



GRAND RIVER HOSPITAL

ACTION

**INNOVATION
& RESEARCH**

SUMMER 2021 EDITION



The Office of Innovation & Research (OIR) coordinates all research and innovation-related activities at Grand River Hospital, one of the largest and busiest community hospitals in Ontario, with nearly 600 beds, approximately 4000 staff, and over 690 physicians, dentists, midwives and nurse practitioners. OIR supports and participates in multidisciplinary clinician-based applied research in each of GRH’s eight Areas of Care. Through partnerships with institutions across the Waterloo-Wellington region, including the University of Waterloo and McMaster University Michael G. DeGroote School of Medicine Waterloo Regional Campus, OIR provides researchers and clinicians the opportunity to work together on groundbreaking studies that help GRH advance exceptional care.

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A portrait of Carla Girolametto, a woman with short dark hair, smiling. She is wearing a dark blazer over a light-colored patterned top. The background is a soft blue gradient.

LETTER FROM THE DIRECTOR

Carla Girolametto, Director of Innovation,
Research and Clinical Trials

With the launch of the new Strategic Plan at Grand River Hospital (GRH), innovation and transformation of health care delivery has taken a prominent role as one of the hospital's priorities and a Strategic Direction for 2021-2025. GRH's advantageous geographical location as a healthcare institution located in the Maple Valley of Innovation surrounded by successful start-ups and by some of the most innovative medtech companies in Canada favours GRH as a key partner to advance medtech innovation in our region and beyond.

This edition of "ACTION at GRH" highlights a few of the highly effective innovative initiatives that we collaborated with external partners to better support our patients and staff to enhance the hospital experience for patients, caregivers, staff and volunteers. One of these initiatives is highlighted in our feature story, 'Accelerator Centre and Grand River Hospital Collaborate to Drive the Development and Adoption of Canadian-Made Health Innovation.' GRH recently partnered with the Accelerator Centre (AC), an award-winning startup accelerator dedicated to building and scaling globally competitive companies, to launch the PLEXUS Program. This program will support medtech companies who are ready to partner with GRH as a key clinical partner in testing and trialing their innovation in a real world setting with feedback from front line staff and physicians. Through this partnership, the companies will refine their solutions to yield utmost success within the Canadian market.

Also in this edition is an interview with Ron Gagnon, President and CEO of GRH. He discusses the importance of innovation and the role that GRH will play to help drive forward innovation work in Waterloo Region, a bustling medtech hub. We are ready and excited to continue to innovate and provide better care for the patients of today and tomorrow. GRH is where innovation becomes application.

THE NERV TO INNOVATE

Dedicated to our mission of exploring groundbreaking ways to provide exceptional quality care for our patients, Grand River Hospital (GRH) will be participating as one of six sites in a global feasibility study on the use of NERv's Inline Device. This pocket-sized device is designed to provide dynamic bedside patient monitoring in the postoperative period as a method of early detection of postoperative complications. Attached in-line with the peritoneal drains of patients after abdominal surgery, NERv's device continuously records the biochemical properties of effluent fluid including pH, and electrical conductivity, and relays the real-time measurements to an accompanying tablet as graphs for easy analysis by healthcare professionals.

This multi-center feasibility study includes collaborations between highly regarded organizations such as Cleveland Clinic, internationally, and domestic institutions like Hamilton Health Sciences, and Unity Health Toronto. At GRH, this study will be led by Dr. Mohamed Husien. As a general surgeon specializing in cancer care, Dr. Husien has been a strong advocate for innovation in surgical procedures. He is now focusing his efforts to tackle the Achilles' heel of general surgery, that is, anastomotic leaks.

An anastomotic leak is a common postoperative complication following general surgery, wherein contents of the lumen of the gut seep through the site of surgery, or anastomosis. These leaks cause a tremendous increase in risk of infections, peritonitis, and septic shock, thereby increasing patient morbidity and mortality.

Their occurrence also increases the chances of local recurrences in cancer patients, reducing overall survival. Hospitals must therefore provide enhanced patient monitoring, diagnostic tests, and additional treatments which can rapidly drive up the inpatient costs for patients.

While there is discord in the medical community regarding diagnosis and management of anastomotic leaks, one fact is clear, that early diagnosis is the key to successful management of leaks. However, studies have shown that current methods of diagnosis detect leaks up to three days after the onset. These delays can quickly exacerbate the patient's condition, further complicating treatment, and increasing the need for re-operations and re-hospitalization.

NERv's device can provide a simple solution that complements the current standard of care, and can potentially eliminate the delay in diagnosis of anastomotic leaks in a safe and non-invasive manner. Minimal training is required to operate the device, which is calibrated using NERv's automated calibration stations, and can be attached inline to the patient's drain in the post anesthesia care unit (PACU). The patient is then treated according to the standard of care, while the device makes continuous fluid measurements.

The safety of the device was previously demonstrated in a cohort of bariatric patients (who underwent surgery of the stomach or intestines for the purpose of weight loss) during early feasibility trials.

The present study will further validate the safety and use of the device in hepatobiliary, colorectal, and trauma patient populations. The data from the trial will be modelled to illustrate the progressive change seen in pH and electrical conductivity of drainage fluid during the course of healthy recovery, and in the case of anastomotic leaks. The clinical models created can then be integrated with the continuous monitoring system to create a diagnostic platform, complete with the ability to display real-time trends on bedside monitors, and alert the healthcare team in the case of complications.

Grand River Hospital is constantly looking for new innovations that positively impact patient care. The Inline Device created by NERv will be an important tool to help ensure early diagnosis of possible anastomotic leaks, which will assist patient recovery and ease of transition from hospital to home post abdominal surgery.

Source: NERv Technology



PLEXUS

Canadian-Made
Medical Innovations

PLEXUS PROGRAM

Accelerator Centre and Grand River Hospital Collaborate to Drive the Development and Adoption of Canadian-Made Health Innovation

The Accelerator Centre (AC) and Grand River Hospital (GRH) have launched a new, collaborative program aimed at improving patient care, and helping Canadian-made medical solutions test and enhance their technologies in partnership with the health system.

The new initiative, called the PLEXUS Medtech Program, will support companies who are ready to scale, meaning those who have solutions that have been successfully adopted in a medical environment, as well as those who are near-scale and require additional support of the innovation community in their final push to get their solutions into the Canadian market. This partnership will also help to ensure that new technologies and solutions to enhance patient care are supported to benefit local patients sooner.

The program will combine the expertise of the hospital's Office of Innovation and Research with the AC's deep startup support system to provide researchers and clinicians the opportunity to work with entrepreneurs on ground-breaking studies that advance exceptional care, with the ultimate goal of connecting high-potential startups into the federally funded CAN Health Network's innovative procurement program.

The AC is an award-winning startup accelerator dedicated to building and scaling globally competitive companies. The AC is ranked the #1 private business accelerator in Canada and is among the top 5 such organizations in the world due to their reputation for meaningful, one-to-one mentorship and helping entrepreneurs go from the idea stage to high-growth enterprises.

Entrepreneurs within the program will work with the AC and GRH on a customized, short-term roadmap to build their team, navigate regulatory requirements, and prepare for consideration as a CAN Health Network project where they will gain access to staff, data, clinicians, and other resources through 3-12 month pilot projects. Startups can then move into CAN Health's innovative procurement processes with the health system to get innovative solutions adopted into the health system faster and support startups as they scale their company across Canada and globally.

"We're excited to launch [PLEXUS] with Grand River Hospital. Together we hope to deliver top notch Canadian-born innovation to our health system."

"Med tech and health tech companies face a number of unique barriers to success, many of which are tied to connections and access to the talent and data from the industry itself," says AC CEO, Jay Krishnan. "... We're excited to launch [PLEXUS] with Grand River Hospital. Together we hope to deliver top notch Canadian-born innovation to our health system."

"Grand River Hospital is thrilled to partner with the Accelerator Centre for the [PLEXUS] Program and its innovative approach to med tech procurement," says Ron Gagnon, GRH President and CEO. "The AC is a world class start-up accelerator and Grand River is a steadfast test site for products and projects that can greatly transform health care delivery for our patients of today and tomorrow."

To assess readiness, the technology readiness levels (TRL) provided by the Government of Canada will be used by the AC. Startups who are assessed as scale-ready (a TRL of 7-9) are eligible for immediate commercialization project consideration with Grand River Hospital and the CAN Health Network.

TECHNOLOGY READINESS LEVEL

DEPLOYMENT

- 9 ACTUAL SYSTEM PROVEN IN OPERATIONAL ENVIRONMENT
- 8 SYSTEM COMPLETE AND QUALIFIED
- 7 SYSTEM PROTOTYPE DEMONSTRATION IN OPERATIONAL ENVIRONMENT

DEVELOPMENT

- 6 TECHNOLOGY VALIDATED IN RELEVANT ENVIRONMENT
- 5 TECHNOLOGY CONCEPT FORMULATED
- 4 TECHNOLOGY VALIDATED IN LAB

RESEARCH

- 3 EXPERIMENTAL PROOF OF CONCEPT
- 2 TECHNOLOGY CONCEPT FORMULATED
- 1 BASIC PRINCIPLES OBSERVED

POCKETHEALTH PUTS PATIENTS IN CONTROL

Grand River Hospital (GRH) is now offering the service PocketHealth Patient Sharing, an innovative electronic image sharing system that allows both patients and providers to access their medical imaging records for visits that occurred at Grand River Hospital.

PocketHealth, like GRH, aims to put patients first. Providing a patient with access to their medical records is now easier than ever. This service gives patients access to their imaging right from the device in their pocket. The system is available via web browser on mobile or desktop and patients can self-enroll at <http://www.pocket.health/kitchener>. Enrollment will grant patients access to their entire imaging history at the hospital as well as any upcoming appointments scheduled within a two week time frame.

Prior to the implementation of PocketHealth, patients were required to request their medical imaging records and visit the hospital to receive a CD copy. PocketHealth now provides a digital record of all medical imaging files. If needed, records in PocketHealth can be burned onto a CD or USB and older records within these formats can be digitized and uploaded to PocketHealth. Possible images that can be made available in PocketHealth include CT scans, MRIs, Ultrasounds and X-Rays. Patients can share individual exams or their entire record with healthcare providers via email, fax or print directly from the PocketHealth website.

THE SEARCH FOR A SAFE FALL

While fall prevention is of high importance in healthcare, falls unfortunately still happen. If some falls are unavoidable, can healthcare efforts make falls happen safely instead? The Professional Practice and Falls Prevention leaders at Grand River Hospital (GRH) have launched an investigation into fall safety methods.

There are a number of safety devices on the marketplace to provide protection from a fall off of a motor cycle, horse, or even a fall as a result of a stunt for a movie. At GRH, the team will explore whether these types of fall safety devices could be used within a hospital setting to provide additional safety to patients and cushion any potential falls. A safe fall not only contributes to successful recovery but also supplies patients with more peace of mind should a fall occur.

With support from partners at the University of Waterloo Centre for Bioengineering and Biotechnology, the team is in on a mission to conduct an environmental scan to analyze fall safety devices in the non-traditional market place (meaning not marketed for healthcare) and determine their applicability for possible use in a healthcare setting.

**Stay tuned for more
information regarding
innovative alternatives
to fall safety devices.**

**Grand River Hospital
is where innovation
becomes application.**

Q&A WITH RON GAGNON

“Grand River Hospital is where innovation becomes application,” says Ron Gagnon (RG). The Office of Innovation (OIR) and Research recently sat down with the CEO and President to discuss, in his own words, the importance of innovation as a key priority in the 2021-2025 Strategic Plan for GRH. This conversation has been edited for clarity and length.



OIR: What does innovation mean to you?

RG: For me, innovation is about anything new that brings value. It could be big, transformational changes, such as creating new diagnostic imaging modalities or it could be smaller changes that also bring value. An example might be testing water as a contrast in CTE diagnostics. Both of those [innovations] have been occurring at Grand River Hospital. Our role at Grand River Hospital is to bring innovation to application, for the benefit of those that we serve. Our vision over the next five years is that we will be recognized as a leader in innovation for health care delivery locally, provincially, and nationally, all as part of our broader aspiration for this region to be recognized as a leader in health care delivery innovation.

OIR: As a new Strategic Direction for Grand River Hospital, why is it important to prioritize the innovation and transformation of health care delivery?

RG: Being world class requires the courage to innovate and it requires us to always raise the bar and aim high. Through that, we will make sure that those we serve always receive high quality care in an accessible way. What we know is, the needs for care are going to continuously grow and what's required is new approaches to delivering the high quality care that we deliver today, whether it's how we deliver that care, what we do for care, or where we deliver that care. And that's why this strategy is so important, not just for our organization, not just for our region, but we believe for health care in general.

OIR: What will the new culture of innovation and research at Grand River Hospital look like?

RG: It looks like people who are curious and exploring “Is there another way?”

It looks like people who are continuously seeking to make sure we find a way and that we see problems as opportunities. It looks like people who are continuously discovering. It looks like an environment where we celebrate mistakes and learn from them so that we strengthen our ability to innovate as we move forward. It looks like an environment where we celebrate successes, both big and small. And it looks like an environment where collaboration thrives because we know we are always stronger together. And finally, it looks like a place where the value of having the courage to start something and the heart to finish it lives every single day

OIR: How can innovation capacity be built, both within hospital walls and in the community of Waterloo Region?

RG: There is a unique opportunity when it comes to innovation in this region.

Working with our partners in the broader health care system, the tech sector, the innovation sector, [and] the education sector, we believe we have a real opportunity to build a health care innovation collaborative locally, one that will be looked to as an aspirational target for others to emulate and one where innovation will thrive when it comes to healthcare delivery and we will be able to make significant strides in delivering high quality care in a sustainable way for the future.

OIR: What is the value of the close proximity Grand River Hospital has to the Toronto-Waterloo Innovation Corridor?

RG: The spirit of innovation that exists in this region is both infectious and inspiring and it's what drew me to move here, and I know it's what's drawn a number of others to come to this community as well. We're blessed with having very strong partners in this region when it comes to innovation, whether it's at Communitech, the education sector, the tech sector.

There's a number of organizations and people in this region that can help innovation thrive and by building those close relationships, we're able to give people an opportunity to test out their ideas in a local test bed. We're able to have more intimate discussions about the problems we face [and] seek solutions. And it gives us the ability to innovate together, not just for the benefit of our individual organization, but for our region, our province, and our country.

OIR: How will Grand River Hospital position itself as a preferred destination for learners in order to prepare for, and inform, future health care delivery?

RG: Today's learners are the future of health care delivery and of a world class health system. By building an environment where we encourage discovery, we encourage learning, we encourage collaboration, and we encourage innovation, we believe we will create that foundation for learning that will attract people from different parts of this province, different parts of this country, and ultimately from around the world

and that will support our vision of a world class health system. In addition, that environment, we believe, will attract people who want to teach and people who want to help to create new ways of delivering health care and make sure that our next generation of health care providers are ready to deliver on our commitment to world class.

OIR: How does the status of Grand River Hospital as a community hospital allow us to better advance our innovation agenda?

RG: I think it's because we're able to focus more on innovation translation and to do that more with a sense of pace. In addition to that, because we're closer to the community, we're able to have a tighter relationship with the innovation sector and with others in the community that help bring ideas to innovation and innovation to implementation in a much more refined way.

OIR: What is the value of our partnerships with several learning institutions?

RG: Innovation and learning capacity is built through partnerships. In addition to the strong partnerships that we have with other health care providers, the tech sector, [and] the innovation sector, we're really grateful for the relationship that we have with the education sector, including our partners at Wilfrid Laurier University, the University of Waterloo, McMaster University, Guelph University, and Conestoga College. It is through these partnerships that we're able to create that learning environment where people want to come to and where they thrive and they become exceptional care providers in the years ahead. In addition to that, the breadth of partnerships helps to provide different experiences for our own team members so we are creating an environment where we learn from different organizations, we learn different ways of doing things, and that collectively helps to build a stronger, more robust organization at Grand River Hospital and hopefully more broadly across our entire health care delivery system.

AXONIFY

Grand River Hospital is Learning Large

In partnership with Axonify, Grand River Hospital (GRH) is implementing a project focused on workplace training. Founded in 2011, the local medtech company Axonify is a modern learning solution for frontline employees. Axonify reimagines traditional learning tools by replacing classroom sessions and computer modules with a system that instead provides quick, fast-paced learning that is game-based, takes only 3-5 minutes a day, and is uniquely tailored to each employee based on their position in the organization. GRH's partnership with Axonify began with providing training and information about COVID-19 protocols and will be expanded to include preparation aids for Accreditation, as well as to ensure the ongoing re-enforcement of organizational learning, including Accreditation standards with "HIPPO".

HIPPO is the customized learning platform designed by Axonify and branded by GRH for use within the organization, recognized by staff for its namesake animal mascot, the hippopotamus, and "Learning Large" tagline. Through the Axonify website or app, HIPPO is used by employees, physicians, and other healthcare providers to engage in daily learning challenges. HIPPO will be used to help clinical and non-clinical staff learn what to expect for our Accreditation Survey scheduled for October 2021, and the Required Organizational Practices (ROP's) that the hospital will be compared to. Accreditation is an ongoing, voluntary assessment of GRH that occurs on a regular cycle and ROP's are essential practices that an organization must have in place to enhance client safety and minimize risk.

Through HIPPO's game-based challenges, organization practices that staff will receive education on include Positive Patient Identification, best possible medication history, device reprocessing, suicide prevention, venous thromboembolism (VTE) prophylaxis, infusion pumps, safe surgery checklist, fall prevention and injury reduction, pressure ulcer prevention, and infection rates.

The Accreditation process is rigorous, like many other employee training requirements. Accreditation learning plans are extensive, requiring months of preparation and considerable resources to achieve. By reducing the resources required for Accreditation preparation through the use of HIPPO by Axonify, those funds can be reallocated to other areas of need in the hospital. As part of GRH's commitment to excellence, knowledge gained through Accreditation preparation by using HIPPO will be put into practice so that the hospital community can best serve patients and their families.



"We're extremely excited to have this new educational tool available to support the staff and providers within our organization. Learning through engaging and fun games is both innovative and accessible and HIPPO will continue to be a useful tool for our staff," says Andrea Guth, Director of Quality, Performance, Planning and Project Management at GRH.

The ultimate goal for this innovative partnership between GRH and Axonify is for HIPPO to be used widely throughout the institution as a supplementary learning tool that will help sustain staff knowledge.

ED DIVERSION

GRH Partners with Bloom and Home and Community Care Support Services for Emergency Department Diversion Program

Grand River Hospital (GRH) participated in a six-month pilot program in partnership with Bloom Care Solutions and Home and Community Care Support Services Waterloo Wellington to trial a rapid transition of patients through the Emergency Department (ED) in order to help them receive more appropriate care from other providers within the community.

In partnership with Bloom, through their Coordination Team, patients were rapidly assigned with care providers that could provide care at the home of the patient, or in another setting that best suited the needs of the patient, such as a retirement home. The patients discharged from the ED during the program were of a population that included dementia, post-fall, post-infection and palliative patients, many whom had recent admissions to hospital or previous ED visits.

The program operated in collaboration with Geriatric Emergency Management (GEM) nurses at GRH and Care Coordinators from Home and Community Care Support Services to identify patients that can be cared for in the community instead of admitted to a hospital bed. GEM nurses like Asiat Mamoukhova, a Clinical Nurse Specialist, found the program especially useful because of how quickly patient supports could be arranged.

Care Coordinators like Brad Jones and Angela Nelham were tasked with patient identification. Once identified, patients were connected with Bloom, whose rapid response team was deployed and often able to consult with ED patients within hours of being contacted.

"This pandemic stretched the resources of the hospital system and it also had a significant ripple effect to community resources. Many patients with chronic medical conditions sought assistance from the ED to cope. This program allowed us to divert individuals back to their homes, helping to ease ED capacity and pressure," explains Jones.

Once referred to Bloom, a consultation is conducted with each patient and their family to identify a care plan that meets their unique individual needs.

This consultation helps create a better transition from hospital to home. Often, patients referred to Bloom are in need of care from a Personal Support Worker (PSW) which Bloom can arrange through coordination with home care.

After initial care within the ED is completed, the patient is transitioned back to their home with ongoing support and care in the community, through Bloom. Ongoing adjustments to care plans are completed in conjunction with Care Coordinators, Bloom, the patient and family, and other community care providers. Bloom also works with patients to prevent and reduce future ED visits, admissions, and readmissions. This preventative measure ensures hospital and ED beds are available for other patients in need.

"We look for every opportunity to support patients in their homes through partnerships with other organizations where we can coordinate and provide safe and effective care that is traditionally only thought to be a hospital level service," explains Stuart Paavola, Program Director of the ED, Medicine and Regional Stroke who was the project lead for GRH.

"We believe this to be a patient centred approach to care delivery and that has been confirmed by the feedback we've received from patients that participated in the pilot program. Moving care beyond the walls of the hospital where possible will also better serve our community at large as it protects our critical resources for others experiencing an emergency and requiring a trip to the ED, reducing wait times and allowing patients to be seen and treated faster."

Founded in Kitchener, Ontario in 2018 and servicing Ontario, Manitoba, Alberta, and British Columbia, Bloom Care Solutions is an innovative home and community care organization, aimed at providing a better care experience for patients, families, care professionals, and partners. With its rapid response and large capacity for care, Bloom addresses many of the pain points that health care faces, ensuring better coordinated and transitional care, while improving communication, accountability and transparency for patients and their families.

"Our team always aims to provide the best patient [and] family experience possible, while successfully improving rapid transitions of care from hospital to home," Melissa Libbrecht, Clinical Experience Manager at Bloom explains. "Having our patients thrive in a supportive environment where they feel safe is extremely rewarding and provides our team with the motivation needed to execute quality care with every single patient [and] family we service."

Data from the pilot is being analyzed. Evaluation of the program is currently underway and future funding to support is being explored. The overall success of the program has demonstrated that these types of partnerships support the needs of patients with complex care needs to successfully thrive outside of the hospital walls and inside the comfort of their own homes. A future goal for the program will be to expand it to include other local hospitals.

"The pilot program is a great example of hospital and community care providers partnering to provide an integrated and collaborative approach to patient care,"

says Krista Trow, Manager, Patient Services at Home and Community Care Support Services Waterloo Wellington and Integrated Discharge Planning Manager at GRH.

"Grand River Hospital patients receive care that meets their specific needs through the coordination of services by Bloom care professionals and [Home and Community Care Support Services] Care Coordinators, [both] in the ED and community."



From left to right:
Stuart Paavola, Melissa Libbrecht, Brad Jones, Krista Trow, Angela Nelham

Our Office of Innovation & Research is a hub for learning. It supports, and participates in, multidisciplinary clinician-based applied research in each of Grand River's eight Areas of Care. Through partnerships with institutions across the Waterloo-Wellington Region, including the University of Waterloo and McMaster University Michael. G. DeGroote School of Medicine Waterloo Regional Campus, it provides researchers and clinicians the opportunity to work together on groundbreaking studies that help Grand River advance exceptional care.



Take action and help shape the future of health care in this Region, and beyond.

Supporting Learning + Innovation at Grand River means support for foundational research all the way to clinical trials.

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RESEARCH & INNOVATION

ACTION

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& Research**

Grand River Hospital

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