

1 Innovation Hub

An overview of our accomplishments

As we look back on the successes of the Nova
Scotia Health Innovation Hub, there is so much to
be proud of. Over the course of one year:

- A new digital cancer care platform, Noona™, developed by Dr. Amanda Cassie, was launched.
- The pilot of Virtual Emergency NS kicked off
 at the Colchester East Hants Centre. The pilot
 has since expanded to Yarmouth Regional
 and Strait-Richmond hospitals. More than
 1,871 patients were able to receive a virtual
 emergency visit, with most of these patients
 being seen in less than an hour of coming to the
 emergency department.
- Virtual Care Nova Scotia has been taken to the next level, and now every Nova Scotian on the Need a Family Practice Registry has access to this important healthcare tool.

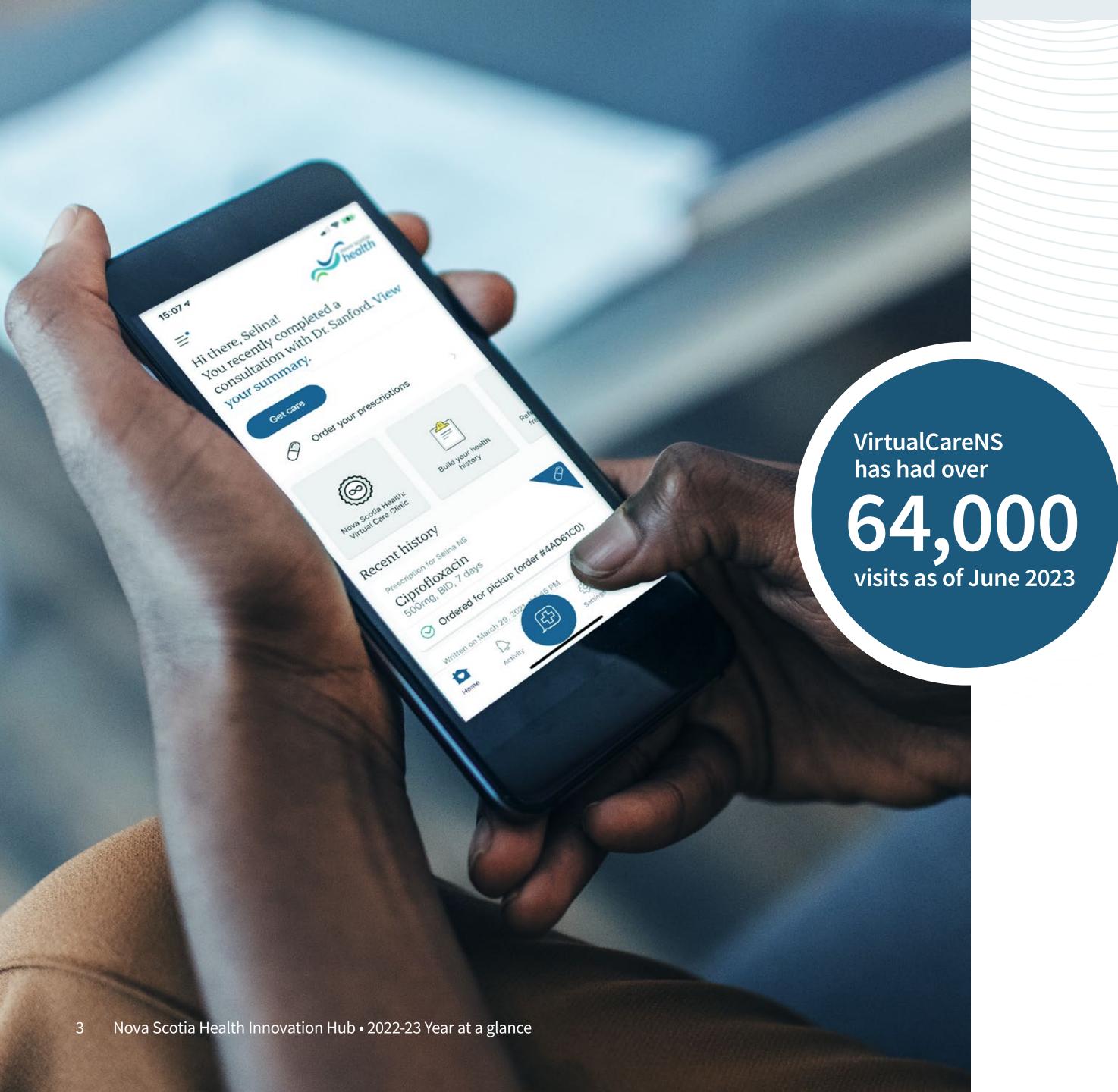
- Another virtual pilot project, Virtual Hallway
 was announced. We are proud to be working
 with a Nova Scotia company to help improve
 patient access to specialist care by facilitating
 rapid phone consults for family doctors and
 nurse practitioners while also saving time
 and effort.
- Clinical trials have taken centre stage as the Atlantic Clinical Trials Network was formally announced at the BIO International Convention. This means that our industry partners will now have access to a patient pool of over 2.5 million people.
- In response to Hurricane Fiona, we implemented a mobile primary care clinic in Cape Breton, which has been tremendously successful, and has been in locations across the province ever since.
- And then there is the wonderful announcements with Varian in the Fall of 2022, and Winter of 2023, which are revolutionizing cancer treatment regionally, nationally, and globally.

The future looks incredibly bright for the Nova Scotia Health Innovation Hub. Stay tuned for what's next!

Delivering High Impact Health Care Solutions



Through research, innovation and discovery, we are playing a leading role when it comes to providing Nova Scotians with new and innovative ways to access care.



Virtual and digital health solutions

VirtualCareNS 7

All Nova Scotians of the Need a Family Practice Registry now have access to **VirtualCareNS**. There have been over 64,000 virtual visits as of June 2023, and there can be close to 300 visits per day. The hours for the service have also been extended to include Sundays.

Patients have indicated that they feel "listened to and that solutions were given," and that they were "so grateful for this service."

Virtual Hallway

The Nova Scotia Health Innovation Hub launched a six-month commercialization project, funded by the Coordinated Accessible National (CAN) Health Network, with **Virtual Hallway**, a Nova Scotian company that enables collaboration of primary care providers directly with specialists to seek advice on patient care.

Since the project was launched, over 2,500 consultations have taken place, with primary care providers rating the service 4.9 out of 5. Over **84 per cent** of the referrals facilitated by the Virtual Hallway platform have allowed patients to avoid a wait list entirely.

VirtualEmergencyNS

Launched in May 2022, **VirtualEmergencyNS** has treated more than 1,871 patients as of June 2023 through a virtual visit for health concerns like back pain, skin infections, simple fractures, urinary tract infections, abdominal pain and non-heart-related chest pain. The virtual emergency doctor can order tests, fill prescriptions, and if the patient needs further assessment, they will be treated by the on-site emergency team.

This test and try is being led by the Nova Scotia Health Innovation Hub. Expanding virtual care to strengthen the healthcare system and to get Nova Scotians the right care they need, is a key initiative in Action for Health, the Government of Nova Scotia's strategic plan to improve healthcare in Nova Scotia.



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VirtualEmergencyNS has treated more than

1,871 patients
as of June 2023



Dartmouth General Hospital first location in Canada to use Mako SmartRobotics™ for total hip replacement surgery

The first total hip replacement surgery in Canada using the

Mako SmartRobotics™ System has been completed at the

Fred Smithers Centre for Orthopedic Care at the Dartmouth

General Hospital.

The Nova Scotia Health Innovation Hub and Perioperative Services team have collaborated with orthopedic surgeon, Dr. Jennifer Leighton, the Dartmouth General Hospital Foundation, and Stryker, an industry partner and one of the world's leading medical technology companies, to use this leading-edge technology that will transform the future of surgeries in Nova Scotia and support the recruitment and retention of clinical and research expertise at the Dartmouth General Hospital. The Mako SmartRobotics™ joins the list of acquired robots making Nova Scotia Health a nationwide leader in robotic surgery.

Dr. Michael Dunbar, one of our Resident Innovators, has made great strides in our surgical robotics program and its applications in patients. Dr. Dunbar continues to develop a research program to study the effectiveness of surgical robots and how they can improve care delivery through their use.

QEII Health Sciences Centre first location in Canada to use Medtronic surgical robot for spinal surgeries

The first spinal robotic surgery in Canada using **Medtronic's**MAZOR™ X Stealth Edition has been completed at the QEII Health Sciences Centre.

The innovative robotic arm is controlled by a surgeon during spinal surgeries and offers unparalleled accuracy and consistency, improving patient outcomes. This leading-edge technology will transform the future of spinal surgeries in Nova Scotia. It will support the recruitment and retention of clinical and research expertise at the QEII Health Sciences Centre.

Nova Scotia Health's Innovation Hub and Perioperative Services team have collaborated with neurosurgeon Dr. Sean Christie, the QEII Foundation and Medtronic, an industry partner and one of the world's leading medical technology companies, to become the first centre in Canada to use this technology, which holds the potential to improve health outcomes for Nova Scotians.

Through a collaborative research program, Nova Scotia Health will assess the feasibility, efficacy, and safety of robotics in spinal surgery in Canada and explore the patient care continuum, including detailed surgical planning and early hospital discharge.

The next 12 months

are focused on the implementation of the technology.



Revolutionizing cancer care, together

ETHOS

In October 2022, The Honourable Michelle Thompson, Minister of Health and Wellness for the Province of Nova Scotia, announced the acquisition of a first-in Canada cancer treatment technology that is placing the province among global leaders in cancer care.

The newly acquired Ethos™ therapy system uniquely combines artificial intelligence with adaptive therapy, resulting in shorter treatment times for patients. The Ethos machine and Nova Scotia's world-class research and innovation program are supported by the generous contributions of donors from the QEII Foundation, \$12 million in operational funding from the Province of Nova Scotia, and a significant in-kind contribution from Varian.

With the arrival of Ethos, the team at Nova Scotia is engaged in an ongoing research collaboration with Varian, the QEII Health Sciences Centre being one of the first sites in the world to conduct research using the **HyperSight imaging system**. The next 12 months are focused on the implementation of the technology. After this, patient treatments will commence.

Oncology Transformation Project (OTP)

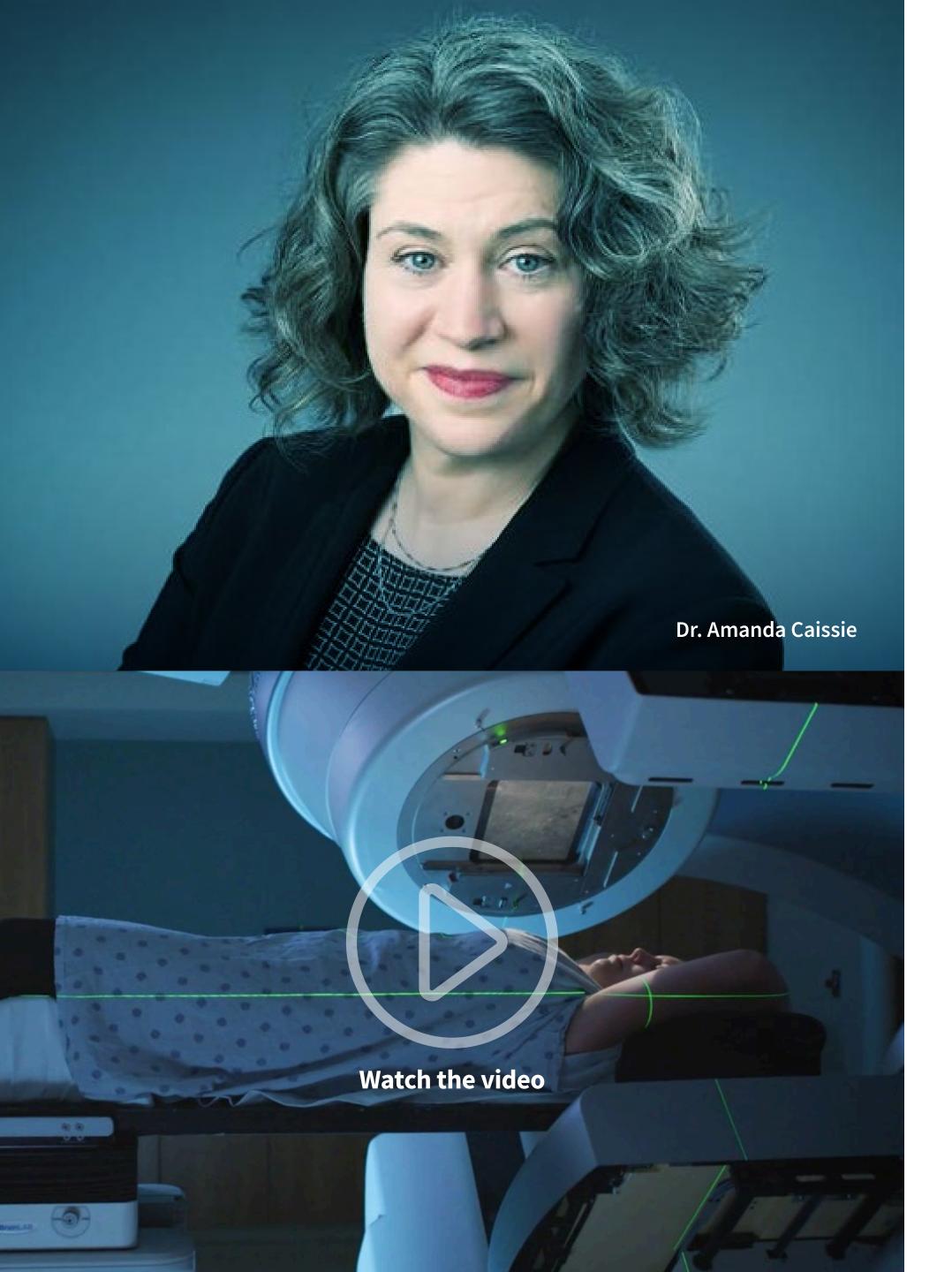
In February 2023, we announced the **Oncology**

Transformation Project, which was made possible through the Nova Scotia Health/Varian partnership and launched Varian's fully integrated ARIA Oncology Information System (OIS). We are the first site in North America to use a new, to-be-released version of Varian's platform. The project modernizes how cancer care is delivered by bringing together its key oncology information systems, with information available in real-time.

This single access point that manages cancer patient referrals, triage and treatment will lead to streamlined care, reduced wait times and deliver better patient outcomes.

The OTP includes a patient portal, offering a direct connection to their care teams, the ability to report symptoms from home and the comfort that they are not alone.

This is the solution for which our cancer care team has been waiting. Our patients and care teams deserve this level of excellence, and it will change the way our patients receive cancer treatment and survivorship care. Dr. Gail Tomblin Murphy, Vice President of Research, Innovation & Discovery and Chief Nurse Executive, Nova Scotia Health



Oncology Transformation Project (OTP) cont.

There will also be real-time communication between the two cancer centres in Halifax and Sydney and the province's eight community cancer sites, enhancing access to care for people living in rural communities.

The new Innovator in Residence, Dr. Amanda Caissie, will provide expertise to drive digital oncology research and innovation strategy and execution. Dr. Caissie will also advance transformation and digital research and innovation across the continuum of cancer care. She is focused on radiation oncology, but is also incorporating the entire continuum of cancer care, driving innovations in cancer care, and data enabled decision-making through big data analytics and artificial intelligence. This initiative will support the introduction of technology and services that will modernize the associated clinical processes, education and research and enhance patient engagement and experience.



A tiny device could change the game in how brain cancer is treated \nearrow

Over 250,000 brain tumors are diagnosed across the globe each year. Although aggressive treatment options are available, like surgery, radiation and chemotherapy, they can be dependent on the size and location of the tumor, and there is usually still only a limited time estimate given to the patient to live.

Inspired by his PhD supervisor, who was diagnosed with a brain tumor, Dr. Jeremy Brown, an affiliate scientist at Nova Scotia Health in the Department of Surgery, was determined to create a better and more precise way to treat these tumors. And that determination led to the creation of a tiny device that could prove to be a game changer in how cancer is treated.

What Dr. Brown has created is the world's first high-resolution endoscopic surgical and imaging probe. Only 3 millimeters by 3 millimeters in size, it uses an ultrafast imaging platform, which allows surgeons to use real-time, high-resolution imaging to detect and reach brain tumors.

The endoscopic and imaging probe was used successfully in the first in-human surgeries at the Queen Elizabeth II Health Sciences Centre earlier this spring. It's clear that this tiny device will have a huge impact on how surgeries on the brain and spine are conducted going forward.



Nova Scotia Health's Care Coordination
Centre (C3) is improving how we coordinate
the movement of patients throughout their
healthcare journey. It provides a real-time
view of access to care, patient flow and health
system resources to support decision-making.

C3 has launched a series of tiles, which are information tools used by care teams and staff to focus on what needs attention right now.

These include:

- Capacity expeditor: Provides at-a-glance, real-time situational awareness of hospitalwide patient census, bed availability and hospital surge status.
- Patient manager: Used broadly by patient care providers to orchestrate daily patient care in real-time, and to prioritize, expedite, and escalate patient care activities to avoid delays and mitigate risks.



- ED expeditor: Provides ED flow managers, team leads and providers real-time situational awareness of ED arrivals, where patients are waiting, where pressure is building and what patients are waiting for.
- Boarders expeditors: Used by bed managers and flow managers to understand where across the hospital patients are waiting for beds and for how long.
- Transfer expeditor: Brings real-time transparency to the wait for patient transfers between hospitals and the workflow status of each transfer.
- Surgical growth: Provides an at-a-glance 15-day view of OR capacity utilization, and patients with risk of cancellation, delay, or excess inpatient days.

Innovative models of care **Mobile Primary Care Clinics**

Launched in September 2022, the Mobile Primary Care Clinics are a temporary service in partnership with Primary Care, Public Health, EHS, Praxes and the Health Innovation Hub.

Three types of clinics are offered:

- Pop-up clinics, which are meant to alleviate ED pressure for low acuity primary care concerns.
- Respiratory mobile clinics for the increase of respiratory illness during cold and flu season.

• Mobile Primary Care Clinics, which address gaps in primary care service related to retirements and the arrival of newcomers to Nova Scotia.

Over 90 clinics have run since last fall across the province, and over 8500 patients have been seen. Patient and provider experience scores have remained consistently high since implementation last fall.

- Mobile Primary Care Clinics to hit the road for N.S. communities in need | CBC News
- **✓** Lining up to get in: Demand is high for mobile health clinics in Nova Scotia | Globalnews.ca



Pharmacist Walk-In Clinic Plus

In February 2022, Nova Scotia Health launched, in partnership with Sobeys/Lawtons, a collaborative care model known as the **Pharmacist Walk-in Clinic+** (PWIC+), which pairs pharmacists and nurse practitioners to provide non-urgent clinical care to Nova Scotians. Since the partnership was announced, five clinics have opened their doors to serve patients in Nova Scotian communities.

Here are some of the significant impacts of the more than 14,248 patients visits (as of June 2023):

- Relieving strain on emergency
 departments for non-urgent care: More
 than 64 per cent of patients indicated that
 they would have gone to a local emergency
 department, had the PWIC+ not been
 available for their non-urgent care needs.
- Increasing access to care and improving patient flow for attached and unattached patients: More than 90 per cent of clinic patients seen at PWIC+ clinics are without a primary care provider.
- Meeting the unmet demand for chronic disease management: More than 70 per cent of patients seeking care have at least one chronic disease. More than 75 per cent of the care for the top chronic disease states seen by PWIC+ practitioners can be managed by a pharmacist; 100 per cent can be managed in collaboration with a nurse practitioner.

Engaging nurse practitioners in initiatives like the mobile primary care clinics, and the Pharmacist Walk-In Clinics Plus is improving access to care for patients. Our nurse practitioners are able to provide a different lens and a different approach to patient care.

Cindy MacQuarrie, Senior Director, Interprofessional Practice and Learning

Tested and tried best practices are being implemented in rapid timelines to attract more nurses to emergency departments across Nova Scotia, while also enhancing work environments for ED nurses already in our system.

Dr. Gail Tomblin Murphy, Vice President of Research, Innovation & Discovery and Chief Nurse Executive, Nova Scotia Health

Support initiatives for nurses in emergency departments

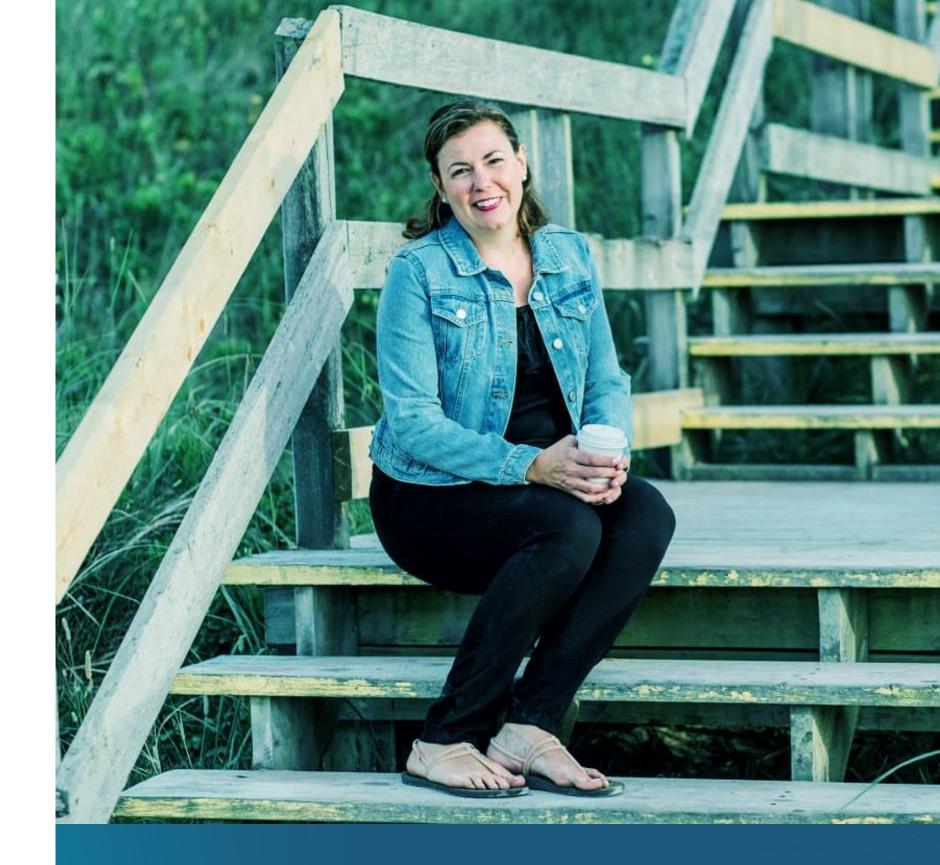
In January, Nova Scotia Health announced several training and retention initiatives for nurses in emergency departments across the province. The initiatives, which span nurses' careers working in emergency departments, include post-secondary programs focused on emergency care for nursing students, professional development opportunities and a nursing innovation fund for practicing Registered Nurses and Licensed Practical Nurses.

The best things come **7** out of the hardest times: Meet Andrea Van Hal, RN **Prescriber at Twin Oaks**

Nursing runs in Andrea Van Hal's family. Her mother was a nurse and spent 33 years as a clinical leader in a 60-bed nursing home. And Andrea's aunt (her mother's twin) was also a nurse.

Van Hal has been a Registered Nurse for 20 years. She first worked on the inpatient pediatric unit at the IWK, then moved to the IWK's emergency department. She left that position a little over a year ago, and now works in the emergency department at Twin Oaks in Musquodoboit Harbour.

In 2021, Van Hal became aware of the RN prescribing program at Dalhousie University and felt that it would be something exciting to take on.



I think nurses are uniquely positioned in the care that we provide, and the way we provide care, to really establish relationships with the patients. We all come with experiences that we can utilize to really improve access and make the overall system work more efficiently.

Andrea Van Hal, RN Prescriber, Twin Oaks Memorial Hospital

Partnerships: Working Together to Enhance Health Care

We are focused on strategic partnerships with clinical champions, industry, healthcare foundations, government, and academic partners. Our purpose is to be a centre of excellence, and single point of entry, that provides a place for innovators, clinical teams, researchers, patients and families, students, partners, and investors to come together. Together, we want to discover, and implement, high-impact health care solutions.

A partner of choice for clinical trials and a global leader in healthcare innovation

Clinical trials are not a new concept to the research ecosystem across Nova Scotia. But the question we have been asking ourselves is "how does Nova Scotia Health become a world leader in clinical trials?"

We want to become the partner of choice for clinical trials to benefit our patients. We are actioning this through three goals that are guiding our daily work.

- Improving access
- Aligning collaborative opportunities
- Growing the research investment

For patients in rural areas of Nova Scotia, accessing followup care can be challenging, especially when it requires lengthy travel time and costs. That is why Nova Scotia Health is partnering with Medable Inc, on a two-year pilot study to improve access to clinical trials. Medable's technology makes care available in a virtual format. Using Total Consent Management and Televisit solutions, patients will have the ability to speak with a physician when they need it the most – from the comfort of their homes.

Improving patient care by giving researchers better, more efficient access to health data

A pilot project, driven by the Nova Scotia Health Innovation Hub, will provide a select group of Nova Scotia Health researchers with access to MDClone's ADAMS Platform through their desktops. This software helps researchers conduct analysis more efficiently by using synthetic data, which replicate(s) the characteristics and correlations of real patient populations, but without jeopardizing patient privacy. Nova Scotia Health is one of the few health authorities in Canada to have access to this technology, which gives our researchers and healthcare teams better access to the kind of data that will transform healthcare in our province. Dr. Dunbar's support has been instrumental in launching the MDClone project. It is an important opportunity to understand how synthetic data can improve current research efforts.

> Nova Scotia Health is one of the few health authorities in Canada to have access to the MDClone technology.

Working with partners to help reduce barriers to practice

There is a great need to enhance access to care, as we are facing many challenges related to the pandemic, crisis staffing shortages, along with recruitment and retention issues, especially in rural communities across the province.

That's why Nova Scotia Health and Dalhousie Family Medicine are collaborating on a new initiative to ensure more **Nova Scotians are** connected to a primary care provider, and recent graduates of Dalhousie Family Medicine gain valuable hands-on experience.

This initiative has enhanced access to over 3,000 individuals from the registry and will continue to enhance care access to current patients of the clinics as it relates to chronic disease management and mental health care within primary care settings.

The incubator clinics (on Mumford Road and in Spryfield) will be open to family medicine graduates and other health care professionals seeking to establish practice in Nova Scotia. This will allow new health care professionals to be a part of a rotating model with new providers stepping in periodically to work with patients in a stable practice. This is creating a steady stream toward attachment to a primary health care provider for patients on the Need a Family Practice Registry.

This proof of concept has now informed scaling to other sites across the province including Antigonish, Bridgewater, Yarmouth, and Truro.



Support for Healthcare professionals with international credentials 7

Our efforts to integrate internationally educated health care workers into communities and the health system fall within Nova Scotia's International Community of Health Workers Engagement (NICHE) program. Through this program, Nova Scotia Health, with our partners, is developing pathways for recruiting and retaining internationally educated health professionals to improve access to care in Nova Scotia.

Nova Scotia Health is also collaborating with partners, like the Nova Scotia College of Nursing (NSCN) and multiple community programs and partners on the implementation of several initiatives to support and strengthen our strong nursing workforce. This includes the recruitment of internationally educated nurses (IENs), those who live in the province, in Canada, and those who want to relocate here. They are an instrumental part of our workforce and will help ensure better health and health care for Nova Scotians.

These initiatives include:

- Several education programs designed to meet the needs of learners across the province are offered by the Nova Scotia Health Learning Institute for Health Care Providers. One of these programs is a well-established NSCN approved RN Bridging and Re-Entry program, which is designed to bridge the education required for successful licensure within Nova Scotia, this program involves virtual learning, skills, simulation, and a clinical component designed to meet NSCN requirements.
- An orientation to the Canadian health care system, which is offered through the Nova Scotia Health Learning Institute for Health Care Providers. This online 8-week program is designed to introduce internationally educated health care professionals to the Canadian health care system.
- A mentorship program, offered by the Nova Scotia Health Learning Institute for Health Care Providers and targeted towards internationally educated nurses' post-graduation, which will facilitate socialization, and integration into Nova Scotia's health care system.

Advancing health care simulation in Nova Scotia

Nova Scotia Health is a member of the SimEd Collaborative, which brings together partners like the IWK; Dalhousie University (Faculties of Health and Medicine); and the Nova Scotia Community College, who are on the ground offering high-quality simulation-based programming every day.

In the spring of 2022, a new **SIM IPE facilitator** development program was launched. This ensures that new clinical leaders and educators are supported and developed in

simulation competencies.

Enabling a Learning Health System

A learning health system is a strategy where we shape and enable a culture of continuous quality improvement in the care provided to patients. It is where providers and teams contribute to and learn from the experience of their colleagues, in delivering clinical care, conducting research, and through innovative activities. Plus, and equally as important, we work with patients and their families on their journeys and learn from their lived experience.

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Research is what helps us change people's lives and transform our health care system. Building on what is possible, our talented research community is opening new opportunities to improve health services for Nova Scotians.

Dr. Jordan Warford, Senior Director, Research, Nova Scotia Health

Nova Scotia Health awards \$1.9 million to 28 researchers

Twenty-eight researchers were awarded \$1.9 million through the Nova Scotia Health Research Fund. Held once a year, this fund aims to build the capacity of Nova Scotia Health's researchers and students and helps to catalyze new research opportunities.

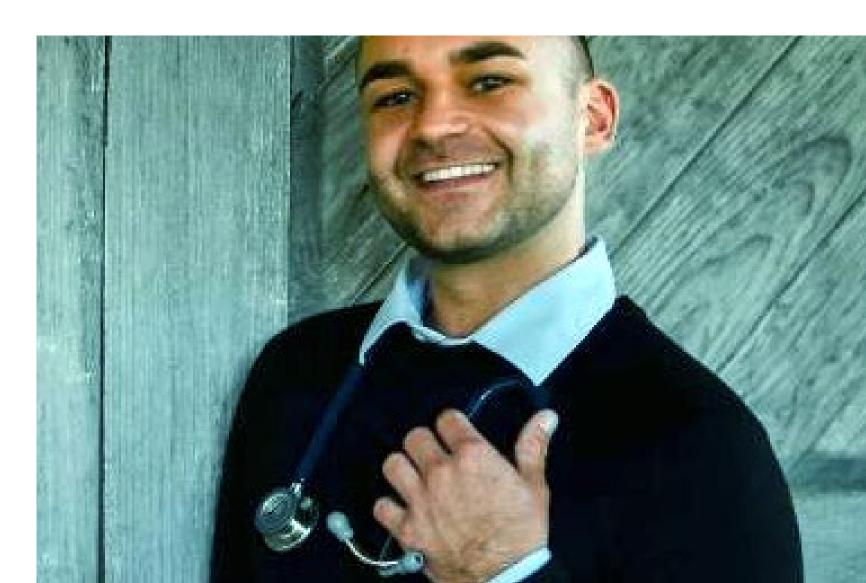
Helping today's learners become 7 tomorrow's health care professionals

As the largest academic health sciences network in Atlantic Canada, Nova Scotia Health is committed to building capacity in our health workforce through supporting a culture of lifelong learning and professional development across all areas of health. A critical component of learning is placements for students at Nova Scotia Health, which ensure that this new generation of health care professionals can successfully join the workforce.

Student Learner Placement is a provincial team part of Nova Scotia Health's Interprofessional Practice and Learning portfolio. They work closely with academic partners across Canada, as well as staff, managers, and program leaders within the organization, to arrange unpaid, hands-on clinical and non-clinical placements for post-secondary students from a wide range of disciplines.

We want to make sure nurses remain in health care: How an early immersion program sets up nursing students for success

Graham Pegg is part of the Early Immersion Program (EIP) that offers senior nursing students the chance to work as a USN in Nova Scotia hospitals. It's voluntary, and students set their own schedule around their academic work. The goal is to help students transition from the ideals they study in school to the realities of working in today's busy, often understaffed hospitals.



Recognizing achievement



Dr. Gail Tomblin Murphy joins as one of the 14 experts on Pan-**Canadian National Coalition**

A Pan-Canadian team of 14 experts brought together by the Honourable Jean-Yves Duclos, Minister of Health of Canada; The Honourable Carolyn Bennett, Minister of Mental Health, and Addictions; The Honourable Kamal Khera, Minister of Seniors; and others are advising and informing immediate and longer-term solutions to address significant health workforce challenges. Established by Health Canada, the Coalition for Action for Health Workers reports to the Deputy Minister of Health and will ensure that all Canadians can access the quality care they need and deserve.

One of those 14 experts is Dr. Gail Tomblin Murphy. Dr. Tomblin Murphy is a renowned expert in health systems strengthening and health human resource (HHR) policy and research.

The Coalition held its first meeting in the fall of 2022. Its initial priorities will include providing advice on workers' retention, so health workers continue to stay in their jobs; increasing the supply of health professionals in the country; improving health workforce data; and opportunities to scale new models of care to address key barriers.

Nova Scotia Health 2022 **Making Waves Awards**

Nova Scotia Health's **Making Waves Awards** program recognizes individuals and groups who have made outstanding contributions to the health and well-being of Nova Scotians. Every day, individuals and teams of staff, physicians, researchers, and volunteers strive to deliver high quality care and services in all areas of our province. The following 5 individuals were the recipients of the 2022 awards for research and innovation.



OUTSTANDING RESEARCHER AWARD: MELISSA ANDREW 7

While working as a very loved and admired geriatrician, and in addition to her role as the Research Director of the Department of Medicine at Dalhousie University, Dr. Melissa Andrew leads a team of researchers, clinicians and patients who are making great strides in investigating models of care in long-term care facilities, frailty, vaccine effectiveness, and outcomes of vaccine-preventable illness and COVID-19.



DIVERSITY AND INCLUSION AWARD (TEAM AWARD) JULIA GUK/TARA SAMPALLI

Tara Sampalli and Julia Guk have led an important initiative to engage and identify Ukrainian healthcare professionals who are eligible to practice in the province, match them to current opportunities in areas of need across the province, and support their integration into Nova Scotia's communities and health system.



INNOVATOR AWARD: KAREN CROSS 7

Dr. Cross is the CEO and co-founder of MIMOSA Diagnostics – a coast to coast company that provides a proactive approach to early detection of skin injuries. MIMOSA is a handheld, portable class II medical imaging device that looks below the surface of the skin to assess skin health. It allows clinicians to implement earlier interventions to save the tissue, an arm, leg or even a life.



EARLY CAREER/EMERGING RESEARCHER AWARD: BRITNEY BENOIT 7

As a registered nurse and researcher, Dr. Britney Benoit's research is significantly improving maternal and infant care and outcomes by supporting parent-led interventions. Her focus is on testing and translating these accessible and non-invasive approaches as part of routine care of infants and families during times of pain, stress, and transition.



Canadian Consortium of Clinical Trials Training receives funding – Atlantic Clinical Trials Network (ACTN) is key collaborator

In January, the **Atlantic Clinical Trials** Network, a partnership between Nova Scotia Health, IWK Health, Eastern Health, Vitalité Health Network, Horizon Health Network, and Health PEI, received funding from the Canadian Institutes of Health Research. This will help with the creation of various student training opportunities at the masters, PhD, postdoctoral and postdoctoral fellow levels, along with the creation of six new positions in Atlantic Canada focused on the development and coordination of clinical trial professional training within the region.



2022-23

nova scotia
health
innovation hub

a glance