected for the entire health authority as well as for each individual hospital within the authority. Regional analysts collected data as part of an approved quality audit using ICD and Canadian Classification of Health Intervention codes.

Our educational intervention took place at Langley Memorial Hospital, a 166-bed facility serving a population of approximately 130 000 in Langley, British Columbia. The intervention began in May 2015 with the distribution of information by email to emergency room physicians and with educational

rounds for operating room nurses. A practice algorithm for acute cholecystitis was then developed and distributed to staff in the emergency room and operating rooms. The algorithm included a recommendation for early surgical consultation for all confirmed or suspected cases of acute cholecystitis. After the educational intervention, data were collected from electronic and paper charts from July 2015 to June 2016. Outcomes included times from admission to surgery and from booking to surgery, as well as preoperative American Society of Anesthesiologists (ASA) scores and duration of operations, conversion to open surgery rates, length of stay, and readmission rates.

Results

Survey respondents included 26 general surgeons (48% of active/provisional regional members) representing all Fraser Health sites. When surgeons were asked how they would manage acute uncomplicated cholecystitis in a medically fit patient, 73% chose early laparoscopic cholecystectomy and 27% chose a trial of conservative management with delayed cholecystectomy. Of those who opted for delayed surgery, 75% cited limited access to the operating room as their main reason for choosing this strategy. Among those who opted for early laparoscopic cholecystectomy, 84% would book the case as needing to be done within 24 hours, although only 23% said they felt surgery was “usually” or “always” completed within this time frame. The majority of respondents (88%) supported an institutional policy allowing for early laparoscopic cholecystectomy.

Between April 2012 and December 2013, a total of 1329 patients were admitted to Fraser Health sites with a diagnosis of cholecystitis, and 611 (46%) had an intervention on their in-

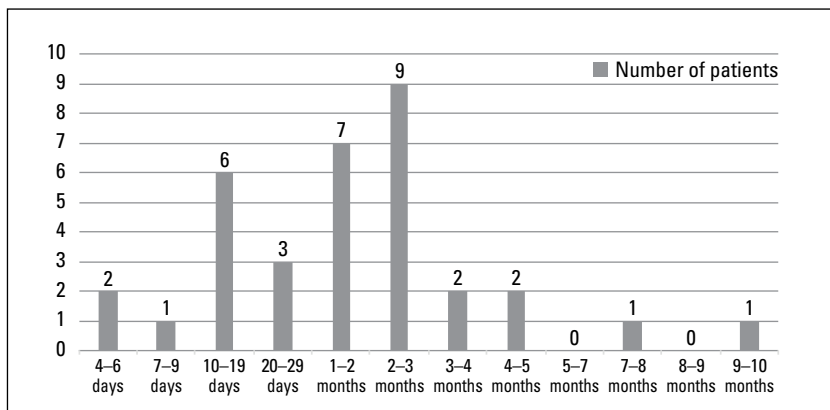


Figure 1. Wait times for 34 patients undergoing delayed cholecystectomy at Langley Memorial Hospital before implementation of educational intervention supporting early cholecystectomy.

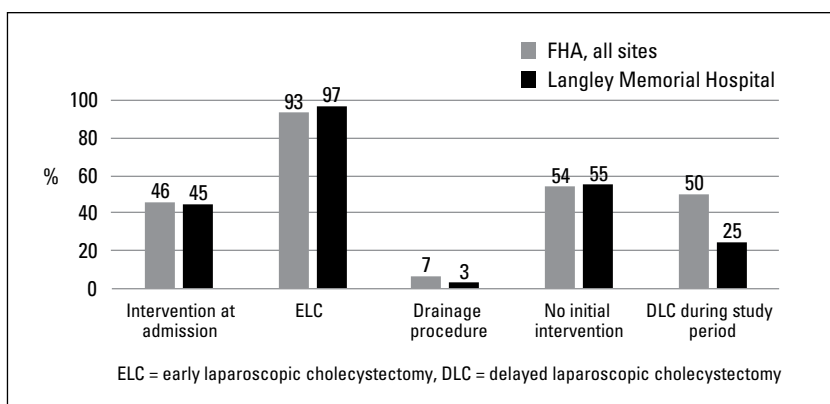


Figure 2. Management of acute cholecystitis at all Fraser Health Authority (FHA) sites and at Langley Memorial Hospital before implementation of educational intervention supporting early cholecystectomy.

ital admission. Of these, 569 (93%) had laparoscopic cholecystectomies and the remaining 48 (7%) had drainage procedures (either operative or radiologic). This left 718 patients (54%) who had no intervention for cholecystitis on their initial admission. Among these patients, 359 (50%) went on to have a delayed cholecystectomy during the study period. Average hospital length of stay in the ELC group receiving early treatment was 5.8 days compared with 6.4 days for the DLC group receiving delayed treatment.

Before the educational intervention, 135 patients presented to Lang-

ley Memorial Hospital with acute cholecystitis over 13 months, and 61 (45%) had an intervention on their initial admission. Of these, 59 (97%) underwent cholecystectomies and 2 (3%) had drainage procedures. This left 74 patients (55%) who had no intervention for acute cholecystitis on their initial admission. Among these, 34 patients (25%) went on to have a delayed procedure during the study period (Figure 1). Overall, management of acute cholecystitis at Langley Memorial Hospital before the educational intervention was comparable to that seen at other Fraser Health sites

(Figure 2).

After the educational intervention, 129 patients presented to Langley Memorial Hospital with acute cholecystitis over 12 months. Of these, 109 (84%) had an early cholecystectomy and 20 (16%) had nonoperative management for a variety of reasons (Table 2). Of the 138 cholecystectomies performed during the entire study period, 29 (21%) were performed for reasons other than acute cholecystitis (Table 3).

The impact of the educational intervention on surgical access was positive (Table 4), with reductions in time from admission to surgery and from booking to surgery (Table 5). The average OR time was 62.32 minutes (OR times for the period prior to the educational intervention are not known). Of the early cholecystectomy patients, 3 were readmitted, with 2 requiring endoscopic retrograde cholangiopancreatography and 1 with abdominal pain requiring no intervention. Conversion to open procedures was required in only 3 (2.9%) of all the cholecystectomies. The pre-operative status of most patients who underwent early cholecystectomy was ASA 2 (45%) or ASA 3 (34%) (Figure 3). The ASA status of all patients' pre-educational intervention is not available.

Conclusions

With a modest educational intervention we were able to achieve significant clinical impact: an 85% increase in early cholecystectomy rates and a 47% reduction in time from admission to surgery for patients with acute cholecystitis. In addition to providing better patient care, increasing patient access to early cholecystectomy resulted in a 44% reduction in hospital length of stay. The length of stay for early cholecystectomy patients after the educational intervention was ap-

Table 2. Reasons for nonoperative management in 20 cases of acute cholecystitis at Langley Memorial Hospital after educational intervention.

Reason	Number of cases
Medically unfit*	10 (50%)
Biliary colic (symptoms resolved)	4 (20%)
Refused surgery/left against medical advice	3 (15%)
Incidental gallstones	2 (10%)
Initially managed with percutaneous drain	1 (5%)

*Including 2 cases addressed with conservative management alone and 8 cases addressed with percutaneous drain insertion

Table 3. Reasons for laparoscopic cholecystectomy in 29 cases not involving acute cholecystitis at Langley Memorial Hospital after educational intervention.

Reason	Number of cases
Gallstone pancreatitis	15
Common bile duct stone requiring endoscopic retrograde cholangiopancreatography	9
Delayed diagnosis/referral	2
Admitted from same-day surgery	2
Percutaneous cholecystostomy tube inserted	1

Table 4. Impact of educational intervention on surgical access for cases of acute cholecystitis managed with early laparoscopic cholecystectomy.

	Before intervention	After intervention	Percentage change
Number of cases	59	109	85% increase
Total time from admission to surgery (hours)	2808.00	2461.50	12% reduction
Average time from admission to booking for surgery (hours)	43.20	22.92	47% reduction
Average length of stay (days)	4.60	2.57	44% reduction

Table 5. Time from admission to booking and from booking to surgery after educational intervention.

Admission to booking	Booking to surgery start
22.92 hours	7.38 hours

preciably shorter (2.57 days) than for patients in the Fraser Health early cholecystectomy group (5.1 days). Interestingly, the hospital stay after the educational intervention was also shorter than the 5.1 days seen in pooled data for patients undergoing early cholecystectomy.³ One possible explanation for this substantial reduction in length of stay is that our intervention focused on education for both emergency room physicians and perioperative staff, which may

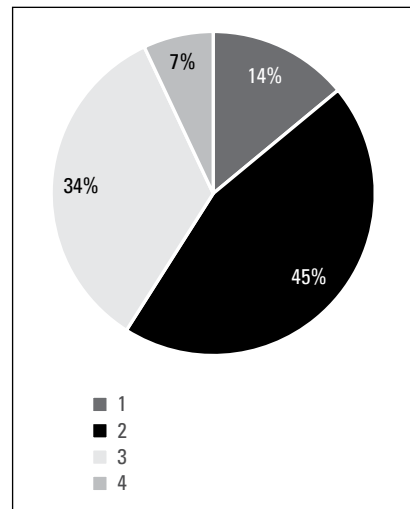


Figure 3. ASA status of early cholecystectomy patients at Langley Memorial Hospital after implementation of educational intervention supporting early cholecystectomy.

have facilitated more streamlined care for patients with acute cholecystitis and expedited their access to surgery. This outcome is significant from both a system and a patient perspective. Reducing hospital length of stay will reduce the costs associated with cholecystitis for an already overburdened system. Less time in hospi-

early laparoscopic cholecystectomy, some degree of caution must be exercised before instituting a strict policy of ELC with rigid scheduling benchmarks, since such a policy could lead to markedly increased after-hours surgery. Data regarding the safety of nighttime laparoscopic cholecystectomy are somewhat conflicting;

that not all cases of acute cholecystitis present an equal surgical challenge and risk to the patient, and that other options such as percutaneous drainage may be preferred.¹⁹ However, a recent retrospective review found that a majority (90.7%) of patients with moderate to severe acute cholecystitis who received early laparoscopic cholecystectomy had a subsequent open conversion rate of only 9.2% and an overall mortality rate of 1.5%.¹³ Perhaps the most prudent surgical approach would be one that estimates the difficulty of surgery to determine which patients are ineligible for after-hours surgery rather than ineligible for early cholecystectomy altogether. For example, male gender, previous episodes of cholecystitis, serum fibrinogen, neutrophil count, and alkaline phosphatase levels can be used preoperatively to calculate a score of operative difficulty in laparoscopic cholecystectomies.²⁰ Patients with high scores could then be prioritized for daytime operations. A “working smarter, not harder” approach is likely to be the most sensible way to manage this common disease.

The need for early access to surgery for acute cholecystitis is clear and the benefits of it have been well defined in the literature.

tal also reduces the impact of acute cholecystitis on patients by facilitating a faster return to baseline function and work.

Part of the success of our intervention resulted from surgeon buy-in, although this is not the only factor that determines patient access to timely surgery for cholecystitis. In a large review of patients with acute cholecystitis across Ontario, similar patients at different hospitals did not receive comparable care, likely reflecting local institutional barriers to the provision of early surgery.¹⁶ Providing all patients with access to early laparoscopic cholecystectomy requires more than surgeon buy-in; it also requires administrative support that allocates the appropriate amount of institutional resources to make this delivery of timely care possible.

Management approaches

While our results suggest it would be worthwhile to increase access to

a retrospective review at two large urban centres found an increased risk of conversion to an open procedure for patients receiving laparoscopic cholecystectomies between 7 p.m. and 7 a.m.¹⁷ Another slightly larger and more recent retrospective review found no increased risk of complications for patients undergoing laparoscopic cholecystectomies after 5 p.m., and statistically significant reduced length of stay among the nighttime laparoscopic cholecystectomy group.¹⁸ While performing after-hours surgery may be safe, the long-term impacts on the surgeon and operating room staff, which can include burnout, exhaustion, and job dissatisfaction, must be considered. It is important to note that we were able to achieve our increased rates of early cholecystectomy while adhering to a policy of operating after 11 p.m. only if conditions were life- or limb-threatening.


Finally, it is worth emphasizing

Study limitations

The main limitation of this study is the retrospective design, which exposes it to selection bias. As well, data for the educational intervention were obtained from a single site, which limits generalizability. Despite these limitations, our results are concordant with previous findings that support the safety and feasibility of early laparoscopic cholecystectomy.

Summary

The need for early access to surgery for acute cholecystitis is clear and the benefits of it have been well defined in the literature. Achieving higher rates of early laparoscopic cholecystectomy is possible but requires

the engagement of the entire health care team, from front-line emergency room staff to medical and nursing staff in the operating room. Policies aimed at increasing the rates of early laparoscopic cholecystectomy will provide greater access to surgical resources, and ideally this access will be in the daytime. 

Competing interests

None declared.

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Policies aimed at increasing the rates of early laparoscopic cholecystectomy will provide greater access to surgical resources.

The economic burden of injuries in British Columbia: Applying evidence to practice

Physicians and policymakers can support broader prevention initiatives for falls, transport incidents, unintentional poisoning, and self-harm by making use of data from a study quantifying injury costs.

ABSTRACT

Background: Approximately 2000 deaths and 8000 cases of permanent disability result from injury every year in BC. Quantifying the economic and societal burden of injury can provide physicians and policymakers with comprehensive data to support the development and implementation of broader injury prevention initiatives.

Methods: Disability-adjusted life years and total costs were calculated using an incidence costing, human capital, societal perspective approach. Data were collected and analyzed for the four leading causes of injury: falls, transport incidents, unintentional poisoning, and self-harm. The Burden Calculator and Electronic Resource Allocation Tool were used to establish direct and indirect costs of injury using data from a number of sources, including hospitals and emergency rooms.

Results: Unintentional poisoning and self-harm resulted in the highest number of years of life lost and gross cost, while falls and transport incidents resulted in the greatest number of years lived with disability. In 2013 the gross cost for the leading causes of injury ranged from \$547 million to \$922 million. The total cost of injury increased between 2004 and 2013.

Conclusions: Health professionals are ideally positioned to support injury prevention initiatives and provide appropriate patient counseling. Physicians and policymakers can help combat rising injury rates and related costs by applying evidence from the study of injuries in BC. Increased effort should be made to prevent injuries caused by falls, transport incidents, unintentional poisoning, and self-harm.

Background

Injuries are the leading cause of death among British Columbians age 1 to 44, and the fifth leading cause of death among Canadians of all ages.^{1,2} Every year in BC approximately 2000 deaths and 8000 cases of permanent disability result from injury.² Beyond the injured person, there are far-reaching consequences for families, communities, the health care system, and society at large. This public health issue directly affects the practice of physicians who must care for these people.

In the past decade, efforts have been made to consider the economic cost of injury and the related societal

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burden of death and disability, and to enlighten decision-makers regarding the extent of the injury issue.² Injury costs in BC in 2010 amounted to \$3.7 billion in both direct and indirect costs.² To reduce the burden on the health care system and society, physicians and policymakers must be informed of the economic cost of injury so they can support cost-effective primary and secondary injury prevention initiatives.³

There are several approaches to measuring economic burden of illness or injury, but a simple way is to measure the direct costs. The cost-of-illness approach generally follows one of two methods: incidence costing or prevalence costing. Both approaches produce the same results for steady-state chronic health problems and conditions that are short-term in nature. However, if policymakers want to assess the benefits of reducing the incidence of injuries, the incidence method is more useful and accurate. Incidence costing estimates the lifetime direct and indirect costs of new cases of injury that have their onset in a given year.² Combined with a societal perspective, it provides a useful starting point when illustrating the full burden of injury for physicians and policymakers.

The disability-adjusted life year is a common measure of disease or injury burden, based on the core principle that everyone should live a long life in full health.^{4,5} Disability-adjusted life years are calculated as the sum of years of life lost due to premature death and years lived with disability to provide a single measure describing the total health loss at the population level.⁴ The disability-adjusted life year permits comparisons with previous years or between communities, and can be used to monitor the effectiveness of new injury prevention programs or laws.⁶ From a clinical

perspective, the disability-adjusted life year offers a comprehensive measure of the relative magnitude of the injury issue and provides physicians and policymakers with reliable and practical information for advising patients and developing effective injury prevention initiatives.

A study was proposed to calculate the cost of treating injuries in BC, the impact of years of life lost to death or disability, and the economic loss of diminished labor market productivity and earnings. Such findings are needed to raise awareness about the burden of injury, to provide physicians with comprehensive information for discussions with patients, and to assist policymakers in the development and implementation of broader injury prevention initiatives.

Methods

The economic and societal burden of injury over time in BC was quantified using an incidence costing,⁵ human capital, societal perspective approach.^{4,6} The total economic impact of injury was assessed by including costs borne by the health care system as well as productivity lost to death or disability over the course of an individual's life. Injury and premature injury-related deaths were translated into direct and indirect costs to estimate what the societal gain would have been if these injuries and deaths had been prevented.^{5,7} Direct costs were defined as all health care costs, including expenditures for hospitalization, physician and health professional services, pharmaceutical drugs, and rehabilitation treatment. Indirect costs were defined as the total productivity loss to society due to injuries that prevented individuals from performing their normal activities. These costs were calculated by considering mean individual earnings in relation to time loss from work over

the relevant period within the working life of an individual age 15 to 64.

Other economic factors considered included wage rates, participation rates, unemployment rates, income loss due to disability, and real wage growth rates, which were all discounted at a rate of 3%.

Calculation

The Burden Calculator,⁸ an open-source analytic tool, was used to estimate disability-adjusted life years for the leading causes of injury: falls, transport incidents, unintentional poisoning, and self-harm.² The calculation applied disability weights,⁹ which reflected the severity of the health decrement on a scale from 0 (perfect health) to 1 (dead). The disability-adjusted life years were then translated into 2013 dollars using the gross national income per capita.⁶

The Electronic Resource Allocation Tool,² developed by Parachute Canada, was used to calculate both direct and indirect costs. The tool combines existing data with variables from the literature in order to model the full costs of unintentional and intentional injuries.² Direct and indirect costs were calculated for the most recent year of data available (2013), with results from previous injury cost studies used for comparison.¹⁰ Direct mortality costs were also estimated on a complete episode of events due to an injury-related death. Costs from previous years (2004 and 2010) were converted to 2013 dollars using the consumer price index to account for inflation and to allow for direct comparison.

To capture the effects of variations in direct and indirect costs of injuries, sensitivity analyses were conducted using variations in the discount rate of 1%, 3%, and 5%, unemployment rate, and average weekly earnings.

Data

Data used for this study were collected from a number of sources, including hospitals and emergency rooms (Table 1). To allow for comprehensive documentation of all costs associated with injuries, proxy measures were also developed using the methodology of Miller and colleagues.¹¹ Direct morbidity costs for out-of-hospital injury treatment were calculated using ratios of episodes and related costs of emergency room visits to hospitalized cases. The incidence of both permanent partial and total disability were estimated using coefficients that relate these episodes and costs to the incidence of hospitalized and emergency room injury cases.

Results

Injuries in BC resulted in 2110 deaths, 37 207 hospitalizations, 482 687 emergency room visits, and 8911 permanent disabilities in 2013 (Table 2). The leading cause of death was falls, which accounted for 30% of all injury-related deaths. The second leading cause of death was unintentional poisoning, followed by suicide/self-harm (other) and transport incidents.

Looking at the four leading causes of injury, unintentional poisoning and self-harm resulted in the highest number of years of life lost and gross cost, while falls and transport incidents resulted in the highest number of years lived with disability. The gross cost for the leading causes of injury in the years studied ranged from \$547 million to \$922 million (Table 3).

Economic burden

Injuries cost British Columbians \$4.1 billion in 2013, with 64% of this in direct cost (\$2.62 billion) and 36% in indirect cost (\$1.48 billion). Permanent disability was responsible for the greatest economic burden of injury at \$1891 million, followed by

Table 1. Data sources for study of economic burden of injuries in BC.

Type of data	Estimate calculated	Data source
Mortality data	Death costs	BC Vital Statistics
Hospitalization data	Hospital costs and length of stay	Discharge Abstract Database, BC Ministry of Health
Emergency room data	Emergency room visits	Extrapolated data from National Ambulatory Care Reporting System, Canadian Institute for Health Information
Disability data (unemployment, labor force participation, average wage rates) Life expectancy year tables	Cost of productivity losses from morbidity and premature death	Statistics Canada
BC population data	Injury rates and per capita costs	BC Statistics

Table 2. Number of injury-related events and incidence rates in BC by cause of injury, 2013.

Cause	Deaths (rate per 100 000)	Hospitalizations (rate per 100 000)	Emergency room visits (rate per 100 000)	Permanent disability (rate per 100 000)
Falls	635 (13.8)	20 902 (455.5)	146 170 (3185.2)	3731 (81.3)
Transport incidents	275 (6.0)	4527 (98.6)	39 336 (857.2)	1227 (26.7)
Unintentional poisoning	420 (9.2)	1657 (36.1)	7369 (160.6)	352 (7.7)
Suicide/self-harm (poisoning)	127 (2.8)	2561 (55.8)	3272 (71.3)	568 (12.4)
Suicide/self-harm (other)	364 (7.9)	344 (7.5)	924 (20.1)	59 (1.3)
Violence	45 (1.0)	1130 (24.6)	13 651 (297.5)	298 (6.5)
Other injuries	244 (5.3)	6086 (132.6)	271 966 (5926.4)	2676 (58.3)
Total	2110 (46.0)	37 207 (810.8)	482 687 (10 518.3)	8911 (194.2)

Table 3. Impact of disability-adjusted life years in BC by four leading causes of injury, 2013.

Cause of injury	Years of life lost	Years lived with disability	Disability-adjusted life years	Gross cost per disability-adjusted life year* (millions)
Transport incidents	9993	1406	11 399	\$569
Falls	8549	2396	10 945	\$547
Unintentional poisoning	18 384	66	18 450	\$922
Self-harm	18 280	152	18 432	\$921

*Based on 2013 per capita income of Can\$49 965 (US\$39 601)

outpatient treatment costs of \$805 million (Table 4).

Falls resulted in the highest costs for inpatient treatment (\$498 million), outpatient treatment (\$232 million), and permanent disability (\$635 million). Unintentional poisoning resulted in the highest total death cost (\$201 million) and highest cost per patient death (\$47414). Suicide/self-harm (other) was the second highest for total death cost (\$150 million).

Sensitivity analysis

Analyses using discounted rates of 1%, 3%, and 5% revealed high sensitivities to these variations and resulted in significant differences in total, direct, and indirect costs of injuries. Lowering the discount rate to 1% increased total costs by 21.2%, direct costs by 18.6%, and indirect costs by 25.4%. Conversely, raising the discount rate to 5% decreased total costs by 15.1%, direct costs by 11.7%, and indirect costs by 21.1%. The analyses for unemployment rate and average weekly earnings variations indicated minimal sensitivities and minimal effect.

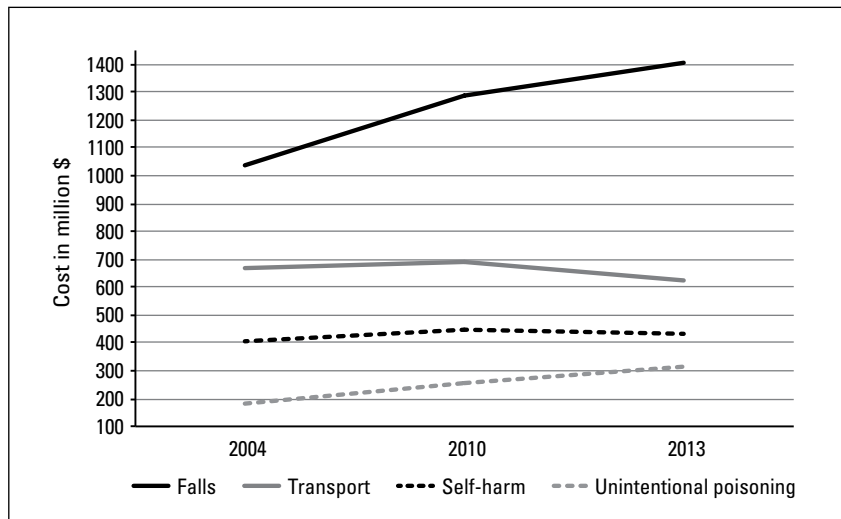


Figure. Total cost of injuries in BC by four leading causes, 2004 to 2013.

Costs over time

From 2004 to 2013, the total cost of injury in BC increased from \$3.3 billion to \$4.1 billion, a 24.4% increase over 9 years. While the cost of transport-related injuries decreased by 7.1%, increases in cost were seen for falls (35.5%), unintentional poisoning (75.6%), and self-harm (6.0%) (Figure). From 2004 to 2010, the total

cost of injury increased by an average of 2.6% per year, and then from 2010 to 2013 increased by a lesser average of 1.3% per year. From 2004 to 2010, increases in the average cost per year were seen for falls (3.4%), unintentional poisoning (6.3%), self-harm (1.5%), and transport incidents (0.5%). From 2010 to 2013, increases continued for the average cost per

Table 4. Cost in dollars for injuries in BC by cause and injury outcome, 2013.

Cause	Death		Inpatient treatment		Outpatient treatment		Permanent disability		Overall costs	
	Total cost* (millions)	Per death cost	Total cost (millions)	Per treatment cost	Total cost (millions)	Per treatment cost	Total costs (millions)	Per injury cost	Total cost (millions)	Per person cost
Falls	42	65 908	498	23 808	232	1586	635	170 148	1406	136
Transport incidents	118	427 759	109	24 096	77	1965	320	261 192	624	306
Unintentional poisoning	201	479 414	22	13 053	8	1141	84	239 048	316	69
Suicide/self-harm (poisoning)	45	356 966	32	12 328	4	1132	170	299 397	251	55
Suicide/self-harm (other)	150	412 718	8	24 328	2	2015	19	327 259	180	39
Violence	21	474 626	19	17 070	20	1449	92	307 618	152	152
Other injuries	90	369 866	118	19 315	393	1443	570	213 160	1171	255
Overall	\$668	\$316 592	\$805	\$21 639	\$735	\$1524	\$1891	\$212 198	\$4100	\$893

*Due to rounding, numbers do not add up precisely to totals shown.

year for falls (2.3%) and unintentional poisoning (5.5%), while decreases were seen for self-harm (1.0%) and transport incidents (2.5%).

Conclusions

This study quantifies the economic and societal burden of injury in BC. At the time of writing, it was the first review of costs using 2013 data, the most recent available.

The economic analyses reveal that the burden is equivalent to one injury-related death every 4.2 hours and an expenditure of \$467 980 every hour.¹² The significance of this burden is such that preventing injury is a top priority of the Provincial Health Services Authority.¹³ Physicians are ideally positioned to provide guidance to health authority operational leaders regarding effective strategies and top injury issues, as well as to engage in community-based preven-

tion efforts and patient counseling. Investing time and effort in counseling and injury prevention saves lives and health care resources and reduces disabilities. Previous studies have shown that every dollar spent on zero alcohol tolerance for drivers under 21 years of age produces savings of \$25,¹² and that injury prevention counseling from health care providers to parents is positively associated with safety behaviors.¹⁴

The results of this study indicate that unintentional poisoning, self-harm, transport incidents, and falls require attention, as they represent the highest disability-adjusted life year costs. As children and youth have the most potential life remaining, they are a priority population for primary prevention efforts and provide a meaningful opportunity to reverse this societal and economic loss.

Physicians who understand the

nuances of the injury burden gained from studying costs can apply this evidence in their own practices using the many resources and tools available (Table 5). They can address the burden of self-harm by connecting youth to mental health services such as Foundry. They can use resources such as Parachute Canada to educate parents of toddlers about risks in the home associated with improperly stored cleaners and medications. They can also address unintentional poisoning associated with drugs and alcohol by discussing social support programs with patients, and address disability from falls by discussing fall prevention using resources such as Finding Balance BC.

Injury prevention

While the results of this study indicate that falls and unintentional poisoning have contributed to increased injury

Table 5. Injury prevention resources and tools.

Injury type	Resource	Link	Description
Falls	Health Link BC	www.healthlinkbc.ca/health-topics/ug2329spec#tp21184	<ul style="list-style-type: none"> • Fall prevention suggestions for seniors
	Finding Balance BC	https://findingbalancebc.ca	<ul style="list-style-type: none"> • Risk assessment tools and fall prevention courses for practitioners • Multilingual educational resources for seniors • Fall prevention campaign toolkit
Transport incidents	Screening and Brief Intervention Training for Trauma Care Providers	http://vghtrauma.vch.ca/injury-prevention/sbirt http://vghtrauma.vch.ca/new-sbirt-clinical-tools/	<ul style="list-style-type: none"> • Videos about the SBIRT program (Screening, Brief Intervention, and Referral to Treatment) • Patient pamphlets • Screening tools for practitioners • Clinical tools
Unintentional poisoning	Parachute Canada	www.parachutecanada.org	<ul style="list-style-type: none"> • Information for parents and others regarding many injury topics pertinent to children
Self-harm	Crisis Intervention and Suicide Prevention Centre of British Columbia	https://crisiscentre.bc.ca	<ul style="list-style-type: none"> • Training in suicide prevention and skillful responding for service providers • Crisis chat services • Mindfulness training • Support for families
	Foundry	https://foundrybc.ca	<ul style="list-style-type: none"> • Support and services for youth and their families

costs over time, the overall annual increase has slowed from 2.6% (2004 to 2010) to 1.3% (2010 to 2013), suggesting that injury prevention interventions are having an effect. After publication of the Economic Burden of Injury in Canada report,¹⁰ policy-makers in BC acknowledged the necessity of investment in prevention to reduce the impact of injury. Following several years of concerted effort and planning, a public health report was published¹⁵ and programs were launched, including Preventable, a province-wide injury prevention social marketing campaign.¹⁶

One program that may have contributed to the decrease in self-harm costs from 2010 to 2013 is the Crisis Intervention and Suicide Prevention Centre of British Columbia.¹⁷ The centre provides emotional support to youth, adults, and seniors in distress and offers immediate access to websites and chat lines—an early intervention approach designed to prevent a crisis from escalating and turning into a tragedy. Another example of early intervention is the SBIRT (Screening, Brief Intervention, and Referral to Treatment) program¹⁸ implemented at the Vancouver General Hospital Trauma Centre in 2014.¹⁹ The program addresses alcohol as a risk factor, identifies those at risk, and connects them with appropriate services in an effort to reduce alcohol-related injuries ranging from motor vehicle crashes and pedestrian injuries to falls and assaults. Despite these achievements, the cost of transport-related and self-inflicted injuries remains high, indicating that continued focus and efforts to improve prevention are needed to achieve further reductions. This is especially the case with unintentional poisoning hospitalizations and deaths, the majority of which are caused by drugs.²⁰

The increase in costs for uninten-

tional poisoning might be explained in part by the opioid crisis in BC and the rising number of drug overdoses and deaths since 2006. Following the public health emergency declared in BC in April 2016,²¹ many programs were developed to prevent drug overdoses and provide emergency response to victims, including the Overdose Prevention Outreach Team of the Vancouver Area Network Drug

suffering, economic dependence, and social isolation that have a profound impact on affected individuals, families, and communities.

Summary

The purpose of this study was to quantify the economic and societal burden of injury in BC and provide comprehensive data to support physician discussions with patients and encourage

While a wide range of recent and ongoing efforts have addressed injury prevention in BC, rising costs indicate that strategic action is required.


Users that facilitates access to life-saving naloxone kits.²² These actions have slowed the rate of unintentional poisoning from opioids²¹ and contributed to greater awareness of risks.

The increase in costs for falls might be explained in part by the aging population in BC.²³ The need to reduce falls is recognized on the Health Link BC website, where fall prevention resources are available in eight languages.²⁴

Limitations of study

The human capital approach used to measure indirect costs in this study produced a conservative estimate because costs were assigned only for injured people age 15 to 64 and not for those who leave the workforce to provide care for injured family members. Furthermore, we were not able to quantify and include costs associated with injuries such as pain and

engagement with injury prevention initiatives. Investing in primary prevention has the greatest potential to reduce the incidence and severity of injuries, including premature death, and produce significant savings in health care costs.²⁵⁻²⁷

While a wide range of recent and ongoing efforts have addressed injury prevention in BC, rising costs indicate that strategic action is required to achieve further reductions in unintentional poisoning, self-harm, transport incidents, and falls, as injuries from these produce most of the economic and societal burden. Physicians and other health care professionals are ideally positioned to participate in implementing the provincial action plan for injury prevention and to support priority prevention initiatives in their own communities and provide appropriate patient counseling during office visits. 

Competing interests

None declared.

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Lower-extremity radiographs: Weight-bearing, please

Injured workers often require imaging for joint-related trauma or pain. After a history and examination, plain radiographs are often the next step in investigating a patient's musculoskeletal complaints. Patients with possible surgical pathology, such as osteoarthritis, may be referred to an orthopaedic surgeon, who often repeats the initial films. While there may be other reasons for requesting new X-rays, such as time elapsed since first films, specific views, or accessibility, a very common reason is that the original films were not ordered weight-bearing.

So why weight-bearing X-rays? For the hip, there are some authors who feel supine radiographs are sufficient,¹ but many consider a weight-bearing AP pelvis film to be standard.^{2,3} Although osteophytes can be seen on both, the discussion is on the best evaluation of joint space narrowing (JSN). The Osteoarthritis (OA) Research Society International noted that while standing films have a theoretical advantage of evaluating JSN, they can be assessed accurately supine as well for normal hip morphology. Patients with any hip dysplasia have been shown to be more accurately assessed for OA with standing films.⁴

Standing foot and ankle X-rays are the standard for assessing conditions such as flat foot, ankle arthritis, and hallux valgus as well as other conditions.⁵⁻⁹ Non-weight-bearing images are often felt to be misleading, while standing films allow better standardization and reliability in assessment between studies and patients.⁹ Weight-bearing radiographs are also

used to assess patients for subtle ligamentous disruptions, such as Lisfranc injuries not seen on initial films.¹⁰

The standard radiographic for OA of the knee includes weight-bearing AP, lateral, skyline views.¹¹ A weight-bearing tunnel (Rosenberg) view may increase detection.¹¹ Weight-bearing

Patients with any hip dysplasia have been shown to be more accurately assessed for OA with standing films.

views have been shown to more accurately assess JSN than supine films. They can also better demonstrate malalignment, such as varus or valgus. For patients ≥ 40 years old with $> 50\%$ JSN on weight-bearing films referred with only an MRI, the latter is found not useful in the majority of cases.¹²

All this highlights some of the importance of obtaining weight-bearing X-rays. But the issue is hardly limited to Canada. A 2012 British study found no patients with knee issues referred from a GP's office to an orthopaedic clinic had had weight-bearing films. Another 2014 British study found 98% of nontraumatic knee radiographs requested by GPs were non-weight-bearing.¹³ The former recommended all requests to the Radiology Department for knee radiographs from GPs to be standardized as weight-bearing while the latter advised GPs to order them as weight-bearing.

In the end, requesting weight-bearing radiographs for elective assessment of the lower extremity is obvious. The only question that re-

mains is, is it *weightbearing*, *weight-bearing*, or *weight bearing*? Maybe just write "WB" or "standing," and avoid the conundrum.

—Derek Smith, MD, FRCSC
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This article is the opinion of WorkSafeBC and has not been peer reviewed by the BCMJ Editorial Board.

Increasing physical activity in patients: By asking the questions, we can make a difference

Take a moment and ask yourself, how many days per week do you engage in moderate (or higher intensity) physical activities (like a brisk walk), and then, on those days, how many minutes do you engage in activity at that level? Multiply the numbers and see if you meet the Canadian Physical Activity Guidelines of 150 minutes of moderate-to-vigorous physical activity per week.

How long did that take? Did it make you reflect on your physical activity habits?

Both physicians and the public are looking for ways to engage in preventive health measures. Many physicians are appropriately concerned that addressing physical activity will take too long, but it doesn't necessarily have to.

The Canadian Medical Association (CMA) encourages physicians to promote physical activity, as physicians are lifestyle change agents who remain the preferred source of health information for many people.¹ Last year, the CMA's General Council passed a resolution supporting the inclusion of physical activity questions in the vital signs section of EMRs. Doctors of BC passed a similar resolution earlier this year.

British Columbians have often led the country in healthy living. Data from the 2017 Canadian Community Health Survey revealed that in Canada, 57.4% of adults self-reported meeting the national guidelines,

This article is the opinion of the Athletics and Recreation 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.

whereas in BC that percentage was significantly higher, 64.9%.²

These data are encouraging for BC, but because they come from a self-reported survey questionnaire, they likely overrepresent the number

The Canadian Medical Association encourages physicians to promote physical activity, as physicians are lifestyle change agents who remain the preferred source of health information for many people.

of people who are adequately physically active. Even if we take the survey responses at face value, it means there are over 1.3 million British Columbian adults who are physically inactive. This costs the BC health care system approximately \$335 million dollars per year.³

BC physicians have an opportunity to continue building on existing strategies that promote lifestyle modification and healthy living. The goal of the Doctors of BC resolution to incorporate exercise history as part of the vitals section of EMRs is to further engage physicians and the public on the importance of physical activity.

The two physical activity questions at the start of this article are an example of a validated exercise history screening tool that is quick and simple to use. When systematically asked in all patient encounters and entered into the patient's EMR it has

also been shown to be effective.⁴

A large study by Kaiser Permanente involving almost 1.8 million patients found that by promoting the systematic collection of these questions into EMRs they were able to identify physical activity history in the charts of 86% of patients after 18 months of effort.⁴ A subsequent study involved 696 267 eligible patients and 1 569 324 visits.⁵ Patients were seen in centres that either were or were not systematically collecting these two simple physical activity questions into patients' EMRs. The centres that were systematically collecting physical activity history showed small but significant changes in weight loss in obese patients and improved HbA1c values in patients with diabetes. Additionally, there was a 12% absolute increase in the number of patients who reported having received exercise counseling from their physician.

By simply asking the questions we can start to have an impact. Physical activity seems to have a dose-response effect: increasing physical activity even by 10 minutes per day results in a substantial improvement in mortality and morbidity, and this effect is greatest when targeting those who are sedentary.⁶

No matter how you scored at the beginning of this article, hopefully you are motivated to find an extra 10 minutes in your day for a brisk walk and a minute to discuss the same with your next patient.

**—Tommy Gerschman, MD,
FRCPC, MSc**

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Helping patients and families navigate dementia: The Kootenay Boundary Dementia Roadmaps

As Canada’s population ages, dementia diagnoses are on the rise—there are currently 564 000 Canadians living with dementia,¹ and 25 000 new cases are diagnosed every year.¹ A diagnosis of dementia, known as “the disease of a thousand goodbyes,” is life altering for patients, their families, and their caregivers, and creates a need for support and guidance as they help their loved one navigate their dementia journey.

As a patient’s disease progresses, family members often turn to GPs for information and resources. To ensure doctors are equipped with all the necessary information to support patients and their families through these conversations, the Kootenay Boundary Division of Family Practice created the Dementia Roadmap for Practitioners and the Dementia Roadmap for Families as part of their work on the GPSC Residential Care Initiative.²

The Dementia Roadmaps are the brainchild of Dr Trevor Janz, a local physician and member of the Kootenay Boundary Division. Dr Janz theorized that if GPs were able to educate

families about signposts (the events and incidents that may occur as a result of symptoms) to look for over the course of their loved one’s dementia journey, they would be better equipped to understand what happens during each stage of the disease, and provide the best care possible as these changes unfold.

Both the family roadmap and the practitioner roadmap split the progression of dementia into four stages:

- Early dementia
- Middle dementia
- Late dementia
- Actively dying

For each stage, readers are provided with a list of symptoms and impacts that may be displayed by the patient at that stage of disease, followed by a list of potential signposts. The practitioner roadmap then provides a list of questions physicians may ask family members about their loved one’s safety and comfort, and a list of treatments and next steps. The roadmap for families and caregivers provides advice and suggestions for keeping their loved one safe and comfortable.

In the spirit of collaboration, the Kootenay Boundary Division has made the Dementia Roadmaps avail-

able for distribution by other divisions and communities. Over 1500 copies have been distributed in communities in Kootenay Boundary and East Kootenay; in the Abbotsford, South Okanagan Similkameen, and Vancouver Divisions of Family Practice; and in the community of Camrose in Alberta.

The Dementia Roadmap for Practitioners and the Dementia Roadmap for Families are available on the Kootenay Boundary Division website at www.divisionsbc.ca/kb/residentialcare.

Divisions and physicians who wish to distribute the Dementia Roadmaps may contact kbdoctors@divisionsbc.ca for permission to do so.

—Afsaneh Moradi

Director, Community Partnership and Integration

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

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Coming soon: GPSC Panel Development Incentive

This fall, the GPSC is introducing a new incentive to support family doctors manage their patient panels. Valued at about \$6000, the Panel Development Incentive will consist of three payments:

- Payment 1 can be claimed after an eligible family doctor commits to completing the three phases of panel management within 12 months from claiming the incentive.
- Payment 2 can be claimed after completion of phases one and two of panel management.
- Payment 3 can be claimed after completion of phase three of panel management.

To be eligible for the new incentive, family doctors must be using an EMR system to manage patient information and have completed the GPSC PMH Assessment in the 12 months before applying for the incentive.

Learn more: www.gpsc.bc.ca

Phases of panel management

1. Empanelment

Ensure that their list of active patients is accurate and up-to-date, and that their panel size is assessed to balance capacity.

2. Initial panel cleanup

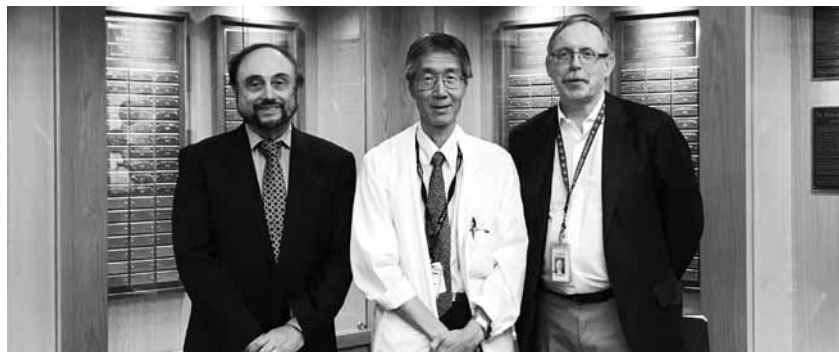
Develop accurate and up-to-date registries for three to five chosen disease indicators.

3. Panel optimization

Develop accurate and up-to-date registries for 10 to 15 disease indicators to support planned proactive care. Clinic staff roles are assigned and appropriate staff time is dedicated to ongoing panel management.

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The Vancouver Medical Staff Hall of Honour (VCH): Remember the heroes of the past



Photograph by Jennifer Laxamana

[L-R] Drs Simon Rabkin, Eric Yoshida, and Stephen Nantel inside the VCH Hall of Honour.

The Vancouver Medical Staff Hall of Honour of Vancouver Coastal Health was created, with the approval of the hospital administration, to commemorate both the 110th anniversary of the Vancouver General Hospital (2016), and the 150th anniversary of Canada's Confederation (2017). Although it is appreciated that all health care professionals at VGH and its allied institutions have provided outstanding service since 1906, the intention of the Vancouver Community of Care Medical, Dental, and Allied Staff Association (VMDAS) is to recognize and honor those who have provided exceptional leadership and dedicated clinical/academic service that has profoundly benefited the residents of BC as well as advanced the practice of medicine/surgery in this province. In doing so, the Hall's inductees have brought great distinction and honor to VGH and its allied institutions.

In the inaugural induction ceremony, held at VGH in February 2018, the inaugural members of the Hall were:

Dr Wallace B. Chung, CM, OBC – Professor emeritus of Surgery, UBC, former head of General and Vascular Surgery, UBC Hospital.

Dr Felix Durity, OBC – Professor emeritus of Neurosurgery, UBC, former head of Neurosurgery, VGH.

Dr Robert E. McKechnie, CBE – acclaimed pioneering surgeon, VGH, and longest-serving UBC chancellor.

Dr Sheldon (Shelly) Naiman (1937–2016) – BC's first clinical hematologist and first head of Hematology, VGH.

Dr George Fredrick (Fritz) Strong (1897–1957) – former chief of medicine, VGH, and creator of the G.F. Strong Rehabilitation Hospital.

Dr Donald Paty, MSM (civil division) (1936–2004) – pioneer in multiple sclerosis and former head of Neurology, UBC.

The VCH Hall of Honour is physically located on the main floor of the Jim Pattison Pavilion, VGH, and was unveiled prior to the annual VMDAS awards ceremony at the end of June 2018. The Hall is the first of its kind in Western Canada and, along with the Canadian Medical Hall of Fame in London, Ontario, is one of the few of its kind in the country. It is hoped that the Hall and its inducted members will be a source of inspiration to physicians, surgeons, and allied health care professionals in the years to come.

—Eric M. Yoshida,
OBC, MD, FRCPC

Hall of Honour Committee Chair
—Marshall Dahl, MD, PhD, FRCPC
Past Chair VMDAS

—Stephen Nantel, MD, FRCPC
Hall of Honour Committee Member
—Jennifer Laxamana

Administrative Assistant, VMDAS
—Simon W. Rabkin, MD, FRCPC
Chair VMDAS

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/jh-macdermot-writing-awards.

Building interprofessional maternity care in BC

Pregnant women in some BC communities can face fragmented and siloed perinatal care, split between family doctors, registered midwives, and obstetricians—who may not communicate, collaborate, or even trust each other.

For pregnant women, such a situation can be stressful and confusing, and can mar their maternity care journey. Should they choose a midwife, GP, or OB? What if their pregnancy develops complications—how is care shared or referred? In some communities, the situation is complicated by too few providers for all the pregnant women needing care. In other communities, too many providers compete with each other for patients.

For providers, these issues contribute to professional stress and dissatisfaction, burnout, and even the personal decision to stop providing maternity care, which can then undermine the sustainability of all maternity services in the region.

Building trusting collaborative teams

Research has shown that effective interprofessional collaborative (IPC) maternity care increases access to care, improves quality, and enhances care provider satisfaction and retention.¹⁻³

But how can providers realistically create a more collaborative network—one that puts patients' needs at the centre while improving the working environment and relationships for all the care providers involved?

Helping answer that question is the rationale behind a Shared Care initiative aligned with other maternity work of the GPSC, the Rural Coordination Centre of BC, and Perinatal Services BC. Called the Maternity Network, the initiative aims to support maternity care providers in BC

communities as they embark on local relationship-building and information-finding activities to improve interprofessional collaboration and create more patient-centred care.

It has long been known that expecting various providers to “just collaborate!” simply doesn't work. It takes more than that. It takes a process of trust-building engagement that has maternity providers getting to know each other, clarifying scopes of practice and roles, dispelling myths and misperceptions, and learning about the needs of patients and each maternity care provider in the region.

With this information and that trust, maternity professionals can begin working together to co-create community-based solutions.

Communities leading the way

In the last 5 years, a few communities—Comox, Penticton/South Okanagan, and Kootenay Boundary—have led the way in piloting process-driven forms of engagement, which have included needs-assessment surveys of both providers and patients, patient journey-mapping, and meetings and events to promote dialogue, relationship-building, and solution-finding. Each community developed solutions tailored to local needs.

In Comox, through events such as a World Cafe, providers learned that they have more in common than the differences they once perceived, and with this understanding, cooperating to co-develop local solutions became easier. Examples of those solutions included creating a well-defined, easy-to-navigate patient pathway; and piloting group prenatal care that brings midwifery and family practice patients together for medical care, education, and peer support. Providers

have clearly defined the various roles and now regularly communicate and cooperate.

In the South Okanagan, the process of engagement has encompassed all providers, and established a new pilot perinatal clinic at the Penticton Regional Hospital, which includes four maternity GPs and a registered midwife. Holding weekly meetings to discuss cases and creating standardized protocols have fostered rewarding collaborative relationships and clarified patient pathways among all local maternity providers, not only those who work at the clinic. A survey of providers found the process has increased trust among maternity care providers by 60%, and contributed to the more sustainable delivery of local maternity services because care is collaborative, not competitive.

In Kootenay Boundary, where travel can be a significant barrier for maternity care, provider collaboration has resulted in the development of telematernity technology, meaning that patients can now meet with their GP and maternity provider through a virtual visit in their GP's office. Additionally, a collaborative approach was used to develop a perinatal mental health program for women at risk of depression or anxiety.

What's next?

Now seven other communities—Thompson, Sea-to-Sky, Nanaimo, Chilliwack, Surrey/North Delta, Vancouver, and the East Kootenays—have embarked on similar engagement processes with seed funding from Shared Care, using some of the lessons learned from Comox, South Okanagan, and Kootenay Boundary. The majority of those communities are in the action phase of their projects, with providers

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Dr Andrew Burger Murray 1927–2018



Dr Murray, a graduate of the University of Cape Town and an alumnus of the Boston Children's Hospital, was the first pedi-

atric subspecialist in Vancouver who limited his practice to children's asthma and allergies. He subsequently became a professor of pediatrics at BC Children's Hospital. There he established the Division of Allergy and became its first head. He published the first controlled study showing that asthma in mite-sensitive children could be improved, and bronchial reactivity decreased, if their bedroom was made dust-free. He was also the first to show that asthma in children was aggravated if the parents smoked in the house.

Dr Murray retired in 1992, but until 1999 he continued to publish research articles based on the data he had accumulated. In 1992 he also attended art school. He continued to paint, hike, and kayak for many years. He is survived by his wife, Molly, and his daughter, son, and five grandchildren.

—Annie Davison
London, England

Recently deceased physicians

If a BC physician you knew well is recently deceased, consider submitting a piece for our obituaries section in the *BCMJ*. Send the content (up to 500 words) and high resolution photo by email to journal@doctorsofbc.ca.

Dr Murray Allen Peglar 1941–2018



Murray put up a strong fight against Parkinson disease, but passed away on 3 April 2018.

He is survived by his wife, Juanita;

his sons, Bruce (Michael) and Murray (Cory); stepson, Scott Napier (Lenora); and his seven grandchildren, Kate, Emma, Charlotte, Ben, Malcolm, Ashley, and Ryan. He is also survived by his sisters, Ann (George) Rodger and Barbara (Ron) Hasan; his nephews, Peter and David (Melanie) Rodger; and niece, Adrienne (Adrian) Cristini. Murray was predeceased by his father, Rev Bruce Peglar, and mother, Ethel Peglar.

Born in Mount Forest, Ontario, to a naval chaplain, Murray grew up on both the east and west coasts of Canada. He attended Glenlyon Preparatory School in Victoria, BC, where he excelled at sports and studies, winning a 5-year scholarship to Ridley College in St. Catharines, Ontario. He was accepted after graduation to pre-med at the University of Toronto. In Halifax, he worked in the pathology lab at the Victoria General Hospital, and completed his BSc and BA degrees while awaiting acceptance to Dalhousie Medical School. He was president of the Phi Chi Medical Fraternity and compared his time in the fraternity to *Animal House*, starring John Belushi. Murray would roar with laughter each time he watched it because it reminded him so much of his own fraternity days.

Murray always followed his heart. He loved music, played guitar, and sang. He formed a bluegrass group and would drive to Peggy's Cove in his sports car or on a motorcycle to

play with local bands. He fished, hunted, and scuba-dived. He embraced many adventures and misadventures while working toward his goal of becoming a doctor.

After graduating from med school in 1969, Murray drove across Canada to work in Vancouver with the World Health Organization. He discovered Langley and decided that was where he would hang his hat and shingle. He was well respected for his 31 years of practice and privileges at the Langley Memorial Hospital. He reluctantly retired in 2001, 6 years after his diagnosis of Parkinson disease. He would always talk about how much he missed medicine.

Murray loved the romantic, Wild West cowboy history of BC. He often said that he must have been a cowboy in a previous life. He enjoyed spending time outdoors, hunting and fishing with friends, watching the local Langley Rugby boys play, and meeting with "table 1" at the Murrayville Pub for Monday Night Football. He was involved with Ducks Unlimited, the BC and Canadian Wildlife Federations, and the Steelhead Society of BC.

His favorite place was his cabin at Gun Lake, where he would work hard on his property, ride his quad up and down the mountains with the Gun Lake gang, or sit on the dock with a beer in hand, dog by his side, and simply enjoy the beauty of nature. He loved his old tugboat trips in the Gulf Islands, motorcycle trips across Canada and the US, and winter vacations in Mexico, but the lake was his place.

Murray was a strong, take-charge, go-for-it kind of man. Undoubtedly, he could be stubborn at times. We will miss him and his "Murray-way" of doing things.

—Murray Peglar
Calgary, AB

Weighing the options: Two shingles vaccines available for older adults

About one in three Canadians will develop shingles (zoster) in their lifetime (with incidence increasing after 50 years of age), and up to 40% of zoster cases are associated with one or more complications, most prominently zoster ophthalmicus and post-herpetic neuralgia (PHN). PHN is more common in older people, affecting 4% to 15% of zoster cases in people aged 50 to 59, 7% to 26% of cases in people aged 60 to 69, and 14% to 29% of cases in people 70 years and older.¹

Zoster and its attendant complications are preventable by vaccination, and two vaccines are approved for use in Canada. The recently approved adjuvanted recombinant vaccine offers appreciably higher and durable protection rates and is associated with more, albeit tolerable, reactogenicity, and physicians should become familiar with these differences in order to provide appropriate counseling to patients who are considering the vaccine, which is available through the private market. At present only Ontario offers publicly funded zoster vaccine, having introduced the live vaccine in 2016 for those aged 65 to 70.

The live attenuated zoster vaccine (Zostavax II, Merck Canada Inc.) approved in 2008 in a formulation requiring freezer storage, has been marketed as a fridge-stable formulation in Canada since April 2014 and continues to be available on the private market. In the pivotal clinical trial, this vaccine was found to have an efficacy of 64% (95% CI, 56-71) in persons aged 60 to 69 against incident

zoster but only 38% (95% CI, 25-48) in those aged 70 and older (median follow-up time: 3.1 years), and 66.5% against post-herpetic neuralgia unaffected by age.² This vaccine is given as a single dose subcutaneously. In postmarketing studies, waning of immunity occurs beginning the first year

**RZV is given
as a 2-dose series
intramuscularly, 2 to 6
months apart.**

after vaccination, with limited remaining protection after 6 years; this waning is more marked when the vaccine is given at older ages.³ While the vaccine has some limited indications in select individuals with immunocompromise, it is generally contraindicated in this group of patients.

A non-live adjuvanted subunit vaccine (Shingrix®, GlaxoSmithKline Inc., varicella zoster virus glycoprotein E recombinant [RZV]) was approved by Health Canada in October 2017 for adults aged 50 and older.⁴ The adjuvant is unique to this vaccine (AS01_B), and is composed of liposomes containing two immunostimulants: 3-O-desacyl-4'-monophosphoryl lipid A from *Salmonella minnesota* combined with 1 mg of dioleoyl phosphatidylcholine (DOPC) and 0.25 mg cholesterol, and *Quillaja saponaria* Molina.

RZV is given as a 2-dose series intramuscularly, 2 to 6 months apart. The vaccine has performed well in clinical trials with 3-year vaccine efficacy against zoster at 97% in people aged 50 to 69 and 91% (a difference that is not statistically significantly

lower) for those 70 and older.^{5,6} Efficacy against PHN was 91% (95% CI, 75.9-97.7) for those 50 and older, and 89% for those 70 and older (95% CI, 68.7%-97.1%). This vaccine is expected to have value for immunocompromised people who cannot receive the live vaccine, and while specific indications for this subpopulation are not yet listed in the product monograph with studies being conducted in people infected with HIV, solid tumors, organ transplant, and HSCT recipients, it is not contraindicated for the immunocompromised. The immune response following RZV appears durable with data available to 4 years at this time and no statistically significant declines observed.

Safety of RZV has been assessed in seven randomized clinical trials with the largest studies referenced above having over 14 000 enrolled older adults. Local reactions were common, with a median duration of 2 to 3 days; 80% of subjects reported pain and 30% reported redness; grade 3 reactions (interfering with activities of daily living) were reported by 8.5% and 9.5% of recipients 70 and older, and 50 and older, respectively, compared to 0.2% and 1.9% by the corresponding placebo recipients. Systemic adverse events of fatigue and myalgia were reported in half of recipients, and headache in 40%; median duration was 1 to 2 days. Grade 3 systemic events were reported by 11.4% of vaccine recipients compared to 2.4% of placebo recipients, and at lower frequencies in those 70 and older (6% and 2%, respectively); these were more common after the second dose. Serious adverse event rates were similar in vaccine and placebo groups, and none were considered vaccine related.

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

In a prepublication statement, the Canadian National Advisory Committee on Immunization (NACI) recommends that for those who have received the live vaccine or experienced an episode of zoster, RZV can be administered 1 year later.⁷ NACI further recommends that the live vaccine should be offered to those without contraindications only if the RZV cannot be given (e.g., due to contraindications or unavailability). The US Advisory Committee on Immunization Practices (ACIP) recommends preferential use of RZV over the LZV, while continuing to recommend that LZV may be used in immunocompetent adults 60 and older.³

Both NACI and ACIP recommend that RZV may be given at the same visit as influenza vaccine and other vaccines intended for adults, including pneumococcal polysaccharide vaccine and tetanus-diphtheria containing vaccines; a study with quadrivalent influenza vaccine has been completed and showed no interference, and studies with the other vaccines are in progress.

—**Monika Naus, MD, MHSc, FRCPC, FACPM, Medical Director, Communicable Diseases and Immunization Service**

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Continued from page 370

working together to bring local needs-based solutions to fruition.

A new round of Shared Care funding will be available this fall for applications for other communities wanting to explore ways to improve maternity care collaboration in their region. For more information, contact Nancy Falconer at nfalconer@doctorsofbc.ca.

—**Nancy Falconer
Shared Care Liaison,
Maternity Network**

—**Lee Yeates, RM, MHM
Collaborative Practice
Consultant, Maternity Network**

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ADULT CONGENITAL CARDIOLOGY

Vancouver, 29 Sep (Sat)

The Adult Congenital Cardiology in the Community event is the first of its kind in British Columbia. The event's main objective is to provide education and support to care providers around the province as they partner with the St. Paul's Hospital Pacific Adult Congenital Heart (PACH) program in providing care for these patients. Participants are expected to recognize the red flags in adult congenital heart disease and to define a shared care model between community practice and quaternary care centre for patients with ACHD. This will be a 1-day event with a target audience of general cardiologists, internists, residents, fellows, nurses, and allied health professionals who care for adults with congenital heart conditions as part of their practice. It will be held at the Morris J. Wosk Centre for Dialogue in Vancouver. To register and for more information, please visit <https://ubccpd.ca/course/acc2018>, call 604 675-3777 or e-mail cpd.info@ubc.ca.

SNOMED CT EXPO 2018

Vancouver, 10–19 Oct (Wed–Fri)

SNOMED CT Expo 2018: The Global Language of Healthcare will be held at the Pan Pacific Hotel, and showcase the latest achievements and research in semantic interoperability, specifically the SNOMED CT clinical terminology. The themes prevalent in this year's Expo include the role that clinical terminology plays within genomic and precision medicine, and clinical data analysis. This event, attended largely by international clinicians, showcases the latest achievements and research in semantic interoperability, specifically the SNOMED CT clinical terminology. Further, it extends an opportunity to BC doctors to get involved in

the determination of relevant clinical terminology in SNOMED CT in a variety of specialty areas, applicable to an international setting. SNOMED CT Expo 2018 program offers (www.snomedexpo.org) offers educational tutorials and workshops at no additional cost to participants, and is available for attendees to earn credits towards maintaining their CPHIMS-CA designation through Digital Health Canada.

MINDFULNESS IN MEDICINE

Molokai, HI, 13–20 Oct (Sat–Sat)

Now is the time! Join Dr Mark Sherman on the pristine Hawaiian island of Molokai for this 7-day mindfulness meditation retreat for physicians. The retreat is an opportunity to learn mindfulness and meditation skills, connect with fellow physicians, and to bring a restored perspective and vitality into your personal and professional life. We will offer instruction in basic and more advanced meditation practice interspersed with small group discussions and sharing, with an opportunity for self-reflection and deep rest. Please see <http://livingthismoment.ca/event> for more information and to register. Contact mark@livingthismoment.ca for any questions.

ALLERGY AND CLINICAL IMMUNOLOGY UPDATE 2018

Vancouver, 20 Oct (Sat)

The Allergy and Clinical Immunology Update is back again this year! This 1-day conference offers timely updates on common allergy and immunology issues faced by family physicians and pediatricians in the clinical setting. Participants will hear from leaders in the field on topics such as food allergy, drug allergy, immunodeficiency, and asthma. Participants last year remarked that they felt more confident managing food allergy and practical advice in daily

practice. Target audience: family physicians, pediatricians, nurses, residents. Accreditation: Up to 7.0 Mainpro+/MOC Section 1 credits. This update will be held at the SFU Segal Building in downtown Vancouver. To register and for more information, please visit <https://ubccpd.ca/course/allergy2018>, call 604 675-3777, or e-mail cpd.info@ubc.ca.

WORKSAFEBC PHYSICIAN EDUCATION CONFERENCE

Victoria, 20 Oct (Sat)

The 19th Annual WorkSafeBC Physician Education Conference will be held at the Inn at Laurel Point in Victoria. Attendees can expect a full-day of discussion, dialogue, and workshops relating to the role of physicians in work-related injuries, and the latest protocols in disability management. The agenda includes 3 plenary sessions, 14 workshops to choose from, and 2 short-snapper sessions that feature a brief presentation followed by an opportunity for Q&A. Register before 1 Oct to get the early bird rate of \$179 + GST for physicians, and \$89.50 + GST for students and residents. For more information, visit www.worksafebcphysicians.com.

INFECTIOUS DISEASES SYMPOSIUM

Surrey, 20 Oct (Sat)

The 4th annual Infectious Diseases Symposium will be held at Surrey Memorial Hospital, UBC Lecture Hall, Floor-B, Critical Care Tower. Symposium chair: Dr Yazdan Mirzanejad. Topics: Adult immunization and resurgences, necrotizing fasciitis, meningitis, high-risk infection during and after pregnancy, fever in returned travelers, parasitic infections in refugees and immigrants, common infections in transplanted patients, fever in children in the office and emergency room settings, and

pitfalls in interpretation of infectious diseases diagnostics. Event speakers: Professor Tony Chow, Dr Monika Naus (BCCDC), Drs Alissa Wright, Laura Sauve, Mike Chapman, Miguel Imperial, Katherine Plewes, Meera Anand, Julie Schalwyk, and Yazdan Mirzanejad. Further information and registration: <https://events.eply.com/infectious-diseases-day-2018-10-20>.

CANADIAN SOCIETY OF HOSPITAL MEDICINE CONFERENCE

Whistler, 25–27 Oct (Thu–Sat)

To be held at Fairmont Château Whistler, this interactive conference will provide clinically relevant updates to hospital medicine physicians, general internists, family physicians providing in-patient care, and residents/students. The conference will review current work-up and therapeutic approaches for common inpatient clinical presentations, and identify essential skills required to care for medically complex adult inpatients. Cost: \$699. Accreditation: This event is accredited for up to 14.5 Mainpro+ and MOC Section 1 credits. For more details and to register, visit <http://ubccpd.ca/course/CSHM2018>; e-mail info.cpd@ubc.ca; or call 604 675-3777.

26th OBSTETRICS UPDATE FOR FAMILY PHYSICIANS

Vancouver, 25–26 Oct (Thu–Fri)

Please join us for this 2-day course at Vancouver Marriott Pinnacle Downtown Hotel. This course is designed to meet the needs of a busy practitioner, no matter where you work! Suitable even if you don't attend births: provides updates for early pregnancy care, postpartum, and newborn care. Wine and cheese social event at the end of the day on Thursday! Hands-On Ultrasound Education Obstetrics Course as post-conference workshop on Sat 27 Oct and Sun 28 Oct. Accreditation: up to 13.50 Mainpro+ credits. To register and for more infor-

mation visit <https://ubccpd.ca/course/OB2018>, call 604 675-3777, e-mail cpd.info@ubc.ca.

MEDICAL LEGAL REPORTS

Vancouver, 10 Nov (Sat) & 24 Nov (Sat)

Medical Legal Reports—The Essentials, is back again this year and will feature new and refreshed content: The essential components of a medical legal report; how to clearly narrate the patient's history, physical examination findings, diagnosis, and prognosis; the steps to complete a medical legal report efficiently and streamline the payment/invoicing process; how lawyers, juries, and judges identify the good, bad, and ugly medical legal report. Medical Legal Reports—Advanced will help you acquire advanced skills needed to tackle these tough reports: Enhanced skills for successful medical legal report writing; how to address complex issues of patient compliance/adherence, possible secondary gain, cost of future care and future treatment; the role of the medical/health professional expert witness in court; how to succeed in the various parts of expert testimony: Becoming qualified, direct testimony, cross examination, and re-direct; common pitfalls and traps in court and how to avoid them. All these aspects will be demonstrated in an engaging mock trial. Both courses will be held at UBC Robson Square, 800 Robson St. Register today at <http://www.medlegaltoolkit.com> For more information e-mail manager@coremedicalcentre.ca.

MINDFULNESS IN MEDICINE 2018–2019

Multiple BC locations, multiple dates

The challenges and blessings of medicine require that we, as physicians, learn skills to take care of ourselves even as we care for others. Mindfulness and meditation offer concrete, evidence-based tools to nurture resilience and wellness in ourselves,

and in those we work with as patients. Please join Dr Mark Sherman and your fellow colleagues for one of our transformative upcoming workshops/retreats: Mindfulness in Health Care—For all health care professionals—Brentwood Bay (23–26 Nov 2018); Mindfulness in Medicine—Foundations of theory and practice (TBD, Feb 2019); Mindfulness in Medicine—For physicians and their partners—Tofino (26–29 Apr 2019); Mindfulness in Medicine—A physician meditation retreat—Hollyhock, Cortes Island (9–14 Jun 19). For more information and to register, go to www.livingthismoment.ca/events/ or mark@livingthismoment.ca.

GP IN ONCOLOGY EDUCATION

Vancouver, 4–15 Feb, 9–20 Sept 2019 (Mon–Fri)

BC Cancer 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.

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Two family practices for sale. Acquire well-established 17-year-old busy rural practices in downtown Smithers, with services including obstetrics and MOT medicals, utilizing MOIS EMR. Hospital is located nearby with potential for ER shifts. Embrace the rural lifestyle with activities such as golfing, boating, kayaking, lake and pool swimming, fishing, hunting, snowmobiling, cross-country and downhill skiing. If interested please email iss24@yahoo.com or dr.pretorius.office@centralsquare.ca.

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Take over 35-year-old established practice from two physicians. Low rent, fully furnished, nine equipped exam rooms, free parking, lab and X-ray walking distance. EMR available. Will assist in every aspect of transition. Call Dr Andrew Major, cell: 604 591-2322.

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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.

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NANAIMO—FT/PT FAMILY PHYSICIAN

Drs Jenny, Margo, Stefan, Seamus, Alva, and Jennifer are looking for a physician to join their brand new, state-of-the-art clinic. Great support staff, Accuro-based EMR, online booking, kiosk checkin, and our friendly atmosphere sets our clinic apart from the rest. Walk-ins available and flexible hours; no buy-in, no overhead during vacation, competitive % splits. Please call Jenny or Shanda at 250 591-9622 (ext. 6) for details or to book a tour of our clinic.

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.

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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 as 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.

PITT MEADOWS—FAMILY PHYSICIANS

We are seeking three full-time family physicians to join our team at the New Pitt Meadows Medical Clinic. We encourage physicians to have a full family practice with regular shifts in our very busy walk-in clinic. The NPMMC is a purpose built, well established, and highly reputed practice in Pitt Meadows with beautiful views. It is ideally situated between Coquitlam and Maple Ridge in a high-visibility, high-traffic location. We have excellent staff. Low overheads for full-time physicians. At present, the clinic is open 6 days per week. For further details visit www.newpittmeadowsmedicalclinic.ca or contact Dr L. Challa at 604 465-0720.

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.

S 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 Peninsulamaterial@live.com or 604 916-2050.

SOUTHERN INTERIOR, BC—OPPORTUNITIES FOR ANESTHESIOLOGISTS

Interior Health (IH) is recruiting anesthesiologists in both locum and permanent capacities in several communities, including Cranbrook and Kamloops. In addition to improving anesthesia and pain management through our collaboration with UBC's Southern Medical Program, you will have the opportunity to make an impact in education and research. At IH anesthesiologists provide a range of services for a wide range of surgical and diagnostic procedures, including general surgery, orthopaedic surgery, neurosurgery, vascular surgery, OBG, ENT, plastic surgery, urology, and multiple trauma. Come enjoy a rewarding career in one of our many caring communities. See job postings: www.betterhere.ca.

SURREY/DELTA/ABBOTSFORD—GPS/SPECIALISTS

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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—GP/WALK-IN, FT OR LOCUM/SPECIALIST

Modern, zen, spacious clinic in Surrey, BC. Very friendly and experienced staff to make your day as easy as possible. Fast computers with OSCAR EMR. Flexible hours: full-time/part-time/walk-in/build your own practice. Heavy-traffic location. Up to 80/20 split. Private offices available for each physician. Email: infinitehealthmedical@gmail.com.

VANCOUVER/RICHMOND—FP/SPECIALIST

We welcome all physicians, from new graduates to semiretired, either part-time or full-time. Walk-in or full-service family medicine and all specialties. Excellent split at the busy South Vancouver and Richmond Superstore medical clinics. Efficient and customizable OSCAR EMR. Well-organized clinics. Please contact Winnie at medicalclinicbc@gmail.com.

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/P-T—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.

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medical office space

BURNABY (METROTOWN)—FURNISHED SPACE FOR SPECIALIST
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BURNABY—INTERESTED IN JOINING A PEDIATRIC PRACTICE?
We are looking for pediatricians and pediatric specialists to join Kensington Medical Clinic, a large multidiscipline practice located in Burnaby. We have six pediatricians, a pediatric cardiologist, and 12 GPs on staff. Collaborative atmosphere and competitive remuneration. Contact Jeremy at 604 299-9765 or jmickolwin@kensingtonmedicalclinic.com.

VANCOUVER (KERRISDALE)—OFFICE SPACE
Airy, spacious, quiet office available for a psychiatrist or psychologist on Fri and/or weekends. Located in Kerrisdale Prof. Bldg., an exceptionally convenient location for access by public transit or car, with a large amount of free residential parking available. Close to pharmacies, labs, a walk-in clinic, coffee shops, and restaurants—all within walking distance. The office is accessible by stairs and elevator. Consists of a waiting area that seats two people; a large reception desk; file storage room; and

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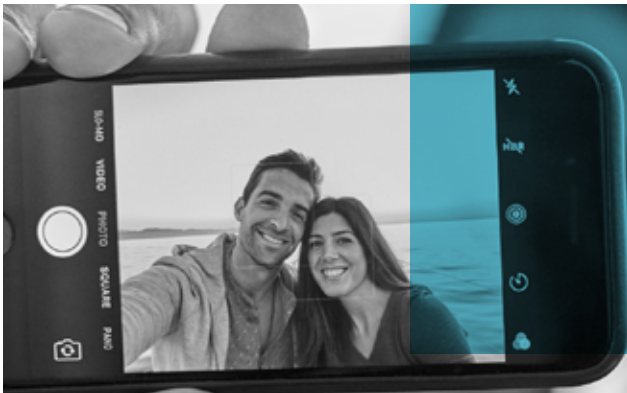
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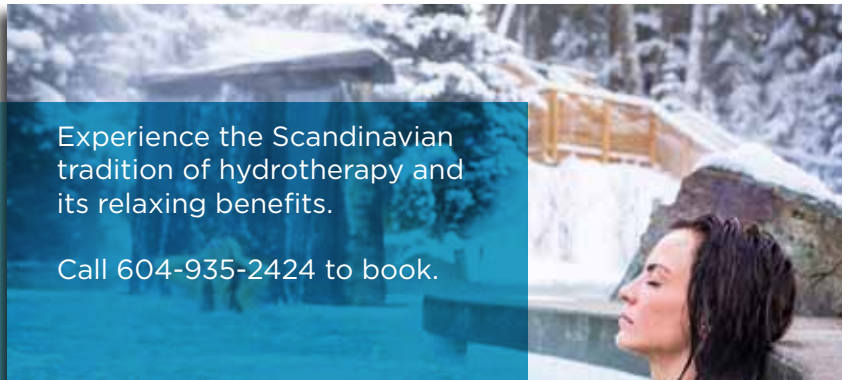
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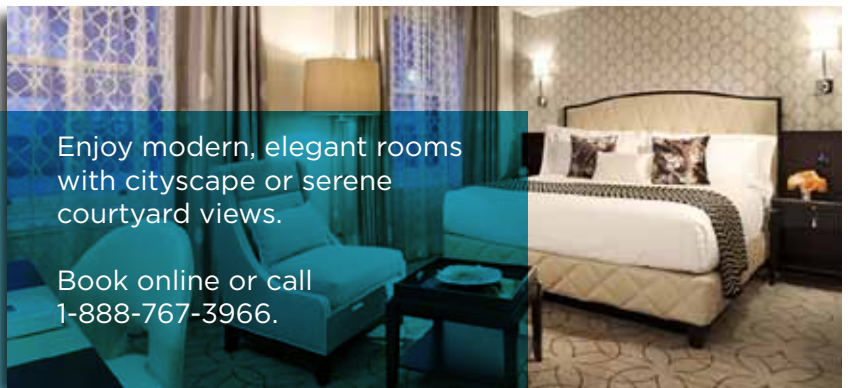
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