

# ACTION

LOCAL  
CHANGEMAKERS

ISSUE 10 – OCTOBER 2024

*Innovation & Research*





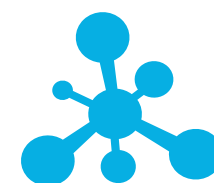
## LOCAL CHANGEMAKERS OUTSIDE THE BOX THINKING IMPROVES CARE

It's amazing to realize that seemingly common aspects of healthcare today, such as anesthesia, insulin, and pacemakers, only became a reality through innovative thinking. Even in many of our lifetimes, we've seen tremendous advancements. Non-invasive fetal heart monitoring wasn't a thing until the 1960s. The positron emission tomography (PET) scan, a standard in cancer diagnosis today, had just come onto the scene in the 1970s. Magnetic resonance imaging (MRI) was also in its infancy in the 1970s. And, it wasn't until 1998 that the world saw a live-donor liver transplant.

Fast-forward to today, and patients at Grand River Hospital and St. Mary's General Hospital are seeing better outcomes because of breakthroughs like these, and many more. Located in the heart of the technology and innovation corridor, there is an enterprising spirit across the talent the Hospitals attract. *We've never done it that way before* isn't a risk- and change-adverse mantra at the Hospitals. It's taken almost as a challenge to see if this "new" way of doing things could improve patient experiences and outcomes.

The same spirit of breaking new ground is the driving force behind the Hospital's plan to merge and partner on a joint redevelopment project, that includes a new acute care innovation hospital, dedicated to fostering world-class healthcare that transforms patients' lives in Waterloo Region, and beyond.

This work is only possible through changemakers. Individuals committed to seeking out ways to make things better. And, at St. Mary's and Grand River, this means improving the overall patient experience. The following stories highlight just a few of the changemakers in our Hospitals. Individuals who saw an obstacle - and turned it into an opportunity.





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## Welcome message from Grand River Hospital's President and CEO, Ron Gagnon

There is a common belief that change in healthcare is slow and that our health systems are too fragmented to create both innovative and meaningful changes to the way we do our work. The amazing people at Grand River Hospital and St. Mary's General Hospital serve up convincing evidence to counter that argument daily - particularly as the healthcare landscape has faced unprecedented challenges in recent years. The COVID-19 pandemic opened doors for our health system to collaborate and work together in ways that not only disrupt, they also transform, for the better, the way we think about and deliver care with our hospital and healthcare partners across Waterloo Region, the province, and Canada. This spirit of innovation and collaboration is not new to Grand River or St. Mary's.

This edition of ACTION takes us back 20 years to the humble beginnings of our research team when Grand River began conducting our first clinical trial in oncology, made possible by the opening of the Grand River Regional Cancer Centre. In the last two decades, our capacity to expand our research and step into the world of health innovation has been made possible by people: patients and passionate team members - which includes our staff, providers, volunteers, and students - who want to make care better for their patients, and our partners in our health, technology, and education systems. Our exciting partnership with local company, Hyivy Health - our first project of "patient-led" innovation - is an example of how we're working with the communities we serve to improve care for our patients of today and the future. Additionally, being recognized as the Coordinated Accessible National (CAN) Health Network Edge of the Year, just three years after our partnership began, showcases to me not just the great work our team has done to date, but also the Hospital's potential to lead the way in transforming the way we deliver health care.

As the stories in these pages illustrate, teams at Grand River and St. Mary's are committed to fostering a spirit of curiosity, a joy for discovery, and a thirst for improvement. They are willing to take risks - calculated ones - to try new ways of approaching how the Hospitals can deliver exceptional healthcare experiences in Waterloo Region and beyond. In reflecting on these stories, I'm humbled by the types of innovation happening daily at our Hospitals, and I'm inspired by our teams. We've set our aim high. And with innovation as a catalyst, I'm certain we'll not only hit, but exceed our mark.



## Welcome message from Carla Girolametto, Integrated Director of Innovation & Research for GRH & SMGH

As a resident of this wonderful region and a professional deeply invested in the future of our healthcare system, I am proud to witness the incredible strides that Grand River Hospital and St. Mary's General Hospital are making to foster and support local innovation. The Hospital community is not just keeping pace with the rapid changes in healthcare, we're actively leading the charge, thanks to the visionary work being done right here at home.

From my vantage point, I see the transformative impact of the groundbreaking research and technological advancements developed within Waterloo Region. These innovations are not abstract concepts - they are practical solutions that are being implemented to improve patient care every day. Our local healthcare teams, driven by a shared commitment to excellence, are pioneering new approaches that are setting benchmarks for the entire industry. Our partnerships with leading institutions like the University of Waterloo have been instrumental in this journey. These collaborations have allowed us to leverage the best of academia, clinical expertise, and cutting-edge technology, creating a powerful synergy that accelerates our ability to innovate.

The Hospitals' focus on local innovation isn't just about meeting today's challenges - it's about anticipating tomorrow's needs and positioning Waterloo Region at the forefront of global healthcare advancements. The future of healthcare is being shaped right here. By continuing to foster innovation, collaboration, and a relentless pursuit of excellence, we are building a healthcare system that is not only responsive to the needs of our patients, but also a model for others to follow.





## LIGHTENING THE LOAD THROUGH INNOVATION

**To say that Lisa Anstey and her innovative crew at Grand River Hospital work behind the scenes is a massive understatement.**

Even though Anstey and her team of about 30 technicians, who make up Grand River's Medical Device Reprocessing Department (MDRD) team, are responsible for ensuring every single medical instrument in the Hospital is ready for use when it's needed, not many people are aware of who they are and what they do.

"We are a hidden department that works to support patient care," says Anstey. "We disinfect, inspect, sterilize, do quality assurance testing and serve as the equipment experts for all of the clinical areas in the Hospital."

It's a critical role that demands ingenuity and creativity. Ensuring surgical tools and equipment are ready 24/7, 365 days per year requires people who excel at troubleshooting and are passionate about turning obstacles into opportunities.

One of the latest challenges Anstey and the MDRD team are helping to overcome is how to reduce the punishing physical burden of transporting heavy surgical carts packed with medical equipment throughout the Hospital.

In collaboration with the University of Waterloo, the Hospital is piloting a project to co-design, develop, and test a mechanical technology to help "drive" carts and lighten the load for technicians moving thousands of kilograms of equipment every day.

The Haul-e (pronounced Holly) Drive Assist project initially began in 2023 with porters in mind. Each day, there are calls for porters and linen throughout the Hospital. How often? At the KW Campus there are 300 individuals portered daily. And each porter clocks around 18,000 steps a shift, maneuvering patients through hallways busy with carts, visitors, and other patients. The goal, originally, was to affix a device to hospital beds to help with transport.

"When the project first came forward in 2023, it made sense to see how this could assist in patient portering," shares Ankur Patel, Supervisor, Environmental Services, Grand River Hospital. "The innovation was a component that would allow the team to safely push/pull stretchers and patient beds, and included a feature that would identify objects or obstacles and avoid collisions."

The only problem? The device didn't fit the fleet of beds used across the Hospital. Enter Anstey and the MDRD team, and those heavy operating room carts. "There was value in the prototype," Patel continues. "It didn't solve the issue with patient portering, but could it still be an effective innovation in the Hospital?"

Amir Khajepour, a professor in the Department of Mechanical and Mechatronics Engineering at the University of Waterloo, oversees the project and the team of students working on the prototype.

"We want to help the Hospital reduce the burden on and reduce injuries to staff," he says. "Injuries from moving these types of carts are even higher in hospitals than you find in the construction industry."

Currently, the university team is testing one semi-autonomous Haul-e Drive Assist prototype that pulls a cart and is operated by a worker remotely.

Khajepour envisions a day in the not-too-distant future when all hospital carts - not only Grand River's - will rely on fully autonomous driving technology to move rather than muscle-power from humans.

"In the meantime, we are going step-by-step, introducing a system that is semi-autonomous and removing the strain of any pushing or pulling on carts," he says.

A self-described "ergonomics geek" Eric Quach, Manager, Occupational Safety, Grand River Hospital, is excited about the potential benefits of Haul-e Drive Assist project.

"I think what the individuals from the University are creating is amazing. It's great to see a group like this innovating in healthcare. It's much needed," says Quach, who has been supporting the university team with input on occupational biomechanics and ergonomics.

Considering musculoskeletal injuries are common for workers in all sectors, including healthcare, Quach is optimistic the technology being developed by the university with Grand River's support holds tremendous promise.

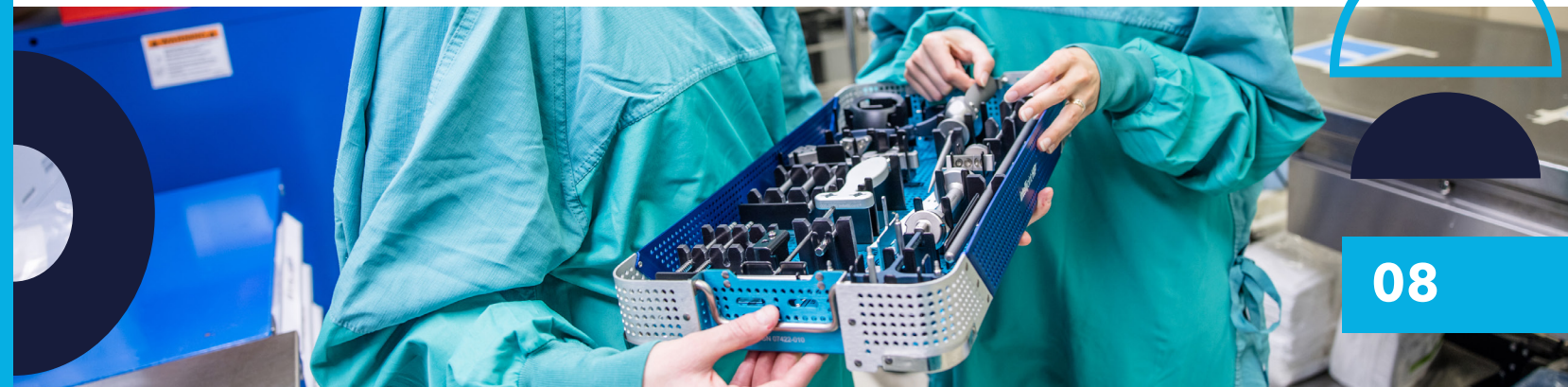
"Anything related to injury reduction is a great asset and benefit to team members and patients. This project will improve the lives of our staff" he says.

In addition to reducing the risk of injury, Anstey says introducing semi-autonomous and - eventually - autonomous carts will enable highly skilled members of the MDRD team to focus more time on maintaining critical pieces of medical equipment and less time pushing carts down hallways.

"By working with University of Waterloo, we're trying to be innovative and world-class even in how that equipment gets to the patient's bedside and making sure our technicians are working to the top of their scope," she says.

Being excited to think differently seems to come naturally to Anstey, who's also collaborated with the YMCA of Three Rivers' Immigrant Services and the Medical Device Reprocessing Association of Ontario to develop an outreach and pipeline into the MDRD field.

Meanwhile, teams are already considering where else in the Hospital this type of tool could be used. "We're happy with the trials so far," says Patel. "Team members especially appreciate that it detects an object or obstacle and stops on its own, preventing injuries all around."



## SIMPLE SOLUTION DELIVERS BIG IMPACT

Bright ideas don't necessarily have to be big or overly complicated. Sometimes simple solutions can have a huge impact, particularly when it comes to patient care.

A case in point is a tool recently pioneered and introduced at Grand River to help prevent and treat delirium.

Delirium is an acute, complex and frequently multi-factorial condition that often leads to a decline in functional independence and cognitive decline. It is very common in older adults in hospital settings with a prevalence of 29-64% (Health Quality Ontario, 2021).

The Health Quality Ontario Delirium Quality Standard recommends many non-pharmacological strategies as part of best practice in the prevention and treatment of delirium.

Leveraging this best-practice document, a new resource developed at Grand River is helping occupational therapists quickly implement delirium prevention and treatment strategies to support their patients.

The Delirium Prevention and Treatment (DPAT) tool, created by Katie Harder, Professional Practice Lead, Occupational Therapy, and Lisa Stephenson, Therapy Assistant, ensures more patients receive quality delirium prevention and treatment interventions. The DPAT provides an itemized list of evidence-based, yet practical, non-pharmacological interventions that occupational therapists can quickly reference and add as appropriate to the therapy assistant care plan.

"It's a simple way to make certain we incorporate these proven strategies into our daily therapy care plans and ensure we don't overlook these interventions in the course of a busy day," Harder says. "The tool helps us integrate delirium intervention as part of our occupational therapy treatment plan".

With mentorship from Dr. Sophiya Benjamin, Associate Professor at McMaster University and on staff at GRH, Harder and Stephenson completed a quality improvement project to test the effectiveness of this tool and presented the results at the Canadian Geriatric Society Annual Scientific Meeting in April, 2024.

"This is an example of addressing a clinical need and augmenting current practice so that our patients can have the best possible outcomes" Harder says. "With the support of the occupational therapists and therapy assistants, we've been able to create change and disseminate this information at a national conference".

Based on the survey findings and feedback, Harder and Stephenson made further improvements to the tool and launched an updated version last spring. The tool is available for use across all inpatient units at Grand River Hospital and the hope is to grow use of the tool among other members of the inter-disciplinary team.

## GETTING STROKE SURVIVORS BACK BEHIND THE WHEEL

Early in her career as an occupational therapist, April Vander Veen felt ill-equipped to navigate the complicated road facing many stroke patients who want to regain their ability to drive.

In Ontario, people who have suffered a stroke are not supposed to drive for a minimum of 30 days and must wait until they receive medical clearance to get back behind the wheel. If their medical team reports safety concerns, their license can be temporarily suspended for a longer period by the Ministry of Transportation.

Clinicians need to make life-changing decisions as they consider the patient's readiness to drive. Making these decisions, however, isn't always clear cut or simple. Screening practices have been inconsistent between hospitals, and communicating directly with patients can be challenging.

Vander Veen says she found it tough early in her career to figure out the balance between supporting stroke patients to reach their goal of driving again and protecting public safety. "The more I spoke to patients and care providers, the more apparent it became that I was not alone in this. It's a big problem that comes up in acute care and yet there aren't a lot of resources directed to it," she says.

Grand River is a partner in the Waterloo Wellington Integrated Stroke Program, providing emergency care, acute care after a stroke, and rehabilitation to restore function and quality of life for stroke patients.

"The PreDAS tool provides a standardized care protocol and ensures consistent messaging and care. It puts everyone on the same page, which helps with the patient experience and builds more trust," Vander Veen says. Developing the tool wasn't the end of the road for Vander Veen on this important topic. She's made it her area of expertise. She's become a part-time clinical researcher, carrying out a study which

examined the clinical usefulness of the screening tool with PreDAS colleagues, Renner, Michael Cammarata, an Assistant Professor in the Occupational Therapy Department at D'Youville University in Buffalo, New York, and Liliانا Alvarez, an Associate Professor, Associate Director and Graduate Program Chair in the School of Occupational Therapy at Western University and Director of the i-Mobile Driving Research Lab. To complete the trials, the research was also supported by the Hospital's research and innovation team as well as physicians, like Dr. Phil Kowtecky.

Vander Veen is building on her research as she completes a PhD in Health and Rehabilitation Sciences at Western University. She's carrying out a further study for her dissertation looking into how PreDAS has helped Occupational Therapists (OTs) work with stroke patients and make decisions about driving. Vander Veen is hopeful the PreDAS tool she helped innovate at Grand River will be adopted by other hospitals across the province.

"The goal is to have enough evidence that we can feel confident distributing it more widely. It would be great if it was part of stroke best practices."



## A BETTER WORKING DAY: ADVANCING REGIONAL HEALTHCARE INNOVATION TO CREATE A COLLABORATIVE VISION FOR THE FUTURE

Healthcare, academic, innovation and technology partners from across Waterloo-Wellington and beyond have come together with a shared vision: to engage in meaningful regional collaboration to innovate healthcare. Together, they've worked to identify common challenges and seize opportunities for improvement in healthcare delivery.

This collective effort has led to the identification of key opportunities, which the next phase of the project will explore. The goal? Developing innovative solutions to common healthcare problems that can transform the way healthcare is delivered and provide more joy in the days of our healthcare workers.

The **"Creating a Better Working Day/Top 10 Opportunities"** initiative was launched in 2023 to explore and address the everyday challenges faced by frontline healthcare team members. With the support of Communitech, McMaster University and the University of Waterloo, EY partnered with three hospitals in the Waterloo Region - Grand River Hospital, St. Mary's General Hospital, and Cambridge Memorial Hospital - to gain a comprehensive understanding of these challenges and identify the top opportunities for improvement.

"This initiative is a way to bring regional hospitals together by identifying shared problems and tackling them with innovations that can benefit all of us," says Carla Girolametto, Integrated Director of Innovation

and Research at Grand River Hospital and St. Mary's General Hospital. "By doing this work collectively, instead of working in silos, we're able to focus on the common challenges that our teams have identified as priorities for us to address." This bigger picture thinking provides the opportunity to have system-level impacts. For patients in the Region, it creates the possibility of a more seamless, improved hospital care experience. And, for team members, more opportunities to build rapport. Through interviews with team members in various departments and on-the-ground observations of hospital operations, the project identified four key focus themes.

These themes were then used to guide workshop sessions, instrumental in identifying problem statements and emerging areas of opportunity. The result? The identification 46 problem statements across the hospital partners, which were meticulously assessed for their innovation potential and grouped into opportunities.

The prioritization process involved a rigorous framework and evaluation metrics, enabling the team to score the problem statements across hospital partners. As a result, the top 10 areas of opportunity were identified, with a strong emphasis on improving patient charting, modernizing systems, and enhancing patient tracking. These areas represent the key focus for the next phase of the project, where innovative solutions will be developed and implemented to address these critical needs.

"This is really about identifying system-level issues that affects us all and coming up with solutions that can scale beyond our individual hospitals", says Rob Howe, Director, Corporate Services & CIO at Cambridge Memorial Hospital.

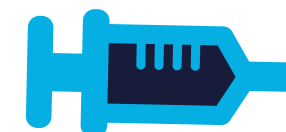
The top ten opportunities identified through the **"Creating a Better Working Day"** engagement and the strategic direction of the newly announced Care Next Coalition represent a bold and collaborative vision for the future of healthcare in the Waterloo-Wellington.

"Healthcare was already a very demanding field, which we've seen grow especially over the past few years since the pandemic," says Sarah Farwell, Integrated Chief Communications Officer, Grand River Hospital and St. Mary's General Hospital, and Chief, Strategy and Governance, St. Mary's General Hospital. "Together, we are looking at initiatives we can launch that will alleviate some of that administrative burden on staff so they can focus more energy on their top priority - delivering exceptional patient care experiences."

By working together, leveraging local expertise, and fostering a culture of innovation, these initiatives will drive significant improvements in patient care, support the well-being of healthcare staff, and position the region as a leader in healthcare innovation. The journey ahead is one of collaboration, creativity, and commitment to excellence - paving the way for a brighter future in healthcare. Grand River Hospital (GRH), St. Mary's General Hospital (SMGH), and Cambridge Memorial Hospital (CMH) are embracing cutting-edge technologies to modernize healthcare systems and enhance workforce management. GRH and

SMGH have improved their Electronic Medical Record (EMR) systems through Project Elevate, streamlining patient information handling, while CMH's new Health Information System (HIS) ensures unified patient records.

AI-driven solutions are being adopted across these hospitals, from optimizing ICU staffing at CMH to enhancing surgical scheduling and presurgical assessments at SMGH and GRH. GRH is also pioneering the AI-powered Discharge Predictor to improve patient readiness assessments. Workforce management innovations include centralized staffing at SMGH and AI-assisted recruitment at CMH, which automates candidate screening, promotes diversity, and reduces administrative burden. These initiatives reflect a broader push towards efficiency, safety, and improved patient care through the integration of AI and modernized systems across the healthcare landscape.



## IMPROVING MENTAL HEALTH THROUGH ART ACTIVITIES

### Out-of-the-box thinking is improving well-being of young people living with mental health challenges.

Changemakers in the Hospital's Child and Adolescent Inpatient (CAIP) Mental Health unit are using art and access to custom-tailored activities to change young lives by supplementing traditional mental health therapy programs. Art therapists work with young people to find a creative outlet through painting for what they were feeling inside.

Matt Shantz, Project Coordinator for Youth and Adolescent Health, says CAIP's art therapy program helps young people share their feelings in ways that may not necessarily come out through traditional therapy.

“ This isn't about recreational art per se. It's about using art as an intentional way for thinking about ways to express emotions, deal with trauma, or find language for expression of emotions you otherwise might not be able to express.

*Matt Shantz*



In addition to one-on-one sessions and group art therapy, young people involved in the program put their talents on display and helped beautify the Hospital through the installation of murals showcasing their work in Hospital corridors, which improves the aesthetic and experience for other patients and visitors.

Shantz says CAIP is currently looking to fill its vacant art therapist position, but other child and youth workers continue to use art as a hands-on tool to help young people express themselves.

In another example of innovative thinking, CAIP's Propel Project delivers ways to engage young people through healthy activities rather than through traditional therapy.

Funded through the generosity of Grand River Hospital Foundation donors, Propel connects CAIP patients with local activities they otherwise might not be able to access, fostering positive relationships and skill development outside of conventional therapy.

If a young person says they've always wanted to try rock climbing, the Propel Project will make it happen. If they want to learn how to ride horses or take swimming lessons or any other healthy activity available in Waterloo Region, Shantz and his team work behind the scenes with community organizations to deliver.



It's a really simple concept, but it's really cool. It's a supplemental therapy for them. We talk all the time about the importance of movement, being out in the community, building relationships. This allows us to be more holistic in the support we provide.

*Matt Shantz*

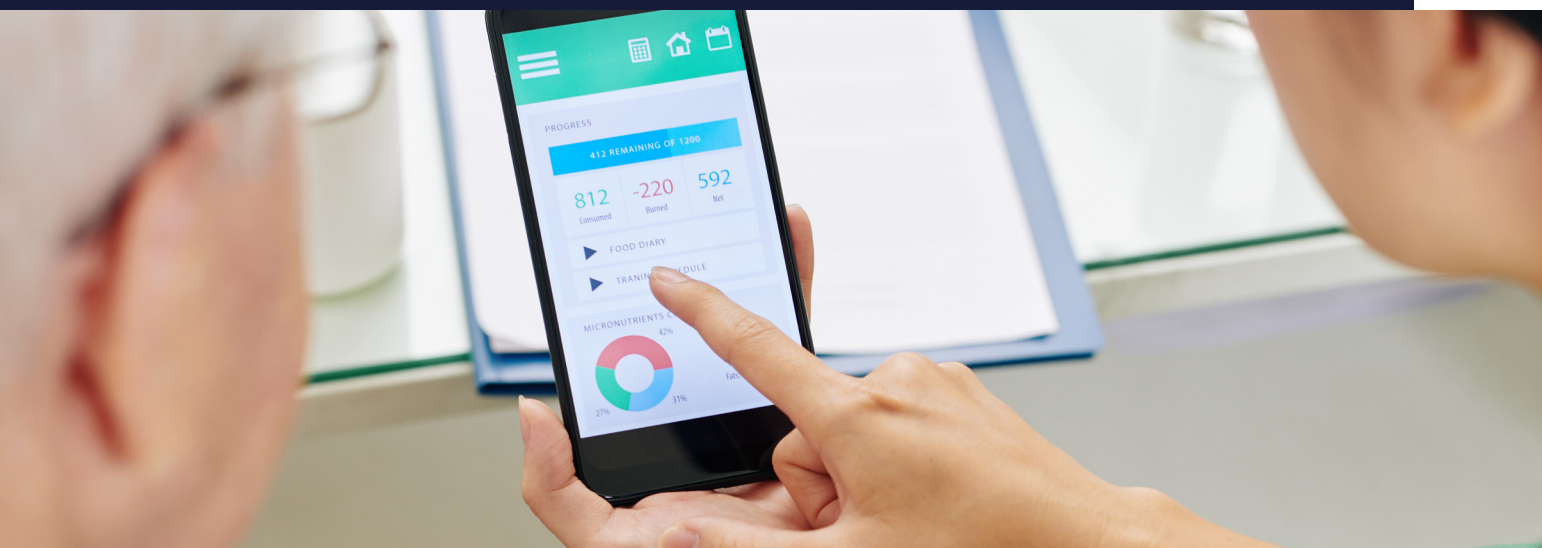


**Simple, but innovative - and a game changer for many of the young people who get to experience something different and learn more about themselves at the same time.**





## APP AIMS TO HELP NEWCOMERS OVERCOME BARRIERS TO ACCESS HEALTH CARE AND SOCIAL SUPPORTS



Navigating Ontario's health and social services systems can be challenging, even for people who have lived here their whole lives. Figuring out where to turn for help can sometimes be confusing and frustrating.

Now, imagine you're a newcomer to Canada who has settled in Waterloo Region, and English isn't your first language. As you try to understand the culture and community of your adoptive home, you'll likely face even more obstacles that will make it challenging for you to tap into the healthcare and social services supports you need.

An innovative project spearheaded by KW4 Ontario Health Team (KW4 OHT) and the University of Waterloo and supported by community partners, including Grand River Hospital and St. Mary's General Hospital, aims to make it easier for newcomers to access support.

Working with a team of researchers from the University of Waterloo, KW4 OHT is developing a digital app to facilitate self-navigation through local health and social services with accurate, timely and up-to-date information in multiple languages.

"What's important about this project, and what makes it truly innovative, is that we are co-designing the app with the newcomer population," said Ashnoor Rahim, Executive Director, KW4 OHT. "We are getting their input and working to understand their needs so we can help them be successful with this information."

Newcomers make up the largest segment of Waterloo Region's rapidly growing population. The region's overall population is growing by nearly 10.9 per cent annually. More than half of that growth - 53 per cent - is attributed to newcomers.



Rahim notes research findings highlighting how many newcomers experience a decline in their health within their first five years of relocating to Canada, in part because they run into challenges accessing adequate levels of care and support.

Through a previous research project geared to mapping the newcomer journey as they settled in the Waterloo Region, KW4 OHT heard a common question: Why can't we just use our phones to find out about health and social services in one place, instead of having to track it down separately through multiple service providers?

"That's when the idea was born to develop something to help them and influence their ability to drive their own inquiries for health and wellness through the Newcomer App," Rahim said.

"What we heard a lot about was isolation and the need for belonging and friend groups. It was different than what I thought I would hear," Rahim said. "It's really important to do this work through a community-design model. Part of the premise and the pillars of the Ontario Health Team work is to co-design with the community, so you deliver what is best for them, as they see it."

To ensure the project was as inclusive and comprehensive as possible, Community HealthCaring, the YMCA of Three Rivers, and the Chamber of Commerce were consulted. "Each community partner added knowledge and expertise to the development of the app, and their perspectives and support have been invaluable to the project's success," says Rahim. The app development team understood that integrated language translation technology would be paramount to the success of this app. The current prototype uses open-source AI translation provided by Meta, supporting translation to approximately 30 languages.

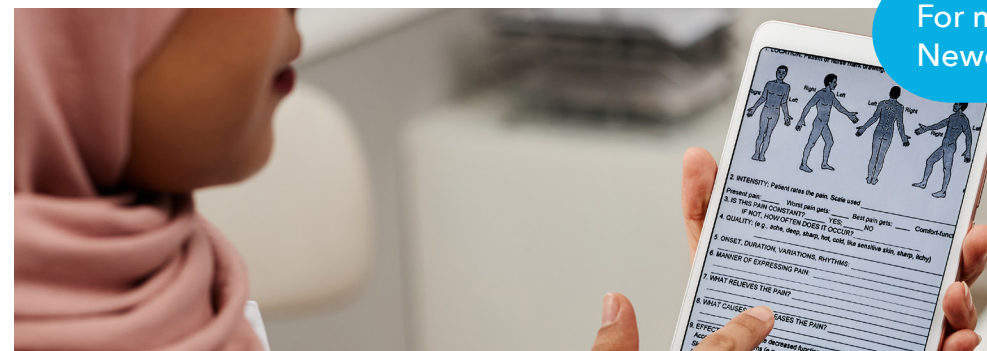
University of Waterloo Computer Science Professor Edith Law, who leads the team developing the Newcomer App, said it's critical not only to provide newcomers information, but also the agency needed to overcome barriers to access services.

"Even if you have resources and tell people about something, it doesn't necessarily mean they're going to take advantage of it," she says. "It's not necessarily the information that's missing. There is a lot of information out there. What's missing is how you get people to take action."

Law has secured grant funding to begin a field study in the fall, where dozens of newcomers will test the latest prototype. "The hope is we can at least connect them to something where we can get them to take a first step to get the support they need," she said. She's also optimistic it will be possible to adapt the app being developed for newcomers in Waterloo Region for use in other jurisdictions with high populations of newcomers. Helping newcomers overcome barriers to community-based health care and social services will also alleviate pressure on hospitals across Waterloo Region, Rahim said.

"Part of this project is about understanding the role of the community providers and how we can support them because it's all connected," she said.

For more information on the KW4 OHT Newcomer App, please visit [www.kw4oht.com](http://www.kw4oht.com)



## COMING TOGETHER TO CREATE THE FUTURE OF PROSTATE CANCER CARE

The generosity of motorcycle enthusiasts and community members has been helping to fuel the fight against prostate cancer at Grand River Hospital for 20 years.

Since 2004, the Grand River Motorcycle Ride for Dad has raised more than \$2.6 million for prostate cancer research and awareness through annual charitable events, including a 156-kilometre group ride featuring the annual poker run across Waterloo. More than \$1 million of the donations raised to date have been directed to projects at Grand River Hospital. Through the unwavering commitment of this team of donors, physicians, and researchers, Grand River is pushing understanding and driving breakthroughs, creating a bedrock upon which future research and innovation will be built.

"I look forward to the Motorcycle Ride for Dad event every year," says Carla Girolametto, Integrated Director of Innovation and Research for Grand River Hospital and St. Mary's General Hospital. "For the past 20 years, I've been involved with the Ride for Dad as our office of research supports our local researchers in the development and implementation of their studies.

This initiative is vital in advancing homegrown research, which has a profound impact on how prostate cancer is diagnosed and treated. Our researchers are deeply grateful to all the riders and donors - this important work wouldn't have been possible without their generous support.



Prostate cancer is one of the most common cancers among men. In 2023, it was estimated that more than 25,000 Canadian men would be diagnosed with prostate cancer. While there are physicians and researchers dedicated to finding new and enhanced ways of understanding, detecting, and treating prostate cancer, their work is dependent on funding.

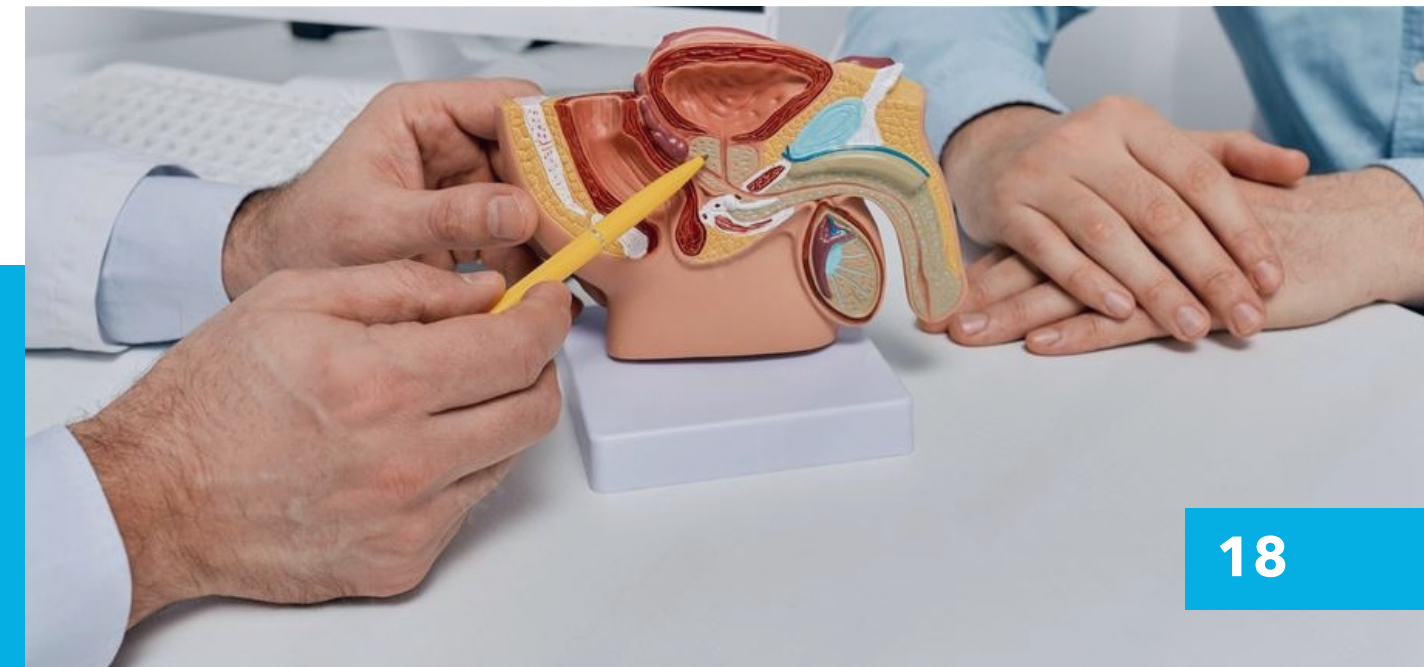
"Sadly, it seems everyone, including myself, knows a man who has dealt with the physical and psychological impact of Prostate Cancer," says Tracey Bell, Co-Chair of the Grand River Chapter of the Motorcycle Ride for Dad. "One of my goals in working with this charity is to never see my son or my son-in-law suffer from Prostate Cancer.

The combination of such a serious men's health topic and the passion of motorcyclists, makes me incredibly proud to be part of The Grand River Ride for Dad working with the wonderful staff at the Grand River Hospital Foundation as our community partner."

Over the past three years, the Maitland Valley Ride for Dad, headquartered in Wingham, ON, has emerged as a close partner of the Grand River Chapter, as many prostate cancer patients from that area receive their cancer care at Grand River Regional Cancer Centre.

"I am honoured to be the Chair of the Maitland Valley Chapter of Ride for Dad," says Angela Duvall. "This is such an important cause, and our region is thrilled to support the efforts of the broader Ride for Dad Community in Ontario and across Canada. We just completed our third annual ride and we look forward to many more in the future to raise funds that truly make a difference in the research, education and awareness around Prostate Cancer."

**In 2023 and 2024, the Grand River Motorcycle Ride for Dad generously funded six research projects being conducted by teams at Grand River and partner organizations, like the University of Waterloo, with the goal of advancing prostate cancer care. Read on to hear how Grand River is revving up research thanks to these dedicated riders.**



## 01 EVALUATING TREATMENTS FOR METASTATIC HORMONE-SENSITIVE PROSTATE CANCER

**Principal Investigator:** Dr. Anupam Batra **Co-Investigators:** Dr. Mario Valdes, Dr. Andrea Molckovsky, Dr. Stacey Hubay, Dr. Ricardo Fernandes.

When prostate cancer spreads to other parts of the body, it is called metastatic prostate cancer. Some metastatic prostate cancer is also sensitive to a patient's hormone levels, which means it can be controlled by keeping the patient's testosterone levels low.

This study is exploring two treatment options - doublet and triplet therapy - that are used to manage metastatic hormone-sensitive prostate cancer. Doublet therapy involves treating patients with a combination of either chemotherapy or hormone-blocking pills and hormonal injections, while triplet therapy treats patients with chemotherapy, hormone-blocking pills, and hormonal injections. This study collects and studies data from participants' electronic medical records, evaluating the benefits and side effects of these two treatment options. Through evaluating real patients and scenarios, this study is uncovering factors clinicians can use to choose the best treatment approach for patients with advanced metastatic prostate cancer.

## 02 INVESTIGATING THE USE OF HAFNIUM NANOPARTICLES IN HIGH-DOSE IMAGE-GUIDED RADIATION THERAPY

**Principal Investigator:** Dr. Runqing Jiang **Co-Investigators:** Dr. Xu Zhang, University of Waterloo, Cape Breton University Collaborators: Dr. Mark Servos, University of Waterloo.

As high-dose radiation therapy becomes a more common prostate cancer treatment, it's important to ensure the precision of computed tomography (CT) imaging and radiation therapy to provide effective treatment, ensure patient safety, and minimize side effects. It's believed that by using nanotechnology - the study and manipulation of individual atoms and molecules - in medicine, the effectiveness of image-guided radiation therapy (IGRT) can be enhanced, resulting in more precise treatment.

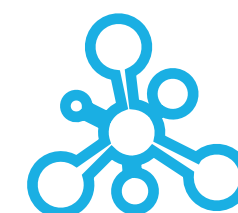
In this study, the team is working to determine whether hafnium nanoparticles are a good contrast agent for improving clinical CT imaging. They will also evaluate whether these nanoparticles are effective at enhancing the effects of radiation therapy targeted to prostate tumours. Gaining an understanding of how various hafnium nanoparticles may be able to be used in this type of treatment may provide important insights into developing and optimizing new nanomedicines for prostate cancer. Ultimately, this research project is looking to improve patient outcomes, reduce the side effects of treatment, and bring us closer to achieving precision cancer treatment.

## 03 CREATING A COMPUTER-BASED MODEL OF HOW PROSTATE CANCER GROWS AND RESPONDS TO RADIATION TREATMENT

**Principal Investigator:** Dr. Ernest Osei **Co-Investigators:** Dr. Johnson Darko, GRRCC; Dr. Mohammad Kohandel, University of Waterloo; Dr. Shawn Wettig, University of Waterloo and Steph Swanson, PhD Student, University of Waterloo.

Increasingly, personalized treatment is being recognized as an important part of cancer care. To be able to personalize prostate cancer treatment effectively, clinicians need a better understanding of how prostate cancer grows and how it responds to radiation therapy. Traditionally, cancer has been studied in a lab setting, which comes with certain limitations and challenges. However, the recent use of computer-based models in cancer research is transforming researchers' ability to study cancer by allowing them to overcome many of these limitations.

In this research project, an existing three-dimensional (3D) computer-based model of prostate tumor growth is being built upon to create a new model that can accurately show how prostate cancer grows and responds during radiation therapy. This new model will then be used in further research to better understand what systems and processes prostate tumors use to grow and respond to treatment. Eventually, clinicians will also be able to personalize the model to represent their patients' cases to help them create more optimal, patient-specific treatment plans.



## 04 UNDERSTANDING HOW PROSTATE CANCER RESPONDS TO RADIATION USING HIGH-RESOLUTION IMAGING

**Principal Investigator:** Dr. Ernest Osei **Co-Investigators:** Dr. Johnson Darko, GRRCC; Dr. Mohammad Kohandel, University of Waterloo; Dr. Shawn Wettig, University of Waterloo and Steph Swanson, PhD Student, University of Waterloo.

Understanding how prostate tumours grow and respond to treatment is critical to improving and personalizing treatment; however, traditional research methods impose certain limitations. This study leverages three-dimensional (3D) imaging of cell cultures called tumour spheroids. Tumour spheroids – small, 3D collections of cancer cells – allow researchers to study cancer cells in an external environment that is more like a tumour’s environment inside the body. The controls of a lab setting with the nuances of a tumour’s “home” environment is giving researchers a more accurate understanding of how cancer grows and responds during treatment.

In this research project, the team is evaluating the effects of radiation therapy on prostate tumour spheroids. The tumor spheroids’ response to treatment will be measured using high-resolution 3D imaging and laboratory tests that measure cells’ ability to multiply, called clonogenic assays, to provide a realistic estimate of how prostate cancer cells are impacted by radiation therapy. Going forward, researchers will be able to use this method to further study and deepen their understanding of the specific mechanisms prostate tumours use to grow and respond to treatment. More practically, the improved ability to predict how prostate cancer will respond to radiation therapy can lead to improved, more personalized treatment for prostate cancer patients.

## 05 USING MACHINE LEARNING TECHNIQUES TO PREDICT AND REDUCE THE SIDE EFFECTS OF RADIATION TREATMENT

**Principal Investigator:** Dr. Ernest Osei **Co-Investigators:** Dr. Johnson Darko, GRRCC; Dr. Mohammad Kohandel, University of Waterloo; Dr. Shawn Wettig, University of Waterloo and Steph Swanson, PhD Student, University of Waterloo.

Recent improvements in radiation therapy for prostate cancer treatment are enabling radiation oncologists to precisely target the prostate gland while minimizing the dose to nearby organs, including the femoral head, bladder, and rectum. However, the location, size, and shape of these organs are unique to each patient. And, throughout treatment, these organs can also shift positions. As a result, it can be challenging to create an optimal treatment plan in which these surrounding organs receive the least amount of radiation possible to minimize potential side effects. Machine learning is a branch of artificial intelligence and computer science whose applications are currently being explored in health care. In this study, researchers are applying machine learning techniques to prostate cancer patients’ computed tomography (CT) images and planned radiation treatments to predict how much radiation will be delivered to the organs surrounding the prostate and the likelihood that the patient will develop undesirable side effects as a result.

The goal is to develop a machine-learning algorithm that can identify when prostate cancer treatment plans can be adjusted to lower the likelihood of side effects, improve treatment outcomes, lower complication rates, and improve patients’ quality of life.

## 06 IMPACT OF SUPERVISED GROUP EXERCISE IN MEN WITH METASTATIC CASTRATE SENSITIVE PROSTATE CANCER ON COGNITIVE, PHYSICAL AND PSYCHOLOGICAL FUNCTION. (EXE-COPP)

**Principal Investigator:** Dr. Anupam Batra **Co-Investigators:** Dr. Tea Lulic, Grand River Hospital/ University of Waterloo; Julia Fraser, University of Waterloo Dr. Steven Fischer, University of Waterloo.

Physicians now have improved methods to treat metastatic castration-sensitive prostate cancer (mCSPC), a form of prostate cancer that has spread to other parts of the body. These newer treatments are extending patients’ lives, but they often come with side effects that leave individuals feeling unwell and unable to engage in daily activities. While previous research has shown that exercise can improve well-being in patients receiving older treatments, the impact of exercise on those undergoing newer therapies remains largely unexplored.

This study aims to investigate whether exercise can enhance the physical and mental well-being of patients receiving advanced treatments for mCSPC. Sixty participants will be recruited, with the option to either join a supervised exercise program or not. Those who opt to exercise will enroll in UW WELL-FIT, a 4-month supervised exercise program offered at the University of Waterloo, specifically designed for cancer patients. All participants, regardless of exercise participation, will take part in five study visits where their physical and mental health will be assessed. The findings from this study will determine whether exercise helps improve the quality of life for individuals with mCSPC and could lead to the integration of exercise as a standard part of cancer care for these patients.

Each of these studies is changing how prostate cancer is and will be treated. The outcomes of these studies, supported through the generosity of donors, motorcyclists and others, will improve patient experience and outcomes. As an added benefit, they could also encourage novel thinking for other cancers or illnesses. Innovation driving innovation – in this case, two wheels at a time.



## NOURISHING WELL-BEING

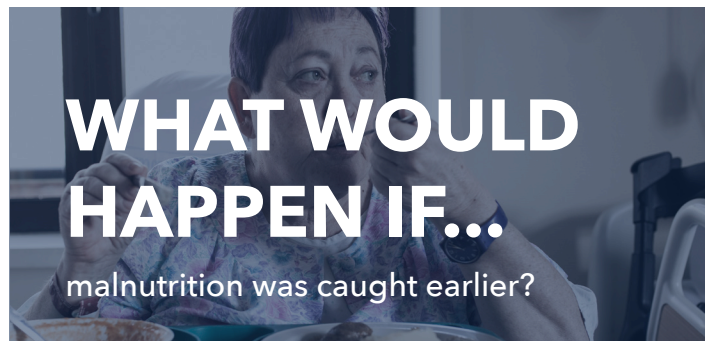
Studies indicate that up to..

# 90%

of cancer patients can experience malnutrition. Often it is found too late, impacting response to treatments or increasing duration of hospital stays.

"Nutrition, good nutrition, can improve your quality of life," says Christine Peters, a former oncology dietitian at the Grand River Regional Cancer Centre and current Interim Manager, Truth and Reconciliation and Health Equality. "During my work directly with oncology patients I wondered, what if there was a survey we could implement to capture the nutritional status of patients, identifying any trends towards malnutrition? If we could keep patients well-nourished, would their outcomes improve? Would treatments go more smoothly?" As part of a quality improvement (QI) project, malnutrition screening (through a patient survey) was integrated at first consult with oncologists. Based on the survey score patients were referred to a dietitian to receive nutrition intervention. This sparked curiosity from Peters to explore ways to screen for malnutrition at other time points beyond the initial consult, such as re-screening at follow-up.

"ESAS is used to help assess nine common symptoms experienced by cancer patients," Peters explains. "Tiredness, nausea, depression, anxiety, drowsiness, appetite, well-being, and shortness of breath." Anyone who has ever been "hangry" knows that food can influence how they're feeling in each of these categories. But what about patients undergoing radiation and chemotherapy? Could assessing nutrition early and often result in improved ESAS scores? The research team began reviewing historical clinical data of oncology patients seen over the years at GRRCC. The team began by comparing nutrition scale scores with the patients' symptoms related to cancer treatment as reported in the ESAS



questionnaires. "And there it was," says Peters. "For all nine ESAS parameters, the patients at risk for malnutrition had significantly higher scores."

"It was a positive correlation," adds Nicole Stonewall, Interim Clinical Manager Psychosocial Oncology, and also a dietitian. "We also found that lack of appetite, tiredness and wellbeing were most accurate at differentiating between patients identified at risk for malnutrition." The results of their initial study supported the association between the severity of cancer symptom and malnutrition status. Now that they knew the correlation was there, they began step two of their work. "We knew that assessing malnutrition status was seen as important," says Stonewall. "But know clinicians have numerous factors to assess during their appointments with patient. So, how could we help physicians get this information, improving the overall symptom management of their patients?" Our goal was to improve the entire process, says Peters. "How can we, as dietitians, add value without the burden of extra work on oncology teams?" When this survey was used in conjunction with ESAS, patients experiencing or at risk of experiencing malnutrition were found sooner, explains Peters. "Which means they received intervention sooner, resulting in improved ESAS scores after intervention."

**While research is ongoing, this project has the potential to improve cancer patient experiences and outcomes by identifying malnutrition earlier and facilitating timely interventions during the treatment trajectory.**

## SETTING THE PACES

While innovation in cancer care may bring novel treatments or technologies to mind, Nurse Practitioners, Hannah Stracey and Angelina Raghbir leaned into their clinical expertise to bridge the gap in acute oncology care. The GRRCC has supported the need to diversify the healthcare work force in efforts to support the care of cancer patients and has successfully embraced and utilized the role of the Nurse Practitioner in the ambulatory care oncology setting.

As a way to improve accessibility to care, physician workload, lack of continuity of care and to support individuals with unmanaged and complex symptoms or toxicities related to their cancer diagnosis or treatment, in 2017, GRRCC established a Nurse Practitioner led clinic; The Patient Access Clinic for those Experiencing Symptoms (PACES Clinic) at our regional cancer center. Nurse Practitioners in the PACES Clinic "provide same day assessments, diagnosis, and interventions for individuals who present with unmanaged and often times complex symptoms or toxicities related to their cancer diagnosis or treatment (e.g. chemotherapy, radiation, transplant, BiTES therapy and/ or immunotherapy)," Stracey says. Given the creasing number of oncology patients and the growing demand for treatments, patients may find that their time to ask questions and engage in conversations with their primary Oncologist is sometimes limited.

"While oncology care focuses much more on just diagnosis and treatment discussions, there is no surprise that our oncologists are exceptionally busy with the rising number of cancer patients in our community. These patients are living longer with many more complexities than we have ever seen before," explains Stracey. "As Nurse Practitioners, we have the ability to provide more time to engage and work with patients and their caregivers, to address symptoms and provide effective

The Grand River Regional Cancer Centre (GRRCC) celebrated 20 years of cancer care in 2023. Innovation has not only helped shape patient and family experiences locally over the past two decades, it remains a central tenant as the teams continue to enhance the way to deliver cancer care in the future.

management tools to prevent them from getting worse." "Many oncology patients have urgent health needs due to chemotherapy or associated treatments," adds Raghbir.

Team members at the PACES clinic support oncology patients with acute needs that may not arise during regularly scheduled physician hours and help them heal at home, with well-managed symptoms.

"By taking the time to work with our patients through the PACES clinic, we're able to address patient symptoms as they arise, and divert patients from the emergency department," says Stracey.

Over the past few years, the PACES clinic has transformed into a robust and highly dependent clinic within the cancer center. In addition to improving patient care, this clinic has also created an opportunity to leverage Nurse Practitioners' ability to practice to their full scope, and to advocate for their role.

The work that Hannah Stacey and Angelina Raghbir have done within the PACES clinic has not only gained traction within the walls of GRRCC and our community, Nurse Practitioners from other organizations and provinces have reached out for opportunities to shadow and connect to learn ways on how to improve the delivery and management of care to oncology patients. "We're helping patients feel heard and providing patients with an opportunity to be in the driver seat where they feel they are an active participant in their care, feel empowered and are well-informed" says Raghbir.

"We are a unique and specialized oncology clinic with highly trained practitioners and nurses who are able to provide exceptional care and support to our oncology patients in the community" concludes Stracey.

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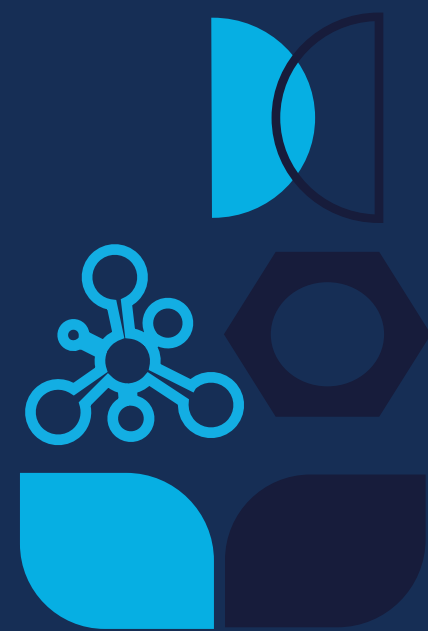
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