Voice of St. Paul's Foundation

St. Paul's FOUNDATION

Promise

2025

Transforming emergency medicine

New Teck Emergency Department will deliver innovation, research, and compassionate care

Dr. Jim Christenson (left) and Dr. Erin Kenny, Teck Emergency Centre at St. Paul's Hospital

From left: Sheila Biggers, President and CEO, St. Paul's Foundation, and Glenn Ives, Chair, Board of Directors, St. Paul's Foundation.

> The future of health care is closer than you think – and it's all happening because of you. You are making it possible for us to accelerate health care transformation and improve lives around the world.

FROM THE TEAM

WE'RE LIGHTING THE WAY TO HEALING BETTER

IN A WORLD WHERE COMPASSION is both necessary and rare, we believe empathy is the starting point for excellent care. Guided by research and a culture of innovation, Providence Health Care strives toward something beyond treatment: true healing. In this issue of *Promise*, our efforts to 'heal better' take center stage – reflecting our unwavering commitment to making care more responsive, heartfelt, human, and driven by excellence.

Our cover story features the highly skilled care patients experience in the Teck Emergency Centre at St. Paul's Hospital. Behind every quick decision is research that's shaping how emergency medicine is delivered today – and how it will evolve in the new Jim Pattison Medical Campus.

You'll also read about innovations in pain management that are helping patients heal better and reclaim their lives after years of chronic pain. And, you'll learn how the reimagined Neonatal Intensive Care Unit (NICU) at the new St. Paul's Hospital will strengthen family-integrated care, keeping newborns close to their families while receiving critical care.

The inspired, compassionate care highlighted in this issue will enter a new era of transformation in our new home on the Jim Pattison Medical Campus. We're less than two years away from the opening of the new St. Paul's Hospital, and construction has already begun on the adjacent Clinical Support and Research Centre (CSRC).

Additionally, this year, we're celebrating an important milestone: the 10th anniversary of Foundry, which provides integrated health and wellness services to young people and their families. Thanks to visionary donors like you, Foundry has grown over the past decade from a prototype centre in Vancouver to a world-renowned collaborative network of 17 centres across BC, plus Foundry Virtual BC, with 18 additional Foundry centres currently in development. You'll meet Victoria, who fled Ukraine for Canada in 2022. She found counselling services, peer support, assistance with employment and education, and, most importantly, a true sense of belonging at Foundry Abbotsford.

The future of health care is closer than you think – and it's all happening because of you. Together, we are accelerating health care transformation and improving lives around the world.

Thank you for being a vital part of this journey.

GLENN IVES
CHAIR, BOARD OF DIRECTORS, ST. PAUL'S FOUNDATION

SHEILA BIGGERS
PRESIDENT AND CEO, ST. PAUL'S FOUNDATION

On behalf of the St. Paul's Foundation team

Promise

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EDITORS
Alyssa Hirose, Julia Prezotto

CONTRIBUTING WRITERS
Sondi Bruner, Alyssa Hirose, Michael Harris, Rebecca Philps

CONTRIBUTING PHOTOGRAPHERS
Tanya Goehring, Coconut Creative, Milana Kljajic, Laureen Carruthers

MEDIA PRODUCTION
Gregory Czaplak

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130, 4321 Still Creek Drive
Burnaby, British Columbia, V5C 6S7
604-299-7311 Fax: 604-299-9188

CEO & GROUP PUBLISHER
Ryan Benn

GROUP VP, PUBLISHING & OPERATIONS
Nina Wagner

ART DIRECTOR
Catherine Mullaly

EDITORIAL DIRECTOR
Alyssa Hirose

DIRECTOR OF CIRCULATION
Tracy McRitchie

PRODUCTION MANAGER
Kim McLane

PUBLISHER EMERITUS
Peter Legge, O.B.C., LL.D. (Hon)

We welcome your comments on *Promise* magazine.
Please write to us c/o
St. Paul's Foundation,
178 –1081 Burrard St, Vancouver, BC, V6Z 1Y6.
Email: *spfoundation@providencehealth.bc.ca*
Phone: 604-682-8206

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INSIDE

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COVER: Dr. Erin Kenny (left) and Dr. Jim Christenson. Photography by Coconut Creative.

Dr. Judy Wolfe (left) and registered nurse Clara Vuong are just two of the incredible NICU staff. The future NICU at the new St. Paul's Hospital (top right) will feature more space, privacy, and resources for families.

ROOM TO GROW

The NICU at the new St. Paul's Hospital on the Jim Pattison Medical Campus will keep families together.

BY **ALYSSA HIROSE** PHOTOGRAPHY BY **TANYA GOEHRING**

Many expecting parents eagerly anticipate the first moments of their babies' lives. But, when newborns require care in a Neonatal Intensive Care Unit (NICU), those early memories can be very scary. So, it's no small feat that St. Paul's Hospital is the referral site for the most medically complex obstetric patients in British Columbia—in difficult cases, parents turn to the St. Paul's Hospital team to deliver swift, compassionate care in those critical hours, days or weeks.

Dr. Judy Wolfe has been a pediatrician at St. Paul's Hospital for 25 years, and knows the current Neonatal Intensive Care Unit (NICU) inside and out. The NICU supports babies that require close monitoring or medical intervention after birth. It's an open bed model, meaning that all of the newborns receive care in the same room. The nine incubators and other necessary medical equipment leave little extra space, so parents spend the first few days or weeks of their baby's life sleeping in separate rooms. "It's very small and very crowded," Dr. Wolfe says. The team is overdue for a better space to work in.

The NICU opening at the new St. Paul's Hospital on the Jim Pattison Medical Campus will give families more space, resources and privacy. Individual rooms allow new parents to stay with their babies 24/7. This means that birthing parents will be able to receive postpartum or post-birth care in the same room as their baby, even if their baby requires specialized care. "There is evidence to suggest that the best way to get sick babies more stable is skin-to-skin care," says Dr. Wolfe. Parents staying with their babies allows more opportunity for that invaluable contact. Plus, NICU staff can more easily support first-time parents (think teaching essential skills like feeding, diapering, and safe sleep practices) when they're all in the same room. "This makes it easier for families to go home feeling comfortable and confident," says Dr. Wolfe.

BIG BABY STEPS

THE CURRENT NICU AT ST. PAUL'S HOSPITAL	THE NICU AT THE NEW ST. PAUL'S HOSPITAL
• The open-bed NICU is a single, large room that can take up to nine babies at once. Parents can sit in chairs next to their babies but cannot sleep in the room.	• Each family will have their own private room. There are 10 rooms, each large enough to accommodate both an incubator and a parent bed. Two are large enough to fit two incubators (for twins) and a parent bed.
• All parents must stay in their own hospital rooms outside of the NICU. Once discharged, parents come from home to visit their babies.	• Most parents can stay in the NICU, receiving care in the same room as their babies. Parents are welcome to stay in the same room throughout their babies' stay.
• There is no washroom or laundry room.	• Each private room has its own washroom, and there is a shared laundry room for parents to wash their baby's clothes.
• There is no isolation space to limit exposure in the event of an infection or disease (such as COVID-19).	• Two isolation rooms provide space to separate patients if needed; both are sealed with negative pressure to avoid germs spreading.

REMEMBERING THE EARLY DAYS

A premature birth brings Whitehorse parents to the St. Paul's Hospital's NICU, where staff provide not only medical support, but essential guidance for infant care.

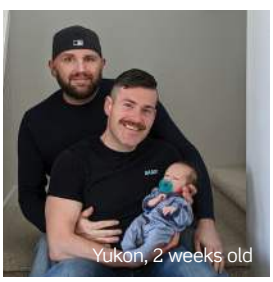
BY **ALYSSA HIROSE**

Left to right: Greg, Yukon at 3 years old and Allen, healthy at home

Greg Shaw and Allen Penny planned to become parents, but their son arrived quite ahead of schedule. "We thought we had another seven or eight weeks before we became a family of three," Greg says. It's been almost four years since the couple's surrogate went into labour just 32 weeks into her pregnancy. She had a premature rupture of membranes, meaning her water broke before 37 weeks of gestation, which can lead to pre-term labour. For any expecting family, this would be a stressful experience, and it was especially so for Greg and Allen, two first-time fathers living in Whitehorse, Yukon—where there is no NICU.

"She was in what they considered 'delivery mode,'" Greg remembers, explaining that their surrogate was flown in to St. Paul's Hospital via helicopter. The couple got on the first flight from Whitehorse the next day, and less than three days later, their son—aptly named Yukon—was born. "It felt like the light opened up from the skies and shined down on us when he was actually born," Greg says. Yukon needed immediate intensive care. Registered nurse Clara Vuong admitted the 3.7 lb baby to the NICU, where he required continuous monitoring: staff kept a watchful eye on his heart rate, respiration, and oxygen saturation, and gave him IV antibiotics and a feeding tube to help him get stronger. But for Greg and Allen, the most memorable part of Yukon's stay in the NICU was the support provided by the physicians, nurses and social workers. "The care was just absolutely amazing," Allen recalls. The kind, patient staff gave the new parents the guidance and assurance they needed. "They were so hands-on, and gave us so much confidence," says Greg.

Yukon, 1 day old



Yukon, 2 weeks old

Nurse Clara explains that one of her most important roles as a NICU nurse is teaching families how to care for their newborns. She spent a lot of time getting to know Greg and Allen, helping them learn how to read their baby's cues, change his diapers, and bathe him. "Just by talking with them, you could tell how Yukon completed their family; it was a wonderful experience to be able to teach them," she says. "They were Yukon's biggest cheerleaders, celebrating his daily milestones."

After 20 days in the NICU, Yukon was discharged. He was off his cardio-respiratory monitor and feeding orally, and Greg and Allen were ready for their next chapter. "We got to go home feeling good about being dads, rather than being nervous," Greg says. As Yukon continued to grow (now he's nearly 50 lbs, and almost four years old), the support from NICU staff continued, too. "They still follow us on Facebook, and like and comment on our pictures," Greg says. "They love watching him grow up." ✧

HEALING HAPPENS EVERY DAY.

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When you become a monthly donor, you join a compassionate community that helps deliver exceptional care across Providence Health Care—every single month.

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> "Careful research can more objectively guide the best decision-making. We're human, and we need science to guide us."
>
> — *Dr. Christenson*

URGENT MATTERS

The Jim Pattison Medical Campus will give doctors and patients in the Teck Emergency Department the space they need for compassionate care in critical moments.

BY **MICHAEL HARRIS**

PHOTOGRAPHY BY **COCONUT CREATIVE**

Dr. Erin Kenny (left) and Dr. Jim Christenson look forward to the new Teck Emergency Department at the new St. Paul's Hospital.

Jenna Pullen woke up in excruciating pain in her shoulder and neck. It had been bothering her for a while, but she thought she could manage it with over-the-counter painkillers. Now it was worse–far worse. She needed help, and fast. But the nearest hospital had a nine-hour wait time. So, Jenna asked her husband to drive her downtown, to St. Paul's Hospital.

"I admit, I had negative preconceptions about emergency departments," she says. In her work as a caregiver, Jenna had witnessed how assumptions about addiction could lead to hasty, incorrect diagnoses. Now, here she was, desperate for pain killers at three in the morning. What if similar judgements delayed her care and extended this terrible pain?

Those anxieties disappeared when Dr. Robert Saona arrived. "He was friendly, direct, and had such a calm demeanor," Jenna remembers.

"How would you rate this pain on a scale of one to ten?" he asked. "Ten. If I could saw off my arm to stop this pain, I would."

Jenna was given the medication she needed straight away. Next, she was given a CT scan, an MRI, and an appointment with a neurologist. These were vital steps: imaging revealed that a disc had popped out and was pinching on a nerve in her neck.

"Dr. Saona walked me through everything; he made sure I had a way

to get home. And he actually called me to follow-up before my own GP even called me back," Jenna says. She was one of hundreds of patients who came through the Teck Emergency Centre that day. About 100,000 patients receive care there every year. And, as British Columbia's population continues to age, the traffic is only increasing.

Care at the Teck Emergency Centre is often brief. In mere moments, caregivers like Dr. Saona must establish trust, diagnose needs, and help deliver patients toward their best possible outcomes. Few realize that those speedy answers and vital solutions are possible because another kind of work is also underway: long-term research projects with results that guide each doctor's decisions.

Dr. Frank Scheuermeyer, director of research in the Teck Emergency Centre, leads a team of five clinician-scientists. The team published fifty papers in medical journals in 2024

alone. Despite the hectic pace of work in the Teck Emergency Centre, it's crucial that research be given space, too. "We are studying the processes and flow that help our department function," says Dr. Scheuermeyer. Research questions (often suggested by co-workers) are pursued in a real-world, practical environment that offers data impossible to gather in a laboratory.

That work—like the care of patients—is more challenging in a cramped and outdated space. The aging department was designed to handle about 65,000 annual patients (two-thirds the current load). The resulting crowds and lack of privacy make research far more difficult.

Research is critical for health care providers to discover new, innovative treatments and save more lives. "Careful research can more objectively guide the best decision-making," says Dr. Christenson. "We're human, and we need science to guide us."

That guidance is about to become far stronger at the new St. Paul's Hospital on the Jim Pattison Medical Campus, where a number of improvements will enhance care and research.

When patients like Jenna arrive at the triage desk of the new Teck Emergency Department, they'll be greeted by a streamlined system where clerks and nurses process patients in tandem. Much of the patient registration will be done bedside, speeding the path to treatment.

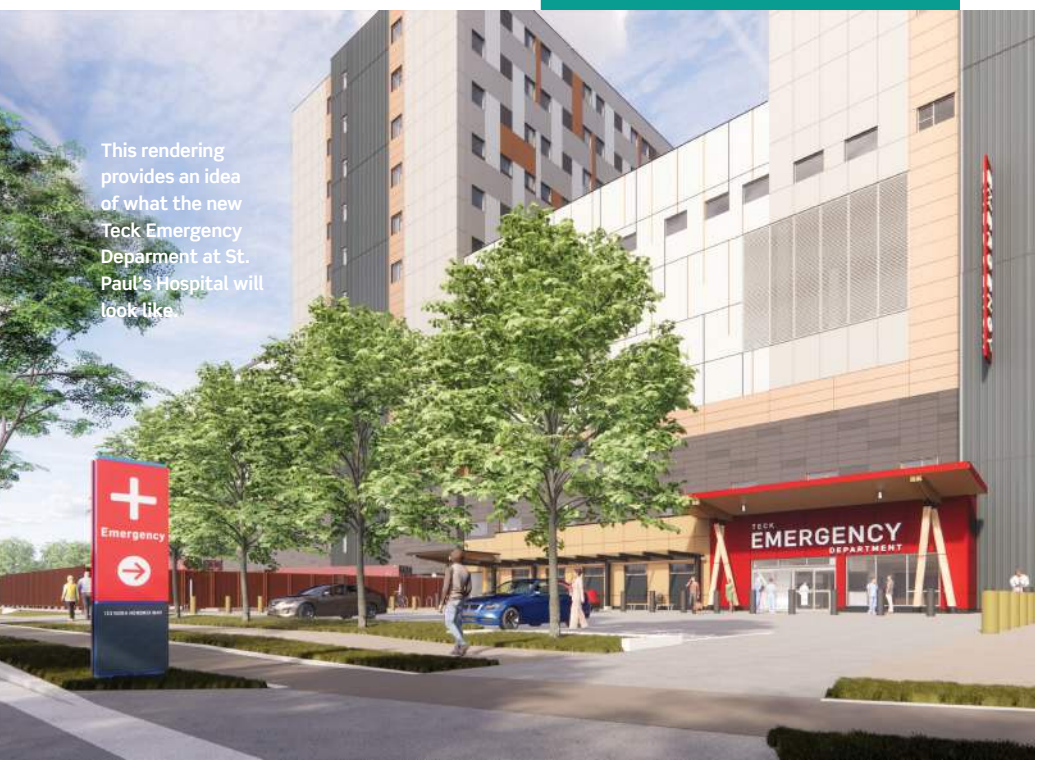
The number of emergency rooms will be increased by 25%. Each room will be equipped with physiological monitoring, patient devices, and proper walls. Each room will also be an "able to accommodate any patient" room (whereas the current hospital's rooms were relegated to one type of care). And Dr. Erin Kenny, Teck Emergency Department Head, says the new, efficient design aims for "all care to be brought to the patient. There's no more ping-ponging from one space to another and back to the waiting room."

Consequently, research can improve, too. "There will be more room and time," says Dr. Kenny. The Jim Pattison Medical Campus will also be home to a brand-new, 12-storey Clinical Support and Research Centre (CSRC), co-joined with the hospital. This innovation hub will include wet labs and dry labs where the hospital's researchers can continue their work in a calm, dedicated space.

This new facility will bolster and amplify the team's work. What's more, by ensuring that research continues, those crucial insights and breakthroughs will improve care for every patient who visits in the years to come.

BREAKTHROUGHS IN EMERGENCY STROKE CARE

During an ischemic stroke, when the brain's neurons are deprived of oxygen, every second counts, says Dr. Jim Christenson. He led a six-year study of Nerinetide, which slows down neuron death, giving doctors crucial extra time to deal with blood clots. In this trial, Nerinetide was administered in ambulances while patients were still en route to a specialty stroke centre. The trial, which was published in the prestigious journal Lancet, not only proved Nerinetide's efficacy, it also proved that paramedics are perfectly capable of delivering such drugs. They may, indeed, be best positioned to administer Nerinetide, since they can deliver it earliest. "It's a game changer," says Dr. Christenson. "And the study is a real credit to those paramedics."



This rendering provides an idea of what the new Teck Emergency Deparment at St. Paul's Hospital will look like.

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THE SURGERY THAT SAVED **TWO HEARTS**

When Shina Biblow and her husband Tyson found out they were expecting their second child, they never imagined the journey ahead. Four months into her pregnancy, Shina faced a life-threatening infection that required open heart surgery—a procedure that carried a 40% risk of losing her baby.

BY **SONDI BRUNER**

PHOTOGRAPHY BY **LAUREEN CARRUTHERS**

Shina Biblow recalls the remarkable teamwork and innovation she experienced at St. Paul's Hospital during her second pregnancy.

Shina is no stranger to complex cardiac operations. Born with a narrowed aortic valve, she had open heart surgery at just 12 weeks old to repair it and restore blood flow. Thanks to regular monitoring into adulthood, she's been able to live fully and joyfully near Williams Lake, BC.

Shina successfully sailed through her first pregnancy with support from Dr. Marla Kiess and the team at St. Paul's Hospital's Complex Obstetrics Clinic, which provides pre-pregnancy counselling and cardiac care to pregnant patients with congenital and acquired heart disease.

So when the morning sickness and heart palpitations appeared early in her second pregnancy in 2021, she simply chalked them up to normal symptoms. Then severe leg cramps set in, followed by a spread of red rashes all over her body and a persistent cough. She was so sick she wasn't able to take care of her toddler.

Following a virtual consultation, Dr. Kiess recommended Shina visit her local emergency department. After seeking urgent care in Williams Lake and Kamloops, doctors discovered she had an infection in her heart valve and was in heart

BRINGING EXPERTISE AROUND THE PROVINCE WITH VIRTUAL CARE

Many pregnant patients who need care at the Complex Obstetrics Clinic reside in remote, small, or northern communities.

Prior to the COVID pandemic, patients would make the journey to St. Paul's Hospital about once a month—spending considerable money, time, and energy. With the rise of online video platforms and limitations on travel beginning in 2020, the Complex Obstetrics Clinic began offering virtual care. Patients can speak with staff from the comfort of their own home, and care providers can order tests at local facilities, review results, and send medication prescriptions to local pharmacies if needed.

Shina, who lives over 500 kilometres away from St. Paul's Hospital, had remote visits with Dr. Kiess and Dr. Mitenko throughout her treatment. She found the virtual care a huge advantage over travelling to Vancouver, enabling her to stay home with her family while still staying connected to her doctors.

Today, about 40% of Complex Obstetrics Clinic appointments are delivered virtually.

"Virtual care has just made a tremendous impact on what we can do," says Dr. Kiess.

failure. She was airlifted to St. Paul's Hospital—the provincial centre for complex cardiac and obstetrics cases – for specialized care, leaving her two-year-old son with her mother-in-law while Tyson hurriedly followed south by car.

A series of gut-wrenching moments

Cardiac surgeon Dr. Jamil Bashir says that when Shina arrived, her entire valve was "almost liquified"—they had no time to waste. She needed a life-saving open heart surgery to replace the infected aortic valve, but it would put her baby at risk.

"When I heard there was a 40% chance of losing my child, that was devastating," Shina remembers. She didn't know if she would survive the surgery or see her firstborn son again. "It was scary."

Staff at St. Paul's Hospital were there for Shina every step of the way, providing both physical care and emotional counselling to help her navigate this challenging time. Shina recalls that Dr. Bashir, as well as the ICU nurses, made her feel supported.

"Dr. Bashir was amazing—he was very comforting and positive about everything, which made it easier," she says. "And we had a lot of people praying for us. The way we had to look at it was: well, if there's no me, then there's no baby."

The power of collaboration

Staff from numerous specialties, including cardiology, obstetrics, infectious diseases, and anesthesiology, collaborated to plan the intricate surgery required to replace Shina's valve with a new mechanical one. There were many tricky elements to consider, from choosing the right anesthesia to safely keeping her on the heart-lung bypass machine to tightly controlling her temperature.

After 30 years in the field, Dr. Bashir says that Shina's surgery was "the most people that I've ever had in the operating room at any one time from different disciplines."

Shina remembers waking up the next morning in the ICU, where she learned the surgery was a success: "Dr. Bashir showed me on his phone—my baby had a heartbeat and was still kicking in there. That was incredible."

Dr. Bashir thinks that these kinds of successes are "classic" at St. Paul's Hospital, due to the expertise, skilled communication, and outpouring of support from different departments. "People work with each other really well here, so we are often able to bring teams together and get great outcomes," he says.

From surgery to successful delivery

But Shina still had an infection – as well as several months to go in her pregnancy. Before she headed back to Williams Lake, infectious diseases staff stepped in to ensure she had the right antibiotic treatment at home. She was introduced to obstetrician Dr. Nancy Mitenko, who worked with Dr. Kiess and the Complex Obstetrics Clinic to create a detailed plan for the remainder of the pregnancy and childbirth. As Shina's new heart valve requires lifelong blood thinners, Dr. Tony Wan and the thrombosis team provided medications that were safe throughout her pregnancy and beyond.

Merritt was born on January 24, 2022, weighing six pounds, four ounces. Shina is grateful for the expert, attentive, and compassionate care that guided her through surgery, delivery, and postpartum recovery.

"I felt like I had a personal relationship with everyone that dealt with my case," she says.

Three years after Shina's surgery, this family of four continues to treasure every moment.

> "It feels good that I'm part of a system where there is so much coordination so things can go as smoothly as possible. I think we have excellent colleagues who really care about the work and who go the extra mile for patients."
>
> *—Dr. Mitenko*

That feeling is mutual. Mere steps away from his desk, Dr. Bashir has newborn photos of Merritt on his bulletin board, and Drs. Kiess and Mitenko are delighted that both mom and baby are thriving.

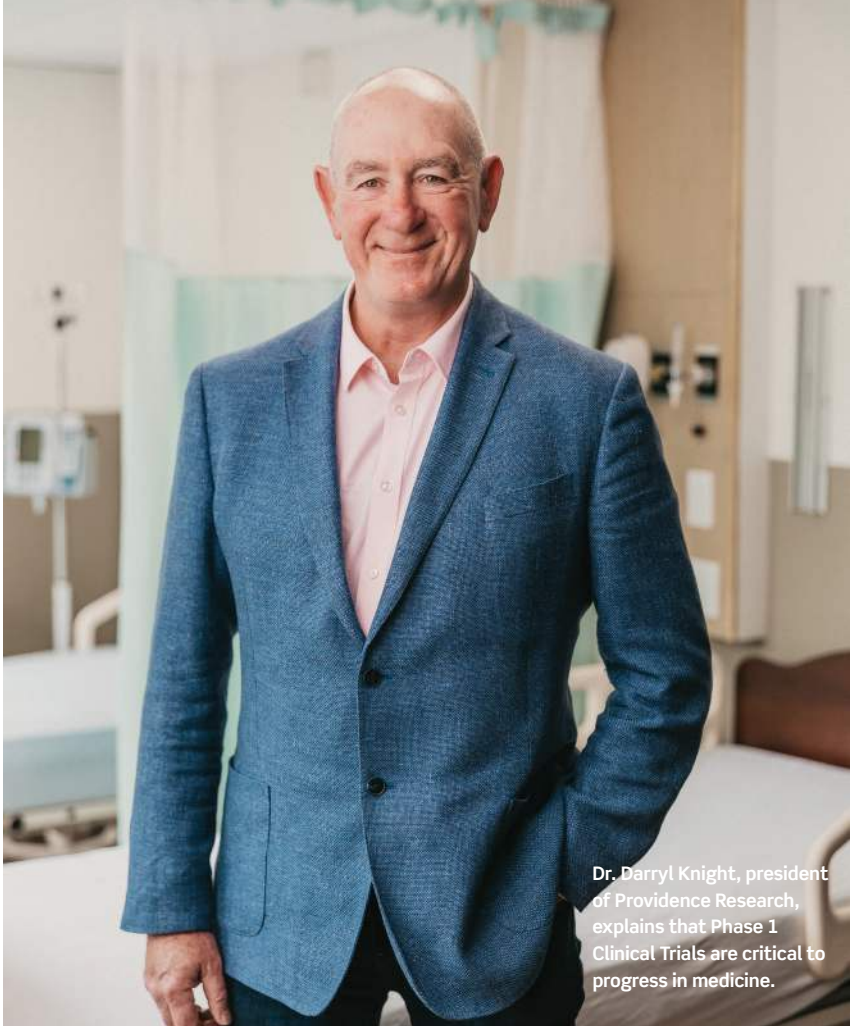
"We all felt wonderful that she made it through this very complex pregnancy: it really highlighted how well our team works," says Dr. Kiess. "I do not think that the outcome would have been so positive without the assistance of the very experienced, multidisciplinary Cardiac Obstetrics team at St. Paul's Hospital who provide this service for the entire province of BC."

Today, Merritt is a healthy, happy, and chatty three-year-old, with the occasional toddler tantrum thrown in for good measure. Shina says she feels better than ever, and cherishes the precious time she has with her family.

"I believe that God put these people at St. Paul's Hospital in my path to help save my life and my son's life," she says. "We wouldn't have made it through without them, or the prayers and support we received from family and friends."

LEARN MORE

Scan the QR code to learn more about our excellence in cardiac care.



Dr. Darryl Knight, president of Providence Research, explains that Phase 1 Clinical Trials are critical to progress in medicine.

FASTER BREAKTHROUGHS, CLOSER TO HOME

The new Phase 1 Clinical Trials Unit at Mount Saint Joseph Hospital is a gateway to more efficient and effective medical interventions that are born and raised in Canada.

BY **ALYSSA HIROSE**

PHOTOGRAPHY BY **COCONUT CREATIVE**

THE NEW CLINICAL SUPPORT AND RESEARCH CENTRE (CSRC) connected to the St. Paul's Hospital on the Jim Pattison Medical Campus will create an ecosystem that encourages the cross pollination of ideas, establishes a hub for innovation, and supports new models of care.

Most of us couldn't make it through our morning routine without the successful outcome of a clinical trial. When you put in your contact lenses, apply sunscreen or pop an ibuprofen to ease a headache, you're benefiting from years of testing conducted by innovative teams of researchers, clinical staff, and physicians.

"Any intervention today is the result of yesterday's clinical trials," explains Dr. Darryl Knight, president of Providence Research. "Any drug you take, any device you're wearing for your health—I think that really puts the importance of clinical trials in perspective."

Clinical trials consist of multiple phases designed to keep patients safe while evaluating the efficacy of the intervention being tested. Each phase is important, but Dr. Knight shares that Phase 1—the first time that the drug or device is given to a human—is the most critical. "It's the gateway," he says. In 2025, Providence Health Care is poised to become a leading provider of these crucial trials: the newly opened Clinical Trials Unit (CTU) at Mount Saint Joseph Hospital is now the only dedicated non-cancer Phase 1 unit in Western Canada.

Essential Testing

Despite its name, Phase 1 is not where a treatment's journey begins. All medical interventions begin with an idea, which is typically followed by years of preclinical computer work, petri dish experiments, preclinical models, testing on human 3D bioprinted tissues, biomanufacturing, and obtaining Health Canada approval to conduct the trials.

Even then, the intervention isn't yet given to a person with the condition that it aims to treat. In a Phase 1 clinical trial, the drug or device is administered to healthy humans. Dr. Knight gives the example of an asthma puffer. "First, you try that puffer in healthy volunteers [people who do not have asthma], and if it's safe and

well-tolerated, then you can try it on an asthmatic patient." The results of the Phase 1 trial determine whether the treatment moves on to the next phase.

In Western Canada, there are no other Phase 1 Clinical Trials Units solely devoted to non-cancer trials. In coming years, the Clinical Support and Research Centre (CSRC) connected to the new St. Paul's Hospital on the Jim Pattison Medical Campus will have the potential to run all phases of trials, but for now, local biotech and pharmaceutical companies have access to the most fundamental phase at Mount Saint Joseph.

Innovation Station

The eight-bed Phase 1 Clinical Trials Unit at Mount Saint Joseph was created thanks to a $4.2 million investment from the BC Ministry of Health and a further $600,000 from Michael Smith Health Research B.C. Participants may stay overnight or for up to a week for hospital staff to safely monitor them, and due to the CTU's location—right below Mount Saint Joseph's high acuity unit—there is swift access to emergency care in the unlikely event of an adverse reaction. The Clinical Trials Unit will be able to conduct clinical trials on a myriad of conditions: respiratory, cardiac, renal, immune, ophthalmology, and more. Most fall into the categories of drugs, small molecule inhibitors, antibodies, and gene modifiers.

Homegrown Science, Global Impact

The global clinical trials market was worth roughly $69 billion CAD in 2021 and is predicted to increase to $111 billion by 2028. "Canada has done pretty well; it's captured roughly 4% of the clinical trials market to date," the Providence Research president says, "but it's fallen behind in Phase 1 trials—outside of cancer—because we haven't had that capacity."

This means that Canadian biotech companies have had to go to the U.S., Australia or India to conduct Phase 1 trials, and once a therapeutic is being tested abroad, it's difficult to bring it back home for Phase 2 and beyond. By the time an approved drug reaches our shores, it may be too late for some patients.

"This is a way for local companies to keep their products in Canada," says Dr. Knight. "If [a treatment] stays in Canada, it gets approved sooner, and that can only benefit the patients that we serve who are in desperate need of better and more specific therapies."

He adds that BC's biomanufacturing capability enhances the possibilities of these trials. "Now, we can develop a molecule, make enough of it and put it into a person without actually leaving the province," he says. "It's an opportunity for industry and academia to be engaged for the entire duration of a potential therapeutic's life cycle, from investigational product to approved therapy."

Great Minds

Not only will the tested products stay in Canada, but the people testing them will, too. "It's an absolute ecosystem of training opportunities and employment opportunities," Dr. Knight points out. He stresses the importance of the multidisciplinary training that will take place, and of the high-income jobs that are created when Phase 1 trials can be done locally: "It's fuelling economic growth."

The impact of the Phase 1 Clinical Trials unit at Mount Saint Joseph can't be understated: not just for the patients and families that will gain access to better, faster care through rigorously tested interventions, but for Canada at large. "It's a catalyst for economic development, a catalyst for health care improvement and a catalyst for health innovation in general," says Dr. Knight.

LEARN MORE

Scan the QR code for more insights on groundbreaking research.

How a Drug Is Developed: Step by Step

1. EXPLORATORY RESEARCH

Researchers identify a potential medical intervention.

2. CLINICAL RESEARCH

Laboratory testing is conducted.

PHASE 1: IS IT SAFE?
The treatment is tested in healthy human volunteers for the first time. Doctors determine if the treatment is safe for people and find the best way to administer it.

In some circumstances, the treatment may not be suitable for healthy volunteers, and patients are the first to be administered the drug. This is the case for cancer drugs, for example.

PHASE 2: IS IT EFFECTIVE?
The medicine or intervention is given to humans with the condition that it aims to treat. Doctors determine how well it works, what the ideal dosage is, and identify any side effects.

PHASE 3: IS IT BETTER?
Doctors determine if the treatment is better than other treatment options available. If it is more effective than others on the market, Health Canada may approve it.

PHASE 4: LONG-TERM ANALYSIS
After the treatment is approved, doctors continue to monitor patients and study potential long-term side effects.

"I always tell people I'm not as much of a pain doctor as I am a function doctor—I care more about ways that I can help improve people's function."

— Dr. Vishal Varshney, Chair in Pain Management at St. Paul's Hospital

HEALING AND HOPE FOR CHRONIC PAIN PATIENTS

The Pain Clinics at St. Paul's Hospital are dedicated to innovative treatments for chronic pain, a notoriously overlooked (but very common) problem.

BY **ALYSSA HIROSE**

PHOTOGRAPHY BY **COCONUT CREATIVE**

One in five Canadians live with chronic pain, so for Dr. Vishal Varshney and Dr. May Ong, who spearhead St. Paul's Hospital's two pain programs, it's obvious why pain research, treatment, and care should be a priority for all of us: "If it's not impacting you directly, it's inevitably affecting someone that you know," says Dr. Varshney.

Dr. Varshney is an anesthesiologist and the inaugural Chair in Pain Management at St. Paul's Hospital—he's the first in BC to hold this position. He leads a team of experts in the Complex and Interventional Pain Program, which offers advanced interventional pain management

Dr. Vishal Varshney (left) and pain treatment patient Keith Meldrum are advocates for interdisciplinary chronic pain care.

therapies and research for the treatment of complex pain.

Dr. Ong is Providence Health Care's Chair in the Neurobiology and Neuropharmacology of Pain, and heads the Department of Medicine's Centralized Pain Program at St. Paul's Hospital. It's the only program of its kind in Canada. Her team of researchers has published outcomes revealing significant improvements in patients' pain and function. After nearly four decades specializing in pain management, Dr. Ong shares that the understanding of pain pathways has evolved tremendously, especially in the past five to 10 years.

While chronic pain is extremely common, it's an 'invisible' problem. "Pain isn't something that you can see on a blood test, or even on an MRI," Dr. Varshney explains. "It's a dynamic process of neuronal adaptation to disease or injury," Dr. Ong adds. Many patients living with chronic pain bounce from provider to provider without receiving effective treatment—or worse, without being listened to. Dr. Varshney, Dr. Ong and the entire Pain Clinic team look forward to the expanded capacity at the Clinical Support and Research Centre (CSRC) connected to the new St. Paul's Hospital on the Jim Pattison Medical Campus to continue their breakthrough innovations in centralized pain treatments.

KEITH MELDRUM:

BELIEF IN BETTER CARE THROUGH NEUROMODULATION

Keith Meldrum is blunt about his near-fatal car accident. "I was just a young, dumb 16-year-old who found out the hard way that if you drink a bunch of alcohol and don't get any sleep, you will roll your car down a bank," he says. His accident occurred in 1986, but almost 20 years passed before Keith visited St. Paul's Hospital for his pain.

"We think persistent pain isn't well-understood now? It was terribly misunderstood then," says Keith, who was left with chronic abdominal wall pain after his accident and the numerous surgeries that followed. Keith got used to doctors brushing him off after hearing his medical history, and every medical intervention he did receive, failed. In fact, one such failure—a paravertebral nerve block injection that gave him a partial lung collapse—was what finally led him to St. Paul's Hospital in 2004. During his intake, Keith was understandably doubtful. "I fully expected to be told once again, 'It's not that bad, it's all in your head'," he recalls.

Instead, intake doctor David Hunt said, "It's okay, we believe you."

Two decades later, Keith still remembers the impact of Dr. Hunt's words. "It was truly a defining, pivotal change," he says. Keith was a candidate for neuromodulation, and in 2005, he was given his first spinal cord stimulator (an implanted device that delivers mild electrical signals into the spinal cord to reduce pain). The pain didn't disappear completely,

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but the implant provided effective relief, and allowed Keith to channel his energy into other strategies for self-management. Breathing techniques helped with breakthrough pain, regular exercise built strength and his mental health improved exponentially. He remembers a follow-up visit in 2005: "My wife broke down in tears in that room, thanking them, because it had that much of a profound effect not only on me, but on my family."

When his spinal cord stimulator reached the end of its life in 2015, Keith returned to St. Paul's Hospital and became one of the first in Canada to receive a dorsal root ganglion stimulator. "It's a more specific kind of device: electrodes are placed at specific parts in the spinal cord to deliver electrical signals to turn the volume down on the intensity of nerve pain," explains Dr. Varshney.

Soon after receiving his first stimulator, Keith started doing advocacy work. Today, he's lectured at universities, co-authored papers, and given countless others invaluable support and resources for managing their pain. He shares his story of combining medical intervention with psychological and physiological lifestyle changes for significant results. "Keith educates patients about using a variety of different resources— it's not just going to be one pill or one injection that will address this, it really needs to be addressed from all different angles," says Dr. Varshney. It's exactly the kind of holistic, interdisciplinary care that the team at the Complex and Interventional Pain Program champions. Keith is also an enthusiastic proponent of pain research: he trusts the work, just as his physicians at St. Paul's Hospital trusted in him. "I have never been treated with such care, concern and empathy," he says.

ANGELO MARVUGLIA:
THE TRANSFORMATIONAL POWER OF KETAMINE THERAPY

In 2016, Angelo Marvuglia spent six weeks in the hospital. After a virus, he developed double pneumonia, a pulmonary embolism, and pericarditis, which was eventually diagnosed as chronic. "After that point, I just never felt better—I kept getting worse and having new and different symptoms," he says. His pain, focused mostly on the left side of his body, prevented him from working at his family-owned small business, playing with his children and, on many days, simply getting out of bed. "I was walking with a four-wheeled walker, I would spend easily three-quarters of my day sleeping and I was taking over 100 pills a day," Angelo shares. Still, there was no relief.

Angelo feels the physicians he was seeing had tunnel vision—once they heard about his cardiac history, his symptoms would be largely dismissed. This went on for years, until one of his cardiologists suggested he may have Multiple Sclerosis (MS). He was sent to the UBC Hospital MS Clinic, and after an official diagnosis, the MS

Angelo Marvuglia (left) has central neuropathic pain, and Dr. May Ong explains how ketamine therapy provides him effective relief.

Neurologist referred him to Dr. May Ong at St. Paul's Hospital. Dr. Ong was determined to find an innovative solution, because the conventional medications just weren't working. "Every single thing you can name, Angelo had tried," she remembers.

She explains that his MS lesions caused sensitivity to touch, poor balance and daily debilitating pain. Angelo describes it as a seven-to-nine out of ten, burning, hot, tingling pain.

Chronic pain like Angelo's doesn't always have a clear cause—and it doesn't just go away. In some cases, a past illness or injury rewires how the brain processes pain, sending constant signals even when there's no physical reason. This is called centralized pain, and it requires a specialized approach. That's exactly what Angelo needed. Because his pain was central neuropathic, Dr. Ong suggested IV ketamine infusion therapy to block the abnormal nerve signals that caused his symptoms.

Ketamine, originally developed as an anesthetic, works by blocking pain receptors in the nervous system. In this first-of-its-kind treatment, patients are admitted to the hospital to receive continuous IV infusions of ketamine over a period typically ranging from 10 to 14 days. The ketamine is administered at subanesthetic doses, meaning the amounts are lower than those used for anesthesia, allowing patients to remain alert and functional during treatment. This protocol aims to modulate pain pathways and provide relief from chronic pain; the treatment is carefully supervised to ensure patient safety and monitor for any side effects.

There's no such thing as a miracle cure, but what Angelo experienced was pretty close. "Within a couple days, I was feeling a lot better," Angelo recalls, "and by the end of that first infusion, my pain was down to a two or three out of 10." Angelo's body had been sending unprompted pain signals to his brain, and the ketamine helped rewire those faulty signals, creating new neural pathways.

In just under two years, Angelo received four infusions at St. Paul's Hospital. "By the end of my fourth one, which would have been in 2022, I actually was experiencing zero out of ten on the pain scale," he says.

> "Really simple things bring me joy. Even being able to do my own shopping is amazing. It's really been a second chance at life."
>
> —*Angelo Marvuglia, Centralized Pain Program Patient*

If you ask Dr. Ong what she's most proud of, she'll say helping her patients return to function and work, and that's especially true for Angelo's case. Now, he works part-time as a table dealer at a casino, a job that requires plenty of speed, dexterity, quick thinking, and confidence. "I'm right there, in the public's eye, dealing with people and the chips and the cards with both my hands," Angelo says. "Everything has to be done perfectly; it's a challenge, but I enjoy it. I think some of my coworkers think I'm a bit crazy for loving my work the way I do, but they haven't been through the same experiences as I have." Playing in the yard with his three children or going for a short hike to a neighbourhood waterfall are things he doesn't take for granted, and he's grateful to Dr. Ong for her mindful dedication to ketamine therapy as a neuropathic pain treatment. "She's an incredible doctor who makes time for patients and is incredibly knowledgeable, and I'm really appreciative of the fact that she's not afraid to try something new… because it worked."

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CELEBRATING A DECADE OF **YOUTH HEALTH CARE** AT FOUNDRY

For ten years, Foundry has been providing essential, accessible, and free services for young people in BC.

> "I wasn't registered for school, I wasn't employed, my English wasn't very good, and I just didn't know where to start."
>
> *— Victoria Sulyma, a youth from Foundry Abbotsford*

BY **REBECCA PHILPS**

PHOTOGRAPHY BY **MILANA KLJAJIC**

Victoria Sulyma didn't know what to expect when she walked through the doors of Foundry in Abbotsford, BC, back in June 2022. Just a few months earlier, Victoria had been attending university in Lviv, Ukraine, and relishing her newfound independence. When Russia invaded in February 2022, that life was over. Initially, she stayed in Lviv, volunteering in bomb shelters and soup kitchens, but as the invasion grew, she knew she had to leave. Victoria began a harrowing journey, travelling on foot to Poland, eventually reuniting with her family and finding refuge in Canada.

She struggled a lot in those early days. "I wasn't registered for school, I wasn't employed, my English wasn't very good, and I just didn't know where to start," she says. Victoria began searching online for affordable therapy, and that's when she came across Foundry—it offered free health and wellness social services for youth ages 12 to 24, and critically, she didn't need a referral or assessment to access the help. The organization had multiple centres, including one nearby in Abbotsford.

Dr. Steve Mathias (left) and Dr. Karen Tee lead the team at Foundry, a network of youth wellness services supported by St. Paul's Foundation donors. PHOTO: Tanya Goehring

Victoria dropped by the centre and met counsellors Leisa and Kristi. Kristi began working with Victoria to address her anxiety and PTSD, and connected her to the Foundry Work & Education program, a free program that provides personalized support for young people to explore career paths, access education opportunities, and build skills for long-term success.

Kristi also introduced Victoria to Allison, a peer support worker. "Allison was a friendly and kind person, sort of like an older sister," Victoria shares. In addition to counselling, she soon joined in other activities happening at the centre, like craft circles and board-game nights. She was able to practice her English and get advice on how to navigate everyday challenges.

With assistance from the Foundry Work & Education program, Victoria was able to get a job at Starbucks and save money for school. She eventually completed a paralegal course and began working as a legal assistant. "Foundry kept me sane while balancing work, night school, volunteering, and fulfilling my practicum hours," she says. "I know I wouldn't have made it without their support."

A Beacon for Youth

Back in 2007, donors to St. Paul's Foundation provided seed funding to create Providence Health Care's Inner City Youth Program (ICY), a program for youth navigating housing insecurity and homelessness. Aided by more donor support, the ICY expanded over the following years.

Foundry helped Victoria Sulyma adjust to her new life in Canada, prepare for job interviews, and create meaningful connections with other immigrants and refugees.

Community Research

The Foundry model is built on what people need now, says Dr. Skye Barbic, Head Scientist at Foundry and an Associate Professor at the Department of Occupational Science and Occupational Therapy at the University of British Columbia: "The idea of going into communities to listen, and then co-designing the solutions, is remarkable." She and her research team study the gaps in Integrated Youth Services (IYS) that have been identified by Foundry's clients, service providers, and community stakeholders.

In 2024, Barbic was named a Tier 2 Canada Research Chair in IYS. The accomplishment is both a recognition of Barbic's significant work, and a celebration of the growth of IYS—which started in Canada at Providence Health Care. "The chair allows me to focus on understanding the mechanisms of IYS—what's working and what's not—and then measure the impact," says Dr. Barbic. "I can share those exciting lessons within BC and across Canada." This research is an asset to the Foundry team and to the 16,000-plus youth who access Foundry programs every year.

"There was a team of about 25 people who had been working with youth in downtown Vancouver," recalls Dr. Steve Mathias, a psychiatrist and co-executive director of Foundry. "We were working out of really small office spaces at St. Paul's Hospital. We had to see young people in their Single Resident Occupancy Hotels, in coffee shops or at youth shelters. And if we missed them, then there was nowhere for them to come and see us."

In March 2015, St. Paul's Foundation, Providence Health Care, and the provincial government, with the help of private donors, opened the next iteration of these essential services: Granville Youth Health Centre. It was soon renamed Foundry (the youth themselves selected the title, associating it with a trusted, confidential place to seek help). The new centre offered a street-level clinic for primary care—access to family doctors and nurse practitioners—but also mental health care, physical and sexual health care, substance use support, youth and family peer support, and social services. It also trained and employed young people with lived experience (those who have struggled with their mental health or with substance use and overcame those struggles) to connect with other young people coming through the door. It was a prototype for Integrated Youth Services (IYS), and the first of its kind in North America.

Power in the Prototype

In 2015, the provincial government announced funding to test out one Foundry model in each of the five regional health authorities in BC. The models opened with further support from St. Paul's Foundation donors—then, in 2017, additional provincial funding was announced to open a second centre in each region. That was unusual, says Dr. Karen Tee, a Clinical Psychologist and co-executive director at Foundry, but it was proof that policymakers could clearly see Foundry's value. In 2019, the Government of BC launched A Pathway to Hope, a 10-year roadmap for making mental health and addictions care better for people in BC; it listed opening more Foundry centres as a priority action.

"Opening those first few centres felt a little like building the plane as we were flying," admits Dr. Tee. There was initial concern that the downtown Vancouver prototype might not work in a suburban or rural community. The leadership team followed a mantra of open heart, open mind, and they let relationships with young people, their family members, community partners, and staff inform what each centre should look like and what services it should prioritize.

Building for the Future

Today there are 17 Foundry centres across BC, plus provincial virtual services offered through Foundry Virtual BC. Another 18 centres are set to open by 2028 with the support of St. Paul's Foundation. "Our vision is for 55 in the province," says Mathias. He notes that Foundry has faced rising construction costs over the years when it comes to building out centres, and space is hard to find. Centres can take three years or more to build and open. And the original Foundry Vancouver has outgrown its capacity on Granville Street—funding a new facility is critical to ensuring that demand is being met and more youth can access the care they need.

And as for Victoria, she is living on Vancouver Island and working at a new law firm. She is actively involved with Foundry's youth advisory committees, and keeps in touch with Allison, her original peer support worker. "I just want to say to all young people, and particularly my fellow immigrants and refugees, you are always welcome at Foundry," she says.

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