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Emergency Departments overwhelmed. Cancelled surgeries, and cancer treatments on hold. Hospitals scrambling to find enough staff. This isn’t the plot of a disaster movie. It’s happening right now, in this province. It can’t all be blamed on the pandemic. Decades of underfunding have left Ontario desperately short of nurses. Restoring the nursing profession to full strength must become a true priority. It’s going to take investment to bring our health-care system back from the brink.

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March 2022 Edition

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- PAINFUL REALITIES

Emergency Departments overwhelmed. Cancelled surgeries, and cancer treatments on hold. Hospitals scrambling to find enough staff. This isn’t the plot of a disaster movie. It’s happening right now, in this province.

It can’t all be blamed on the pandemic. Decades of underfunding have left Ontario desperately short of nurses. Restoring the nursing profession to full strength must become a true priority. It’s going to take investment to bring our health-care system back from the brink.
Could provincial governments mandate children’s COVID-19 vaccinations for school attendance?

By Colleen M. Flood, Bryan Thomas and Kumanan Wilson

Health Canada has authorized Pfizer’s COVID-19 vaccine for children aged 5-11, concluding that the benefits -- 90.7 per cent efficacy in preventing the disease -- outweigh the risks. The state of California has already announced plans to require vaccination for school children. To date, no Canadian province has followed suit, despite entreaties from prominent public health experts.

On the surface, there are many compelling reasons for mandating pediatric vaccinations for in-school attendance. While children are far less likely to develop serious illness from COVID-19 than adults, the risk is nonetheless greater than for other vaccine preventable diseases for which there are school mandates in some provinces.

There is also an increased risk that unvaccinated children will contract and transmit the virus to other children, causing school closures, and they are at higher risks of transmitting the infection, both to their families and the broader population.

All of this has become even more apparent with the Omicron outbreak. The number of children falling ill and requiring hospitalization continues to put pressure on the pediatric health system. Assuming the data continues to show vaccination protecting children from severe illness from Omicron, a mandate seems justifiable -- particularly next to existing mandates for much rarer diseases.

The primary concern with the Pfizer children’s vaccine is the risk of myocarditis, an inflammation of the heart muscle leading to shortness of breath and chest pain. Older boys and young men receiving the vaccine have experienced myocarditis at a rate of 1 in 10,000, and most recover quickly. The long-term effects of COVID-19 vaccination are not yet known, but vaccines rarely have long-term side effects. By comparison, the risks from COVID-19, both for children themselves and for broader society, are much greater.

In the face of a COVID-19 vaccination mandate, there is bound to be legal misinformation disseminated by opponents, for example, claiming any mandate would necessarily be contrary to the Charter of Rights and Freedoms.

In Ontario and New Brunswick, school vaccination mandates (such as for measles, mumps, rubella) are mitigated by allowing parents to request exemptions on either medical or non-medical (such as religious or philosophical) grounds. This is an imperfect solution: with vaccine-hesitant parents requesting non-medical exemptions in growing numbers, Ontario has seen outbreaks of once well-controlled diseases like measles. Some public health experts have urged the elimination of non-medical exemptions.

It is unlikely that prevailing forms of vaccine hesitancy, rooted in mistrust of the pharmaceutical industry and government regulators, will qualify for Charter protection. In an early Charter ruling, the Supreme Court explained that protections for conscience apply only to “comprehensive value systems,” and “profoundly personal beliefs that govern one’s perception of oneself, humankind, nature.” Over the years, courts have cited this doctrine when rejecting conscience claims from people skeptical of the science around seatbelts; provincial human rights tribunals have recently echoed the point in explaining why vaccine hesitancy is not a trait protected against discrimination.

Continued on page 6
Smart arm bracelet for ERs aimed at saving kids’ lives

By Georgia Powell

It’s no secret that during a trauma, an emergency room can get hectic, putting a tremendous cognitive load on nurses and physicians. This is especially true when it comes to administrating life-saving drugs to sick children, and ensuring they receive the right dose of medication at such a critical point in care.

With studies showing that one in every three children treated in North America receives the wrong dose, it’s clear that the current process – which relies on weight calculations done by hand and therefore has a high error rate – is in need of an overhaul.

That’s why my colleagues and I set out to do something about it. As graduate students in the Experimental Surgery Master’s program at McGill University, we had an “aha” moment during our internship at the Montreal Children’s Hospital when a trauma case came in by ambulance and the physician kept asking for the medication over and over because it was taking so long to prepare.

It became clear that the medical staff’s manual calculation and preparation of IV medication was not only creating a critical bottleneck in clinical workflow, but was posing a risk to children’s safety.

Supported by $45,000 in research funding through the Mitacs Accelerate Entrepreneur program – which funds and guides student start-up entrepreneurs to develop their technology – we developed a solution to automate the process and take the guesswork out of the current manual and time-consuming process of weight-based pediatric medication dosing, avoid costly mistakes and significantly improve patient outcomes.

The invention, called the IV Assistant, is an arm bracelet with a retractable tape measure that accurately predicts a patient’s weight given their arm size and sends it to a companion web app they developed for use on a tablet. An ER nurse then signs into the app, selects the drug requested by the treating emergency doctor, and our software does all of the math behind the scenes, automatically determining the correct dose based on weight, and walking hospital staff precisely through each step of IV medication preparation.

Through our research, we found that arm size is a better predictor for overall weight than current practices, so we leveraged it and digitized it. Using more than 20 years’ worth of arm measurements and weights available in a massive U.S. Centres for Disease Control and Prevention (CDC) database, we developed a first-of-its-kind weight-predicting algorithm. Based on feedback from doctors and nurses, having an automated process that they can trust to come up with the right dosage every time is game-changing.

Not only is the approach completely disrupting the way life-saving drugs are administered to sick children, but the novel device is poised to change the way emergency room clinicians work worldwide. In fact, it was recently featured in a new video series that showcases top Canadian innovations, called Their World, Our Future, available on YouTube by national innovation organization Mitacs.

Early testing of the prototype shows a 50 per cent time savings or better, meaning the current eight minutes it takes to prepare a pediatric IV medication dose on average can be shaved to four minutes or less. We are now working to refine and test the technology and expect to have a prototype ready for regulatory approval as a class II medical device within the next few years.

Thanks to the support of Mitacs, we were able to build the bridge between our company, McGill University, and the Montreal Children’s Hospital, allowing us to rapidly prototype our device in a medical setting and giving us access to a huge network of hospital professionals in the field who are the ones experiencing the challenges our company aims to solve.

Georgia Powell is COO of NURA Medical, a medical equipment startup based in Montreal.
Study shows a decline in Veterans’ mental health throughout the pandemic

In a newly-published findings from Lawson Health Research Institute, more than half of Canadian Veterans report a decline in their mental health over the course of the COVID-19 pandemic.

When it comes to mental health conditions, Veterans are an at-risk population, often having higher rates of depression and post-traumatic stress disorder (PTSD). When the COVID-19 pandemic hit, scientists at Lawson wanted to understand its effects on this already at-risk population.

“We anticipated the ongoing pandemic would have impacts to multiple domains of life such as loneliness, isolation, depression and PTSD,” says Associate Scientist at Lawson and the MacDonald Franklin Operational Stress Injury (OSI) Research Centre, Dr. Anthony Nazarov.

To examine the potential impacts the research team launched a longitudinal study in early 2021, recruiting Canadian Veterans and spouses of Canadian Veterans. A total of 1,136 Veterans have participated in the study, spanning over 18 months. Participants complete online questionnaires every three months, with questions focused on mental health and virtual health care services.

“We looked at use of care services, including virtual care services, which we know have been on the rise during the pandemic,” says Lawson Associate Scientist and Scientific Director of the Macdonald Franklin OSI Research Centre, Dr. Don Richardson.

The team recently published preliminary findings based on the Veterans portion of the study, which confirm a decline in mental health amongst the Veterans that took part.

“One of the important preliminary findings demonstrated a little more than 55 per cent of Veterans (55.9 per cent) have indicated that their mental health has worsened over the pandemic,” explains Dr. Richardson.

The findings also revealed that nearly one in five Veterans used virtual health care and telepsychiatry services and found them to be helpful.

“Veterans have been having positive experiences with virtual care for mental health support,” adds Dr. Nazarov. “Most found it helpful, and more importantly, many would like to continue to use this form of health care services even post pandemic.”

The preliminary study findings have been published in the European Journal of Psychotraumatology. The longitudinal study will wrap up this summer, and then the team hopes to use the information to improve and innovate different forms of mental health supports for Veterans and their spouses in the future.

Vaccinated patients less likely to need critical care during omicron surge

The highly contagious omicron variant of SARS-CoV-2 became the dominant strain in the United States in mid-December 2021, coinciding with a rise in hospitalizations of patients with COVID-19. Among those admitted during the omicron surge, vaccinated adults had less severe illness compared with unvaccinated adults and were less likely to land in intensive care, according to a new study by Cedars-Sinai and the Centers for Disease Control and Prevention (CDC).

“Overall, the omicron-period group had a lower likelihood of being admitted to the intensive care unit (ICU) and were also less likely to require invasive mechanical ventilation compared with the delta-period group,” said Matthew Modes, MD, a pulmonologist at Cedars-Sinai and co-first author of the paper.

Investigators also found that during the omicron period fewer patients died while hospitalized (1.2%), compared with those admitted when the delta variant was dominant (3.5%).

In addition to the protection that vaccination offered people admitted to hospitals, the findings also revealed that patients admitted during omicron were less likely to require invasive mechanical ventilation compared with those admitted during the delta variant, which is consistent with previous research showing that the omicron variant is associated with less severe illness.

Study authors say the findings provide important insights into the potential impact of the omicron variant on hospitalization rates and intensive care unit admissions.

Could provincial governments

All efforts must be made to keep schools safe, including N95 masking, ventilation and other measures, but also by increasing vaccination rates.

And to be clear, prior to any vaccination mandate for school attendance, all efforts should be made to make vaccination convenient for those who want it, by ensuring easy access within schools themselves, following up to ensure second doses are received, and requiring employers to give time off work to parents taking their kids for shots. A hastily implemented vaccine mandate could do more harm than good, if it means, for example, that children from low-income families are cut off from school food programs.

As a first step, provincial governments could empower schools to require that students register their vaccination status but allow the unvaccinated to attend except in the event of an outbreak. This approach has the benefit of minimizing or even eliminating school closures for those who have been vaccinated. Meanwhile, the prospect of being sent home from school for days or weeks at a time may provide the incentives needed for many to get vaccinated.

If our primary aim is to incentivize vaccination, the provinces have another option at their disposal: like adults, younger people could be required to show proof of vaccination when entering non-essential settings like restaurants and movie theatres – an approach recently announced by New York City.

Whatever policy path is chosen, we must develop and refine policy options now regarding childhood vaccination in order to prepare ourselves for the emergency of new variants, and in the process, dispel legal misinformation. Not acting quickly will have serious negative consequences on our children’s health.
IN BRIEF

Significant investments in hospitals needed to build surge capacity and meet the future health service needs

The Ontario Hospital Association (OHA) is calling on the Government of Ontario to make significant investments in hospital surge capacity.

Over the past two years, Ontario’s hospitals have continued to step up and serve as the anchor of the pandemic response. Organizations, leaders and teams have demonstrated extraordinary dedication, innovation and resilience, even under the most punishing conditions.

However, hospitals and the health care system entered the pandemic in a state of under-capacity and misaligned resources and services – a longstanding challenge inherited by the current Government of Ontario. While beds have been added over the past two years on a time-limited basis to address pandemic needs and to mitigate hallway health care, system capacity is still a serious and growing problem.

“With the worst of the last wave behind us, now is the time to ensure the health care system is supported in a manner that meets the current and future health care needs of the people of Ontario,” Dale said. “The Government of Ontario has been a strong funding partner with hospitals throughout the COVID-19 pandemic. Now is the time for a dialogue about what’s needed to fundamentally strengthen our health care system into the future.”

To ensure hospitals continue to be resourced for the duration of the pandemic and better able to meet the health needs of the people of Ontario into the future, the OHA is recommending that the additional beds and related funding allocations made over the past two years be designated as permanent.

The OHA also recommends funding and government policy support to enable the hiring of at least an additional 10,000 registered nurses and 3,500 registered practical nurses as well as other critical health care workers over the next five years. In making pandemic-related capacity permanent, the Government of Ontario would be taking a significant step forward in achieving this objective.

Historically, on a per capita basis, Ontario hospitals have had very low numbers of beds compared to other provinces and countries. The total number of hospital beds has remained the same for 20 years even with approximately 2.8 million people being added to the population.

When the pandemic arrived, hospitals were required to postpone many surgeries and other non-urgent services to create a buffer of excess capacity. Today, hospitals are still working through a very large backlog of surgeries and diagnostic tests, and funding to serve this growing volume of patients and address added patient complexity and acuity due to delayed treatment is needed. Investment to address the ongoing inflation and population growth pressures facing hospitals is also necessary.

Acute care occupancy rates are currently at 96 per cent with some hospitals approaching or exceeding 100 per cent, and emergency department volumes have returned to the normally high pre-pandemic levels. Hospitals are also facing growing capacity pressures due to challenges across the continuum of care. There are currently approximately 5,500 ALC patients (as of mid-February 2022), which includes approximately 3,900 patients in acute care. The hospital sector has never experienced ALC levels as high as they have been in recent months.

“Ontario hospitals will continue to work to meet the needs of the people of Ontario no matter the circumstances, as they have done throughout the pandemic,” Dale said. “However, strategic investments in surge capacity will support more timely access to care throughout flu season and future COVID waves while reducing the prevalence of hallway health care, reducing wait times, and meeting the growing health care needs of the people of Ontario.”

For more information, view the OHA’s 2022/23 Pre-Budget Submission.

Significant volume of cancer cases have gone undetected during pandemic

A significant volume of cancer cases have gone undetected during the pandemic, a new study published today in Journal of the National Comprehensive Cancer Network has found.

The study, led by Sunnybrook surgeon-scientist Dr. Tony Eskander, examined weekly cancer diagnoses between Sept. 25, 2016 and Sept. 26, 2020 in Ontario based on data from ICES. At the start of the pandemic in March 2020, there was a 34.3 per cent drop in weekly cancer incidence volume. In total, 12,601 fewer people were diagnosed with cancer between March 15 and Sept 26, 2020 than expected based on other year’s incidence.

The drop in cancer incidence was seen in cancers diagnosed through screening programs and those without such a program. In Ontario, there are organized screening programs for breast, colorectal and cervical cancers. The largest drops in volumes were seen in cervix, endocrine, melanoma and prostate cancers.

There was no change in the socioeconomic information of those diagnosed during the pandemic. The volume of cancer diagnoses have not yet returned to pre-pandemic levels.

“Cancer survival rates have improved over the last decade, in part due to the earlier detection of disease,” the authors wrote. “However, screening programs with accessible in-person care have been impacted by the emergency health measures put in place during the COVID-19 pandemic.”

The drop in incidence may also be related to delays in seeking care given public messaging around avoiding an overburdened health care system, the authors say. It’s important that public health messaging, physicians and healthcare teams are unified and clear going forward: participate in screening programs and seek care if you have any symptoms.
Four-armed technology benefits surgical patients

By Mariela Castro

Robotic surgeries are elevating surgical care at Mount Sinai Hospital, and the four-armed robot enabling better patient outcomes is called LEO.

As a fourth generation da Vinci Xi model, it is the most advanced surgical robot in Toronto and one of few in Ontario.

Affectionately nick-named LEO by hospital staff as a tribute to Leonardo Da Vinci’s impactful technological innovations and work with the human body, it is transforming the field of minimally invasive surgery.

Part of the da Vinci Surgical System, the robot translates a surgeon’s hand movements at a console in real time, bending and rotating surgical instruments while performing the surgical procedure. It allows for more precision, flexibility and control than possible with more conventional surgical techniques.

The da Vinci robot and Surgical System were unveiled as part of the innovative Robotics Suite on the Hospital’s new state-of-the-art Operating Rooms and Surgical Services Floor, and are facilitating complex laparoscopic operations on patients with complicated health concerns.

Dr. Jonathon Solnik is Head of Gynaecology and Minimally Invasive Surgery, and an internationally recognized leader in his field. He was one of the first Mount Sinai surgeons to use the robot, having experienced the benefits of robotics-assisted surgeries first-hand during his tenure as a surgeon in the United States.

“Laparoscopy surgery affords patients specific benefits – shorter recovery, less pain, an earlier return to normal activities and quality of life,” he said. “Using a surgical robot enables an extremely precise type of laparoscopic surgery. Traditional laparoscopic instruments twist and open. But the robot gives you wrists – wristing motions enabling seven degrees of rotation that traditional laparoscopic instruments don’t. So it allows you to more safely reconstruct organs, which can be quite difficult with traditional laparoscopic surgery.”

With the “wristing” motions afforded by the robot, the same laparoscopic surgeries can be extended to additional groups of patients with specific health conditions, such as women with some types of reproductive cancers.

Robotics is taking surgical care to a higher level. As a hospital world-renowned for its surgical program, Mount Sinai already has superbly-trained surgeons conducting minimally invasive surgery on patients with complex health concerns. Now, surgical teams can take care of more patients with complicated health conditions in a minimally invasive fashion.

The Robotics Suite is one of the many advancements of Renew Sinai, the largest and most ambitious redevelopment in the Hospital’s history. Robotics-assisted surgeries are available for gynaecology and urology patients.

Mariela Castro is the Redevelopment Advisor, Capital Development at Mount Sinai Hospital.

Artificial intelligence tutoring outperforms expert instructors in neurosurgical training

By Shawn Hayward

The COVID-19 pandemic has presented both challenges and opportunities for medical training. Remote learning technology has become increasingly important in several fields. A new study finds that in a remote environment, an artificial intelligence (AI) tutoring system can outperform expert human instructors.

The Neurosurgical Simulation and Artificial Intelligence Learning Centre at The Neuro (Montreal Neurological Institute-Hospital) recruited seventy medical students to perform virtual brain tumour removals on a neurosurgical simulator. Students were randomly assigned to receive instruction and feedback by either an AI tutor or a remote expert instructor, with a third control group receiving no instruction.

An AI-powered tutor called the Virtual Operative Assistant (VOA) used a machine learning algorithm to teach safe and efficient surgical technique and provided personalized feedback, while a deep learning Intelligent Continuous Expertise Monitoring System (iCEMS) and a panel of experts assessed student performance.

The researchers found that students who received VOA instruction and feedback learned surgical skills 2.6 times faster and achieved 36 per cent better performance compared to those who received instruction and feedback from remote instructors. And while researchers expected students instructed by VOA to experience greater stress and negative emotion, they found no significant difference between the two groups.

Surgical skill plays an important role in patient outcomes both during and after brain surgery. VOA may be an effective way to increase neurosurgeon performance, improving patient safety while reducing the burden on human instructors.

“Artificially intelligent tutors like the VOA may become a valuable tool in the training of the next generation of neurosurgeons,” says Dr. Rolando Del Maestro, the study’s senior author. “The VOA significantly improved expertise while fostering an excellent learning environment. Ongoing studies are assessing how in-person instructors and AI-powered intelligent tutors can most effectively be used together to improve the mastery of neurosurgical skills.”

“Intelligent tutoring systems can use a variety of simulation platforms to provide almost unlimited chances for repetitive practice without the constraints imposed by the availability of supervision,” says Ali Fazlollahi, the study’s first author. “With continued research, increased development, and dissemination of intelligent tutoring systems, we can be better prepared for ever-evolving future challenges.”

This study, published in the Journal of the American Medical Association (JAMA Network Open) on Feb. 22, 2022, was funded by the Franco Di Giovanni Foundation, the Royal College of Physicians and Surgeons of Canada, and a Canada Tumour Research Grant from the Brain Tumour Foundation of Canada along with The Neuro. Cognitive assessment was led by Dr. Jason Harley at McGill University’s Department of Surgery.
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- Christine Lao, Anesthesia Assistant

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COVID-19 detection with point-of-care ultrasound technology

By Sarah Ripplinger and Vivian Sum

The global rally to stop the spread of COVID-19 has spurred the discovery of new approaches to streamline and enhance disease detection and triaging. A recent study led by Vancouver Coastal Health Research Institute (VCHRI) researcher Dr. Teresa Tsang summarizes evidence for why point-of-care ultrasound (POCUS) technology could be a leading, next-generation part of COVID-19 care.

“The published literature we reviewed provides compelling evidence for the use of POCUS as a cutting-edge imaging tool that can be used to quickly assess the heart and lungs,” says Tsang. “This relatively novel application of sophisticated technology packaged in a small unit could complement the suite of imaging machines currently available in-hospital, and become a welcome addition to a wide variety of care settings, including family practises and long-term-care facilities in the community setting.”

POCUS emerged over two decades ago as a means of providing rapid, portable access to ultrasound technology. This non-invasive, zero-radiation technique emits high-frequency sound waves through a probe placed on a patient’s body. The sound waves bounce off a patient’s internal tissues and organs, which are then displayed as images on a tablet, computer or smartphone screen.

POCUS portable ultrasound machines use sound waves to detect abnormalities in the body’s tissues.

The technology is a more rapid alternative to traditional, larger ultrasound machines used to assess heart function, says Tsang. It has also been used to evaluate foetuses in utero and to detect solid organ tumours and cysts.

For her study, Tsang and her team examined peer-reviewed literature published up until August 2020 on the use of POCUS for diagnosing COVID-19.

“The literature we reviewed highlighted several advantages of using POCUS in COVID-19 detection,” says study first author Olivia Yau.

POCUS does not require transporting patients outside of their rooms or care facilities, notes Yau. It is relatively low-cost, is easy to sanitize and cuts down on CT scanner demand and cleaning time, which can help prevent the spread of COVID-19.

POCUS can effectively image fluid buildup around the lungs, and pneumonia and fluid congestion in the lungs, as a non-radiating alternative to chest x-rays and the ionizing radiation used in computed tomography (CT) scans.

“POCUS may be better at detecting some lung findings than x-rays; and, unlike x-rays, the technology is safe for children and pregnant women, which is another huge advantage,” Yau adds. “When it comes to long-term care, you do not have to transport the patient to the hospital, which, for geriatric patients, can avoid putting stress on the patient and their family members, especially during the COVID-19 pandemic.”

The images provided by POCUS can reveal disease severity, helping clinicians to quickly assess a patient’s condition and make treatment recommendations. For example, an image of diseased lungs typical of COVID-19-related pneumonia, combined with the presentation of other COVID-19 symptoms, could signal the need for emergency care.

This POCUS image shows signs of white lung and other indications of COVID-19-related pneumonia.

“POCUS can help with risk stratification,” says Yau. “Clinicians can see how far into the disease process a patient is, their prognosis and if they require urgent treatment versus home care, which can also help optimize resource allocation.”

While their study provided a good starting point for this line of research, more work is necessary to fill in information gaps.

“A provincial study of POCUS imaging is currently underway,” says Tsang, who received a VCHRI COVID-19 Research Fund. She and her team also received funding for a multicenter study of how POCUS imaging of the heart and lungs may affect the diagnosis, management and outcomes of patients suspected to have COVID-19.

Dr. Teresa Tsang is a cardiologist and professor of medicine at the University of British Columbia (UBC). She is the director of Echo-cardiology at Vancouver General Hospital (VGH) and UBC Hospital, director of the VGH UBC Artificial Intelligence Echo Core Lab and the associate head of research with the UBC Department of Medicine.

Olivia Yau is a third-year UBC medical student who received a Master of Science in Experimental Medicine from Queen’s University.

Sarah Ripplinger and Vivian Sum work in communications at Vancouver Coastal Health.

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Physical rehabilitation seeks solutions in virtual reality

By Ben Maycock

When IWK Health’s Dr. Jordan Sheriko was looking for a safe and engaging way to teach youth to navigate the world in a power wheelchair, he soon realized that he would have to look beyond healthcare to find an innovative solution. The pediatric physical medicine and rehabilitation specialist reached out to a Halifax, NS virtual reality (VR) company, Mars VR Lab, to see if they could help.

“Complex problems require an interdisciplinary group to identify and create solutions together,” says Sheriko. “And technology solutions require skill sets not often available in academic or healthcare organizations.”

The IWK Rehab and the Mars VR teams set to work on creating a virtual reality program that could teach kids aged four to 18 how to use a power wheelchair. The idea is that the game aspect of VR would help engage youth while helping the wheelchair user gain the necessary wheelchair driving skills, all in a safe environment. The platform would also increase the data available to clinicians, potentially increasing the accuracy of identifying physical limitations and progress in skill acquisition.

Currently training involves several clinicians, the patient and family, and at times the wheelchair vendor to help the patient learn to navigate with a power wheelchair in the real world. The wheelchairs themselves can cost between $35,000-$50,000. The virtual training environment eliminates the risk of injury or damage to property.

“We know the VR space and how to build fun and engaging games” says Daniel Baldwin, CEO and co-founder of Mars VR Lab. “We also have the expertise to build large-scale enterprise software that provides insights and analytics that clinicians and therapists have never been able to see before. We give them actionable data, specific to each patient.”

And future users of the VR software are not the only ones who benefit from collaborations such as the one between IWK Health and Mars VR Labs.

“I think there are immense future opportunities to combine the strengths of clinical teams, including their knowledge of healthcare barriers, clinical research and problem-solving, with the strengths of industry partners in innovation and development,” says Carrie Ricker, counsel for IWK Health Innovation and Legal Services. “This partnership is a great example of collaboration that reflects a true shared commitment to improving care for children and families.”

“Technology and business entrepreneurs rarely have the knowledge or understanding on how to build something that the medical establishment truly needs,” says Baldwin. “And medical experts don’t often have the technology/business experience, connections or time to pursue building these kinds of solutions.”

Such partnerships also enable both parties to tap into resources that might not normally be accessible to them.

“Funding from traditional academic and research sources are extremely challenging to access,” says Sheriko. “Innovation partnerships allow opportunities to leverage different sources of funding.”

IWK Health and Mars VR Lab will co-develop the program and will share revenue if it is successfully commercialized. The program is currently set to begin clinical testing.

“We feel like we are just getting started,” says Baldwin. “We pinch ourselves, we can’t believe how it has all come together and this is the work we get to do every day.”

Ben Maycock works in communications at IWK Health.
RETScreen® analysis helps build capacity in Canadian health sector

By Kent Waddington, Ozora Amin and Autumn Sypus

The Canadian Coalition for Green Health Care (CCGHC) is working with the Government of Canada to make the RETScreen® Clean Energy Management Software (RETScreen Expert) more accessible to a broader range of users in the health care sector by demonstrating the software’s applicability to real-life project assessments and feasibility of energy conservation and carbon reduction projects.

This project encourages the sustained use of RETScreen Expert by working with selected Canadian health care organizations to embrace the low-carbon transition and climate resilient health care sector.

The project focuses on sites currently not using RETScreen Expert and will culminate March 2022 with a formal written project analysis for each participant by the Coalition’s technical lead, one-on-one knowledge exchange tutorials with participants and a series of case studies highlighting RETScreen findings.

Through engagement with each participant, the team will help build familiarity, comfort and confidence enabling users to see clearly the merit and ease of using RETScreen Expert on an ongoing basis thereby building capacity within each organization. Each participant site will be using a different component of the RETScreen® software for their energy project analysis.

A financial analysis for new high efficiency heating equipment will be conducted for the Mattawa hospital (ON). Using RETScreen Expert’s utility analytics capabilities, the team will analyze the whole-building energy performance of a Providence Health Care facility (BC). In Québec, analysis will be conducted on behalf of CISSS de la Montérégie-Ouest. The project is also supporting Woodstock General Hospital (ON) in assessing the feasibility of undertaking a major facility retrofit.

Technical lead David Elfstrom (P.Eng, CEM, CMVP, LEED AP), who has been using the RETScreen® software for 13 years, brings a wealth of technical expertise to each participant’s project analysis and will assist greatly in knowledge transfer.

RETScreen Expert® is a comprehensive clean energy management software platform which enables professionals and decision-makers to identify and assess the viability of potential energy efficiency, renewable energy and cogeneration projects; and to measure and verify the actual and ongoing energy performance of buildings, factories and power plants around the world. This “Made-in-Canada” software is well suited to assisting Canada’s health care facility and energy managers to take a data-driven approach to managing the energy in their facilities.

To learn more, visit www.green-healthcare.ca/RETScreen

This article was submitted by The Canadian Coalition for Green Health Care.

Advancements in infection control in hospital settings

An update on the impact of technology, including robotics & AI on healthcare delivery

By Lisa Fraser and Katharine Creighton

Technology has had a dramatic impact on healthcare administration over the past two years. It has facilitated our healthcare system’s response to Covid-19, particularly, in the provision of healthcare to patients.

On March 11th, 2020, the World Health Organization declared Covid-19 a pandemic, which prompted the implementation of various public health restrictions including limited access to medical care and public health services. As a result, many people suffering seemingly non-urgent medical conditions could not access traditional healthcare. Technology allowed for a necessary pivot from in-person to virtual healthcare services.

Virtual healthcare, provided through technology such as telephone, videoconference, mobile apps and instant messaging, has now become predominant, with over fifty percent of Canadians receiving healthcare virtually. This pivot has advantages. Virtual healthcare can provide more convenient, timely and accessible care, particularly for those with mobility challenges or those who reside in rural or remote areas. Further, of course, it reduces the risk of transmitting Covid-19 and ensures that the healthcare industry continues to operate.

Today, family physicians can be consulted over telephone, counseling services can be provided through mobile apps, and even expert medical assessments can be completed using videoconference. Virtual medical assessments have played a significant role in the legal/insurance industry, ensuring claimants continue to receive the benefits they are entitled to and legal cases are appropriately advanced.

Until recently, a medical assessment would involve a claimant attending at a medical facility, which in the reality of Covid-19 is not always possible. Now, many assessments can be conducted from home, provided claimants have access to the necessary equipment, including a webcam or video service and a reliable internet connection.

There remain additional challenges associated with virtual healthcare, despite the advantages it provides us. Like those accessing healthcare services, practitioners and their staff require appropriate equipment and related training to appropriately and efficiently provide care to patients virtually, and many worry about technical glitches.

Further, in situations where patients are accessing on-demand virtual healthcare from various providers, a reduction in care continuity can be created. Finally, there is currently limited legislation that addresses virtual healthcare as lawmakers have struggled to keep pace with the quick-pivot of the healthcare industry.

Technology has assisted the healthcare system to adapt to the ever-changing climate created by Covid-19 and its variants. However, various challenges have arisen, and so the continued role that technology will play in healthcare post-Covid-19 remains to be seen.

Lisa Fraser and Katharine Creighton are lawyers with the Personal Injury Team at McKenzie Lake Lawyers LLP


www.hospitalnews.com
A pregnancy becomes a harrowing medical journey for a BC mom and baby

By Ann Gibbons

When Shina Biblow became pregnant with her second child, she and her husband were elated.

But the couple’s excitement would be short-lived.

The Williams Lake, British Columbia-area woman immediately developed health problems that would require complex, high-risk heart surgery at St. Paul’s Hospital when she was just 15 weeks pregnant. The expertise of the multiple St. Paul’s teams that the case united brought a happy conclusion for Biblow and her husband Tyson. On January 24, she gave birth to a healthy baby boy named Merritt, a brother for two-year-old Morris.

In a sense, Biblow’s story began 32 years ago. She was born with a narrow- ing of her aortic valve, the main blood vessel leaving the heart. She required surgery for this as an infant.

The condition meant that when she turned 18, she became part of the Pacific Adult Congenital Heart Clinic (PACH) at St. Paul’s Hospital, a multidisciplinary team that follows adults born with heart disease.

FEELING UNWELL FROM THE PREGNANCY’S START

Apart from being unable to do certain intense sports, Biblow led a normal life, including an uneventful first pregnancy and birth.

This second pregnancy was different.

From the get-go, she felt unwell. “I was nauseous and tired, my heart was racing and I got what I call hot flashes,” she says. “I just assumed they were caused by a surge of pregnancy hormones.”

She received care at her local Emergency Department, then doctors sent an urgent referral to the highly specialized Cardiac Obstetrics Clinic (COB) at St. Paul’s Hospital. She received tests that revealed episodes of sudden extremely rapid heart rhythms, but no one knew why.

Calf cramps followed – also a pregnancy symptom, she figured. When she developed itchy red spots on her body, she became alarmed.

Breathing was so hard she could not even care for her toddler. When she called a PACH Clinic nurse, she exploded into fits of coughing.

Dr. Marla Kiess, St. Paul’s cardiologist and COB founder, followed Biblow by Zoom to monitor the heart palpitations, shortness of breath and other symptoms.

A SOARING HEART RATE

As they persisted, Dr. Kiess directed the local hospital to airlift her for more advanced care to Kamloops’ Royal Inland Hospital August 12. There, her heart rate soared to 190 beats/minute. A normal rate is 60 to 100.

Tests found growths on her aortic valve, suggesting a bacterial infection: serious in any patient, more so in a pregnant woman.

“The infection in the valve was totally unexpected and unpredictable,” recalls Dr. Kiess.

She and her team arranged for Biblow’s transfer to St. Paul’s, the only centre in British Columbia for complex cardiac-obstetrics cases like this.

SURGERY A BIG RISK TO FETUS

Shortly after arriving on August 15, St. Paul’s cardiovascular surgeon Dr. Jamil Bashir told her she’d need open-heart surgery to replace the infected aortic valve.

“It was scary,” says Biblow. “But it needed to be done if we wanted to keep the baby and save my life.”

Risks were high. “That point in gestation is a critical time in the baby’s evolution because many organs are developing,” says Dr. Kiess.

COMPLEX CASE REQUIRES A LARGE CARE TEAM

In surgery, Biblow would be supported by a heart-lung bypass machine, which would reduce blood flow to the fetus and risk organ malfunction. Alarming, it would bring a 40-per-cent risk of the baby dying, says Dr. Kiess.

Because of the case’s complexity, her care team began a huge amount of planning to anticipate potential responses to problems in both mom and baby. It included nurses and doctors from cardiology, anesthesia, surgery, infectious diseases, the ICU, and obstetrics. Zoom proved invaluable.

DELICATE BALANCE AROUND MEDICATION

On August 18, Dr. Bashir and his team successfully implanted a mechanical aortic valve to replace the severely infected one. The good news was, a mechanical valve (unlike a cadaver valve) would never have to be replaced. The bad news was, it increased Biblow’s risk of clotting. She would need blood thinners for the rest of her life.

Those drugs brought risks to the fetus, so Dr. Anna Rahmani and Dr. Tony Wan from the St. Paul’s Thrombosis clinic were also part of her care.

St. Paul’s teams then followed her post-surgery to monitor her with the new valve and pregnancy.

THE BIRTH APPROACHES

As the delivery date approached, her team wanted her in Vancouver near the hospital several weeks before, to tend to her cardiac and obstetrical needs. Registered Nurse Karen Sandhu, Complex Care Coordinator for Maternity, and Amy Graham, COB RN, oversaw the many logistics around that chapter, as did PACH/COB social worker Cassandra Maxwell. “I coordinated with her St. Paul’s obstetrician, Dr. Nancy Matinko and the virtual visits Shina would have with her,” says Sandhu.

More planning ensued, especially around her anticoagulants. They had to stop in advance because of the risk of a severe bleed giving birth. Yet she couldn’t be off them for more than 24 hours because of clotting risks.

Amid it all, Merritt arrived on January 24 at 38 weeks’ gestation, weighing six pounds, four ounces. “With all the meds I was on, they were expecting a smaller baby,” Biblow says proudly. He is healthy and well.

The expanded family is home on its ranch in the Interior, focusing on their two sons. She has regular virtual visits with St. Paul’s teams, including COB and the Thrombosis Clinic.

She and husband are grateful to St. Paul’s expansive team of doctors, nurses, social workers and many others who helped her and her baby survive risky cardiac surgery and see her through delivery and post-partum care.

“Even though everything happening was very scary and we didn’t know what the outcome was going to be, our faith and prayers from our family and friends, and the care from the team at St. Paul’s is what got us through the experience.”

Ann Gibbon is a Senior Communications Specialist at Providence Health Care.
Impact of biofilm on Venous leg ulcers

Joseph Stoffel, Specialist Microbiology, 3M Medical Solutions Division

The healing trajectory of many chronic wounds, such as Venous leg ulcers (VLUs), can be affected by the presence of biofilm. As a microbiologist who studies wound biofilm at 3M’s Medical Solutions Division, here are my insights on the complexity of wound biofilm communities and antimicrobial effectiveness.

Antimicrobial effectiveness is often evaluated in laboratory environments where meaningful experiments can be conducted in controlled environments. However, the bacteria we encounter in our day-to-day lives aren’t typically what we see in the lab, and this poses significant challenges to antimicrobial effectiveness.

For instance, say we want to test if something can kill microbes. We will grow a test tube of bacteria, introduce an antimicrobial solution and check to see if any bacteria survived. If nothing survived, would it be considered a success?

Under FDA guidelines, this is how a typical test is performed; however, this test only proves that the solution can kill planktonic bacteria. Planktonic means free-floating; think plankton in the ocean, and in this state, bacterial cells are easily impacted by antimicrobial solutions with almost no barriers to interaction.

Here is the problem. Humans don’t typically live in the ocean or find themselves frequently suspended in liquid for extended periods. This can also be said for microorganisms living on our bodies or infecting tissue. Microbes typically attach to surfaces: from the ring in our toilets and shower to rocks in a stream and even on our teeth.

HOW DOES BIOFILM OCCUR?

As soon as microbes land on a surface, they get straight to work and secrete a protective slime layer known as an extra-polymeric substance or EPS. The presence of an EPS is a defining factor in resiliency when compared to planktonic organisms. The EPS can improve a microbe’s tolerance to environmental changes and often contain several different microorganisms living in the same biofilm. In some situations, cells within the biofilm can also “hibernate” thanks to an altered metabolic state. Protection from the EPS and the ability to hibernate are some of the prevailing factors for a cell’s ability to withstand external assaults from topical antimicrobial solutions.

BIOFILM IMPACT ON WOUND CARE

Biofilms have a significant impact on the treatment of chronic wounds and must be considered when developing an effective treatment plan. Studies by James et al and Johani et al indicate that microbial biofilms are present in almost every non-healing wound, triggering additional health complications such as chronic inflammation. Though not always visible to the naked eye, the evidence of a biofilm impacting healing may be noted when wound healing suddenly stalls or regresses.

Clinicians will typically reach for topical antimicrobials in addition to other medical inventions, however, the FDA cleared antimicrobial products that receive antimicrobial status by testing against planktonic organisms that will likely not encounter the same organisms and conditions when treating real wounds.

Well, why aren’t we testing products against biofilms? The problem rests with the diversity of organisms in biofilm. Despite extensive literature in testing wound care products against biofilm models, none are standardized. This means that what may work for model A might be completely ineffective in model B. The lack of standardization also means that results may be altered to produce the desired result, making comparisons between antimicrobial solutions challenging.

Learn more about effective biofilm-based wound treatment plans.

Biofilm in chronic wounds poses significant challenges to treatment and recovery. Effective treatment plans require a specific biofilm-based approach that leverages consensus documents. Looking ahead, further research and standardization around antimicrobial product claims will be essential to providing the appropriate data for treatment decisions.

To learn more about effective wound treatment, contact a 3M Account Representative.
Creating a sustainable Canadian health system in a climate crisis

Climate and environmental change threaten patient health and the systems that deliver care. At the same time, modern health systems are themselves a significant contributor to global carbon emissions. Action is needed, and that need is increasingly recognized at the national and international scale. In November 2021, Canada was one of 51 countries to sign on to the Health Program at the United Nations Climate Change Conference (COP26), making a commitment to climate resilient and low carbon, sustainable health systems.

Already, there is considerable capacity for sustainable healthcare in Canada. Many individuals and organizations possess sustainability-related knowledge, skills, and networks and have tested and implemented a range of sustainable healthcare practices and policies. Launched in 2021, CASCADES is funded for a five-year term by Environment and Climate Change Canada’s Climate Action and Awareness Fund for Community-Based Climate Action Projects to support and enhance this work.

CASCADES pursues improvement in clinical or clinically adjacent practices and policies. Through partnerships with patients, providers and organizations, and an orientation towards systems thinking, the initiative seeks to catalyze action and broad engagement in the national transition to climate resilient and low carbon, sustainable health systems.

CASCADES is led by the Centre for Sustainable Health Systems at the University of Toronto, in partnership with the Healthy Populations Institute at Dalhousie University, the Planetary Healthcare Lab at the University of British Columbia, and the Canadian Coalition for Green Health Care.

CASCADES is committed to collaboratively coordinating a national approach to develop new – and refine existing – tools and strategies that can improve the sustainability of health services and systems. The initiative works with teams across Canada to support innovation through both ‘test’ and ‘spread’ phases. CASCADES targets the healthcare community as a whole – front-line care providers, administrators, leaders, and the associations that support the delivery of care across Canada’s provinces and territories.

In the first phase, innovations are tested at one or more sites to assess whether they lead to care that is high quality, resilient, and has low greenhouse gas (GHG) emissions. Test cases produce a prototype playbook: a step-by-step guide for innovation implementation and assessment.

In the second phase, CASCADES works with teams to spread promising service innovations across multiple sites and regions in the country, using quality improvement methodology. Spread cases use the prototype playbook to implement an innovation with consistent processes and impact measurement across all sites and regions. The result is a validated playbook that can be used both to inform policy and to enable widespread implementation of what will then be considered a best practice in sustainable healthcare.

CASCADES leverages and builds knowledge, skills, and networks across Canada’s healthcare community to promote and deliver sustainable health systems. The initiative offers professional development training to equip health professionals, including front-line care providers, administrators, leaders, with the skills to understand and support sustainable change. CASCADES also supports knowledge-mobilization and networking activities to help the community to identify opportunities for innovation, to encourage excellence and skill-sharing, and to build and support communities of practice.

For health professionals looking to join this growing movement of motivated change-makers, there are a number of ways to get involved.

CASCADES’ suite of continuing professional development training programs ranges from introductory to advanced. Through these programs, participants develop the fundamental skills required to advance climate action in healthcare in Canada. Individual sustainable quality improvement coaching is also available.

CASCADES’ networking and outreach opportunities include a national online forum; Monthly Exchange Sessions (MES), which offer an informal discussion space for members of the healthcare community interested in sustainable health systems; and ongoing events programming targeted to individuals across diverse fields, career stages, and levels of familiarity with climate action.

For more information about CASCADES, please email CASCADES@utoronto.ca.
Part of her support team.

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Ontario’s doctors have a remedy for wait times

By Allan O’Dette

Even before the pandemic, patients in Ontario were waiting longer than they should for some surgeries and procedures.

When health-care resources were diverted to the COVID-19 response, wait times grew even longer and exacerbated the backlog that has ballooned to 21 million patient services including preventive care, cancer screenings, surgeries, immunizations, MRIs and more.

Doctors report that Ontarians have grown sicker and as they wait for the care they need, their outcomes are worse. The situation will become more severe as the unknown number of missing patients who didn’t get help during the pandemic seek treatment.

Ontario’s doctors have a solution, and we need the provincial government to act on it now so that patients can get the care they need.

First, invest in the resources required to clear the backlog. Then, set in motion the most significant modernization of surgical and procedural ambulatory care in 30 years to tackle wait times.

The Ontario Medical Association’s proposal is a significant system shift that involves moving patients who need less-complex surgeries and procedures away from overburdened hospitals and into ambulatory clinics.

Integrated Ambulatory Centres – or IACs – would be free-standing centres working in partnership with hospitals to provide publicly funded, OHIP-insured surgeries and procedures safely and efficiently on an outpatient basis.

Cataract surgeries, for example, and those involving the ears, nose and throat. Hysterectomies and breast reconstructions after cancer. Procedures to treat hernias, gallbladders and prostates. All could be done without a hospital stay.

Patients would get the care they need, and go home the same day.

Ambulatory centres provide surgery or procedure times that are shorter, with faster recovery and lower infection rates. They are 20 to 30 per cent more efficient.

Both patients and physicians would have a more satisfying experience. The modern and integrated system the OMA is recommending would allow for more collaboration by physicians, surgeons and specialists, something that benefits everyone.

Hospitals, in turn, would have increased capacity to perform more complex and urgent surgeries and procedures.

IACs would not violate the Canada Health Act because they would be fully integrated with the publicly funded health system. They would be subject to open and transparent public reporting and have strong clinical oversight.

As such, no one would jump the queue. There would be no two-tier service.

The evidence shows the system change we are proposing will work.

Ambulatory centres have been successful in other provinces such as Saskatchewan, Alberta and B.C. Other countries that also have government funded universal health care have also demonstrated these clinics can perform a range of outpatient surgeries and procedures safely and efficiently. Ontario has dipped its toe in this water with the Kensington Eye Institute in Toronto.

When Saskatchewan Health compared the cost of performing 34 procedures in clinics and in hospitals, the results showed that in every case the clinics were less expensive. In some cases, they were half the cost.

A decade ago, the non-partisan Drummond Report recommended Ontario expand on the success of the Kensington Eye Institute. Yet, a recent Auditor General report found the province has made little progress in leveraging this model of care.

Instead, Ontario has not moved beyond the Independent Health Facility framework that is now more than three decades old.

The vast majority of the province’s nearly 1,000 IHFs are licensed for diagnostics such as X-rays and ultrasounds, with only a small minority licensed to deliver publicly funded surgeries or procedures. They were not built to handle the broad spectrum of surgeries and procedures that could move to IACs.

Our solution will work only if we address the significant strain on health human resources, which has grown worse during COVID-19.

Having spent more than two years on the front lines of the pandemic, doctors, nurses and other health-care workers are burned out. Many are leaving the profession. Physicians who stay are bogged down in administrative burdens. They are overwhelmed by a provincial doctor-to-population ratio that is fourth from the bottom in OECD countries – if Ontario were counted as a country -- and they are feeling the crush of a population that is growing and aging.

Fixing wait times and the backlog needs to start by supporting the people who are the core of health-care delivery systems. That means reducing red tape for physicians so they have more time for direct patient care. It means finding a way to measure and track burnout among health-care workers, and then taking action to address it.

If we can ensure we have the people we need in place and that those people have the physical and mental capacity to do what’s required, then we can begin to address the backlog and ensure no one waits longer than recommended guidelines for care.

The pandemic has shown us we need to re-think how care is delivered so we can take pressure off overburdened hospitals. COVID has shown us that the current model is simply not sustainable.

There is a clear path forward. We urge the government to take it.

Allan O’Dette is CEO, Ontario Medical Association.
17th ANNUAL NATIONAL NURSING HERO AWARDS
2022 National Nursing Week (May Edition)

NOMINATE A NURSING HERO!

Celebrating Canada’s Nurses!

Have you been inspired, encouraged or empowered by an employee or a colleague?
Have you or your loved one been touched by the care and compassion of an outstanding nurse?
Do you know a nurse who has gone above and beyond the call of duty?

Hospital News will once again salute nursing heroes through our annual National Nursing Week (May 9th to 15th) awards. Nominations can be submitted by patients, patient family members, colleagues or managers.

Please submit your Nursing Hero Story by April 1, 2022 and make sure your entry contains the following information:
- Full name of the nurse
- Facility where he/she worked at a time
- Your contact information
- Your nursing hero story
- At least 500 words highlighting how they have gone above and beyond the call of duty

Along with having their story published, the winner also will take home:
CASH PRIZES: 1st PRIZE $1,500 2nd PRIZE $1000 3rd PRIZE $500

Please email submissions to editor@hospitalnews.com

If you do not receive confirmation within 24 hours of emailing your nomination, please follow up at editor@hospitalnews.com or by telephone 905.532.2600 x2234.
Canadian Nurses Association, the national organization dedicated to championing nurses across Canada, today unveiled a massive, 28-storey reminder to people in Canada of the immense role nurses have played and continue to play amidst a continuing worldwide health-care crisis in the COVID-19 pandemic.

The mural, entitled “We Are Nurses – We Answer The Call,” located at Toronto’s Dixon Hall shelter in the Yonge-Dundas area, was officially dedicated recently at an on-site ceremony which included remarks from CNA executives and spokespersons.

“COVID has impacted the nursing profession in measures we still can’t quantify,” said Tim Guest, CNA President. “Nurses in all practice settings, many in crisis, have played a significant role in the last two years responding to this deadly virus. Despite the disproportionate toll on their own mental health as a result, they have continued to answer the call that this pandemic has foisted on the Canadian health systems. The latest wave may be waning, but we are in still in the middle of a bonafide health-care crisis. This monumental artwork serves as a reminder of nurses’ sacrifice.”

The mural, created by artist collective Oneday Creates, depicts the diverse faces of four nurses looking out at the city’s skyline. Complementing the static image featured on the wall, and as a nod to the art and science in which the nursing profession is steeped, the mural also contains an augmented reality overlay, launched via QR code on mobile devices. The AR experience brings the nurses’ faces to life with voiceovers and links to stories from the front line and other CNA initiatives.

Among the CNA’s initiatives is the call for a national coordinating body to address critical health workforce gaps by guiding the retention and recruitment of nurses through
The Canadian Nurses Association members and executives assemble at a 28-storey mural in downtown Toronto entitled “We Are Nurses – We Answer the Call.” The landmark art piece, featuring an Augmented Reality overlay telling nurses’ stories, was unveiled at an official dedication ceremony on Valentine’s Day. (CNW Group/Canadian Nurses Association)

“WITHOUT NURSES, THERE CAN BE NO HEALTH-CARE. WE NEED NURSES TO KNOW THAT PEOPLE LIVING IN CANADA HAVE THEIR BACKS.”

enhanced data collection. Nurses also deserve safe working conditions, which should include immediate deployment of mental health resources targeted to health-care workers, and additional efforts to ensure safe patient-to-nurse ratios.

“If we don’t care for our nurses,” said CNA spokesperson and JUNO award-winning Indigenous singer-songwriter Susan Aglukark, “how can we expect them to care for us? The nursing profession is on the brink of collapse. Nurses are burnt out, demoralized and have little left to give – and yet they still show up.”

The latest statistics indicate alarming numbers for the nursing profession and Canada’s healthcare system at large:
• Rates of anxiety and depression among nurses has increased over 40 per cent and the Omicron variant’s surge in recent weeks has only added to this number.
• Preliminary studies conducted by the Healthy Professional Worker Partnership show that one in three nurses has given serious thought to leaving their health care facility and/or the profession altogether. Critical care shortages have been further exacerbated by large numbers of health workers being unable to work due to isolation requirements.
• While the pandemic has taken its toll on all Canadians, healthcare workers unsurprisingly top the list. A recent poll from Canada Life and Mental Health Research Canada, in which CNA was a participant, found that a staggering 66 per cent of nurses report workplace burnout – practically doubling the national average of 35 per cent.

Added Guest: “Without nurses, there can be no health-care. We need nurses to know that people living in Canada have their backs.”

To see more of the mural and learn about the project and Canadian Nurses Association’s broader mandate, visit www.WeAreNurses.ca

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New technology can help break the breast cancer surgery backlog

By Fazila Seker

As the COVID-19 pandemic continues to overwhelm Canada’s healthcare system, its long-term consequences on hospital care are becoming clear. The massive surgical backlog that has built up in Canadian hospitals since 2020 – particularly in cancer care – has come with a profound cost for patients and their families.

In Ontario alone, hospitals are facing a backlog of 327,800 surgeries. According to a recent report, some provinces are facing wait times of up to 36 days for breast cancer, 46 days for lung cancer, 55 days for colorectal cancer, 84 days for bladder cancer, and 112 days for prostate cancer, in contrast to the national goal of 10 days.

We’ve known since the beginning of the pandemic that delays in care can have life-or-death consequences for patients – particularly for people living with cancer. According to the Canadian Cancer Society, delaying cancer surgery by just a few weeks can increase the risk of death by around 10 per cent. However, as we have all seen, COVID remains unpredictable – and even a small surge in patients in an already overwhelmed system can have profound effects on wait times. Canadian healthcare leaders need to find new ways to help make hospitals more resilient – which means having the right people and the right resources in place to manage sudden surges in admissions.

To create that resilience, it’s important to understand that the current cancer surgery backlog is not only because of the shortage of beds caused by waves of COVID, but also because hospitals have adjusted workflow and scheduling to minimize overcrowding and ensure physical distancing. More physical distance means that more time needs to be set aside for appointments to reduce the possibility of overlapping procedures and to properly clean and disinfect areas after use. While all of this is necessary to help reduce the risk of infection, these safety measures have also led to fewer patients being seen and fewer procedures being performed.

One way to help solve the backlog is for hospitals to adopt newer and better technology that can help make surgeries more efficient while improving the patient experience.

For example, many hospitals still use wire-guided localization, a way to mark the location of a tumour before surgery, by inserting wires into the patient’s breast. It’s a technique that hasn’t changed much in 50 years. Wire-guided localization demands a lot of coordination among the patient, radiologist, surgeon and pathologist because the procedure has to be done on the same day as the surgery. This can create scheduling challenges for all the people involved as well as for the hospital itself.

Wire-guided localization is particularly challenging and anxiety-inducing for patients. Because the tumour has to be marked on the same day as the surgery, it can mean a long day spent waiting at the hospital between the two procedures. As part of the wire-guided procedure, the patient needs to fast the whole time, which can sometimes lead to fainting. Patients often need to sit around in a hospital gown as they wait for an operating room to open up, while also trying to avoid accidentally snagging their gown on the protruding wire. And finally, the wire has also been known to become displaced or transected during surgery, which can lead to inaccuracy and additional procedures.

Instead of relying on this method, hospitals should consider a new wire-free technology where the marker can be implanted several days ahead of the surgery – meaning the patient doesn’t need to have their radiology appointment on the same day as their surgery. During the surgery, the MOLLI Wand® tells the surgeon the exact position of the marker, which is a much easier way to locate the tumour, more precisely remove it, and produce better cosmetic results for the patient – because it allows for smaller incisions to be made, even in hidden areas.

From a hospital perspective, wire-free technology allows for a more flexible approach when it comes to scheduling surgeries, reduces the impact of unforeseen delays in radiology, and increases the number of surgeries that can be performed in a day. Just by “decoupling” localization from surgery, care teams can improve their workflows to make care for patients more timely and create a better overall experience. When hospitals take this step, it leads to a 34 per cent increase in the scheduling capacity of radiology departments and a 41 per cent increase in breast-conserving surgery programs. In short, wire-free localization provides a better experience before, during, and after surgery for patients, for the radiologist who helps to locate the tumour, and for the surgeon who has to remove it.

The COVID-19 pandemic has had a devastating impact on the healthcare system as a whole, and cancer care in particular. For people who work in hospitals, improving their workflows, clearing cancer surgery backlogs and making sure people can continue to have faith in their local hospital are all vital concerns.

As hospitals and administrators explore new ways to increase efficiency in the face of these wait-time challenges, it’s important that the changes that are ultimately adopted are not just efficient for the hospitals, but centred on the patient, too.

Fazila Seker Ph.D. is CEO and co-founder of MOLLI Surgical.
Environmental services lead quality improvement initiatives and innovate in the face of the pandemic

By Natalie Bruce

When we talk about innovation we tend to think of state of the art technology or breakthrough ideas that result in revolutionary changes in the way we do our business. Often this occurs as a result of strategic planning, relentless research and discipline. However, this is not always the case. In the face of the pandemic many in healthcare including Environmental Service Departments (EVS) were forced to address countless challenges in the absence of additional resources, and without compromising best practice and patient safety.

EVS departments are vital in the prevention of healthcare-associated infections and communicable diseases, including COVID-19. During the first wave of the COVID-19 pandemic supply chain disruption was one of the greatest threats for EVS to effectively complete their necessary work. Simply being able to access disinfectants was very difficult and in some cases impossible. Jenn Worboy, the EVS Manager at Peterborough Health Centre, Ontario, recalls at the beginning they were not able to access any hospital disinfectants from their supplier. “We needed to be very creative”, says Jenn. “One of the large national office supply stores ended up supplying us with disinfectant, so we were one of the lucky ones; we never had to go without”. Thinking outside the box to obtain disinfectant was the norm in the first wave. Some EVS departments recycled disinfectant containers, refilled them with available product, and sourced replacement wipes to ensure disinfectants were readily available for use by frontline staff. Some needed to quickly redistribute product to meet equipment manufacturers’ instructions for use (MFUs). Radiology equipment and hemodialysis machines, for example, have very specific MFU requirements, and simply using any disinfectant would not only jeopardize the integrity of the equipment but negate the warranty of such important and expensive medical equipment. At one hospital, an expedited review of all disinfectants was conducted, supply was monitored very closely, and products were sorted and redistributed. Not only were they able to successfully follow MFUs and best practice, but they found opportunities for efficiencies that they may not have otherwise.

Staffing shortages on top of the already increased workload continue to be an immense challenge for EVS. The very basic pandemic necessities of increased isolation rooms and increased use of alcohol-based hand rub have resulted in exponential workload for EVS. Chris Fougere, the EVS Supervisor at Lakeridge Health in Ontario, states “It has been very challenging and we are running as lean as possible without sacrificing excellent service, but the team is fatigued. The silver lining through all of this is the great teamwork and collaboration despite the added workload on the team. Some days what is accomplished is just short of a miracle.” With the staffing shortage, EVS leadership teams need to increase training and hiring. Fougere also reports the continuous recruitment and training to ensure he has the “people power” has been one of the greatest challenges. Some facilities have reviewed their training programs, and have implemented standard work and other strategies to expedite on-boarding of new EVS staff without sacrificing the quality of training, while at the same time ensuring staff are feeling comfortable on the frontline.

Despite the staffing shortages experienced throughout the country, EVS teams are making an unanticipated impact on the care of those suffering from COVID-19. Worboy explains, “We (EVS) are in patients’ rooms for a minimum of 15 minutes every day and many patients look forward to our arrival.” Isolation can be a very lonely experience, and the EVS team can make a positive change in the patient’s hospital experience. As the pandemic rages on and the world continues to struggle with COVID-19, our EVS teams across the country continue to find creative solutions to solve the many challenges in maintaining environmental hygiene best practice and ensuring patient safety. Their ongoing perseverance to improve process and innovate is a fine example that will help us get through the pandemic. Their ability to redefine EVS process during stressful circumstances is an example of how innovation can result from perseverance, dedication and creative thinking, without the need for high-tech or expensive solutions.
Computer model shows the best ways to slow the spread of COVID-19

By Ryon Jones

Researchers at the University of Waterloo created the first computational model that simulates many variables affecting the transmission of COVID-19 to slow the spread of variants.

The model takes raw data already in use to forecast case numbers and hospitalizations, and then adds other factors, such as vaccination rates, the use of masks and lockdowns, and the number of breakthrough infections.

The researchers based their computational model on Ontario’s recent experience with COVID-19 and data from the Ontario COVID-19 Science Advisory Table.

“We were actually building the model when the Delta variant was still the dominant one in Ontario,” said Anita Layton, professor of applied mathematics at Waterloo and Canada 150 Research Chair in mathematical biology and medicine. “We simulated a variant that was similar to Omicron, and the model is helpful for understanding whatever variants will come next.”

The research team can change the parameters of the computational model to see what would happen with a new variant. It can also show what it would take to stop variants that are more contagious than others. As a result, the model can show where vaccination levels need to be or what levels of restrictions are necessary to keep a new variant at bay.

“It includes vaccination and different vaccine types, delays in second and third doses, the impacts of restrictions and even the competition among different variants of concern,” said Mehrshad Sadria, a PhD student in applied mathematics at Waterloo who also worked on the new model. “We want policymakers and stakeholders to have the most pertinent information so they can make the best decisions.”

The researchers plan to develop the model to include even more factors that influence the spread of COVID-19 in specific communities. “We’d like to investigate how people of different ages are impacted and compare different levels of vaccination between and within age groups,” Layton said. “We’re also looking to make it more refined so we can focus on specific regions of Ontario, which can then be helpful for looking at resource distribution.”

The research team’s paper on the computational model appears in Scientific Reports. The project grew from a research collaboration in the University Health Network and expanded with rapid research funding from the Canadian Institutes of Health Research.

Ryon Jones works in media relations at Waterloo University.
Diverting medical waste, yes we can!

By Mariete Ferreira

Hospitals are the second largest contributors to landfills after the food industry, but it shouldn’t be. Common misconceptions in hospitals is that all waste either in the operating room or in other parts of hospital is considered contaminated when it really isn’t. Cancelled operations, patients attending to a loved one or visiting for a check up and throwing away PPE that they wear over their street clothes contribute to the excess waste ending up in landfills every day.

Eighty per cent of operating room waste is generated before the patient enters the room and most still ends up as biohazardous waste. This waste either gets incinerated or ends up in garbage heaps.

Traditionally, the plastics industry has considered this operating room waste is “clean.” Companies that sell medical consumables like gowns and drapes, neglect to educate their customers on the difference between soiled and contaminated versus clean and excess waste. When you consider the cancellation of an operating room, all this clean waste that sits on back tables cannot be used on the next procedure and ends up in a garbage bag when it should be in a recycling bag. These very fibres usually made from polypropylene five plastic are sought after by industry to be recycled into pellets which then could be melted down and made into other products such as bed pans and trays or now medical grade fabrics to make gowns and masks.

Andy Straisfeld, a former medical sales rep for Kimberly Clark Medical, and is now an internationally podcasted expert on hospital waste recycling and PPE recently said, “There’s gold in the garbage but at the same time, there’s also a prosperity in that garbage if we can eliminate the landfill, if we can eliminate the plastic waste, if we can reclaim that and create industry and give back to Mother Nature and give back to our economy and give back to our to us as citizens, you know, in cost savings to the hospitals, then we’ve achieved everything that we wanted to achieve that everybody’s been crying for.”

Since the onset of Covid 19 and the concern that over 68,000 tonnes of used masks and PPE coupled with over four times as much generated by the healthcare section that over 68,000 tonnes of used masks and PPE coupled with over four times as much generated by healthcare in Canada is leading to an environmental disaster, a few companies and associations have entered into the scene to help turn the tide.

Companies like MEA Health and Lifecycle Revive in the PPE/Healthcare space and manufacturing associations like CAPPEM (Canadian Association of PPE manufacturers) are showing responsibility in recycling at the factory, hospital and retail level.

Straisfeld notes that the onus should be on medical manufacturing and suppliers to be part of solution rather than part of the problem. “When it comes to sustainability, are companies holding customers by the hand?” Straisfeld asks. “Sadly, it’s usually a frustrating thing that corporations say, ‘hey, my job is just to make the product, the person who uses the product, they have to deal with it. No, you got to help that person. You got to take them by the hand and you got to help them understand what is our there in form of recycling and sustainability options.”

However, organizations like the Canadian Coalition for Green Healthcare and other independent health networks in Canada have been working at developing strategic initiatives in landfill diversion, strengthening supply chain management to purchase “green and sustainable” At the Federal level, the ISED ministry (innovation, science and economic development) legislation is being drafted to promote “environmentally friendly and compostable fabric and garments” as well as drawing up guidelines for plastic manufacturers to work towards a “zero net” outcome to deal with future waste.

“Canada consumes over six million metric tons of plastics a year. And only nine per cent of it is recycled. That’s a very small quantity... help is here with programs that is going to help the world with a reduction of pollution from the PPE that the pandemic created and generated. But also moving forward... the manufacturing scrap or support is going to generate more plastics for the plastics industry, recycled economy that is going to help plastic manufacturers be competitive,” says Edy Vega, President of MEA Health.

Once challenged to ignore recycled plastics, the North American plastics industry is actively looking for feedstock that healthcare used to churn out by the tonne every hour prior to Covid. Signs are promising, and indications show that healthcare may be entering into a new age of sustainability and environmental stewardship now that industry is seeking to be a willing partner.

Mariete Ferreira is Business Development/Marketing Manager and partner at MEA Health Corporation
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For years I’ve been fairly certain that a pandemic will occur in my lifetime. The optimist in me always hoped not. The scientist in me knew otherwise. So, on Wednesday, March 11, 2020, when the pandemic was declared, I was not surprised.

But – even for me – the extent of what we are experiencing with the spread of COVID-19 is beyond what I could have imagined.

Another surprise has been how markedly my work has changed in the last 22 months. I went from having one, to two full-time jobs. And, I created the second job!

Two days after the World Health Organization (WHO) declared the pandemic, I was sitting in my office with Dr. Raphael Ximenes, one of my postdoctoral fellows at Toronto General Hospital Research Institute (TGHRI), talking about COVID. We asked ourselves, how might this virus play out in Ontario? And, as modellers, we asked, what could we focus on to inform Ontario public health policy?

As our conversation deepened, we reflected on the alarming TV news images coming out of Italy showing the dire effects on patients of the lack of ventilators and overrun hospital Intensive Care Units (ICUs). Could what was happening in Italy happen here? Those newscasts certainly added urgency to our conversations.

We called in Stephen Mac, one of my PhD students, who had done modelling for another project that we thought might be helpful. Then we brought in Dr. Kali Barrett, another one of my students, who is also a UHN critical care physician, and Dr. David Naimark one of my long-time modelling colleagues. We kept challenging ourselves: what modelling would be most useful? What are the important questions for Ontarians? And, how quickly could we generate our predictions?

We knew time was of the essence. The news from Italy kept coming up in our conversation. And then it struck us how we could contribute. By Saturday, March 14, we started modelling to predict ICU use for Ontario. We took into account the Italian case trajectory, the South Korean situation, which had done really well at that time, and a third one – something in between. That’s how it all started.

By Wednesday, March 18, one week after the WHO declaration, we had a one-page forecast with bullet points. We shared our modelling with UHN leadership, the Ontario Ministry of Health (MOH), Public Health Ontario, and via a website we created, the COVID-19 Modelling Collaborative.

We had received no directives. We just did it.

And it’s naïve to think now, but we wondered if anyone would notice. That notion was quickly extinguished. Within 24 hours CBC TV’s The National was calling for an interview. The headline was pretty stark: Hospitals scramble to secure more ventilators amid coronavirus outbreak – CBC News

Within weeks of our one-page brief, the Ontario Modelling Consensus Table (MCT) was established. I was one of the inaugural members and have been co-chair since Summer 2020. Through the MCT, we established a framework for members to access MOH data to support modelling teams across the province, and in turn provide model predictions to Ontario government agencies and the public through our partnership with the Science Table.

One of the MCT’s guiding principles has been consensus. This is critically important. First, because of the impact and gravity of decision-making in a pandemic. We also knew no single model should inform policy given the substantial uncertainty. Each team approaches the same question, but often conceptualizes and structures a model differently. So even for the exact same scenarios, predictions will differ, and then usually there are a range of “what if” questions, i.e. scenarios of interest. To arrive at consensus requires context expertise in modelling as well as the Ontario situation across many domains. I believe this consensus approach has been critical to why the Ontario MCT has been so successful.

Over time, the modelling process both at MCT and the COVID-19 Modelling Collaborative team became more refined and we expanded the range of questions and “what ifs” to examine. We benefited greatly from being a diverse and collaborative team that grew to include social scientists, mathematicians, epidemiologists, healthcare workers, and public servants.

The pace of our modelling work has been a revelation. We had to learn to adapt to the insatiable demand for knowledge.

As researchers, prior to the pandemic, we were used to taking months
and years to gather data, analyze trends, and present findings. For nearly two years now, that research timeline was compressed into weeks and days. The speed of modelling, while maintaining rigorous scientific standards, has been key in providing timely insight. It is critical to Ontario planning public health action at a time of great uncertainty and urgency. We will deliver a forecast and oftentimes within days the government is reacting to our modelling with new or revised protocols.

Of course, the biggest fear hanging over us about working so fast is what if we are wrong? To this day, we feel the gravity of every model we deliver. Public health action informed by the model predictions affects every Ontarian. Thank goodness for our years of training and experience to provide the modelling along with insightful interpretation and context. And, working in multidisciplinary teams has never been more important. The work is very rewarding. We know providing this type of modelling evidence informs decisions that impact the pandemic trajectory in a positive way. That helps make things better. And above all – helps save lives.

No question I have felt the pressure. Borne out of a feeling of the weight of our responsibility. All of us doing this modelling are volunteers. And, we share a profound sense of responsibility to decision-makers, to the many stakeholders, and the people of Ontario. If there is a positive in all this, I am grateful for the fact that we have raised the profile of the science of modelling. As the pandemic unfolded the work we do and the method of research behind it became part of mainstream media reporting. Canadians now know our work is essential to, and intertwined with, good health-care practice.

My day job is in the field of health economics, where we assess the value of a health intervention, and evaluate whether it provides good value for taxpayer dollars. We use a mix of simulation modelling and real-world data analysis. With modelling, we can figure out whether, and under which conditions, an intervention could work in real life. And we analyze real-world big data to inform the simulation models. In fact, as if to foreshadow what was to come, just months before the spread of COVID-19, I actually gave a talk at UHN about the potential fallout of a pandemic. (Watch that presentation starting at 1:06:10 in Science in the 6ix – Spotlight on UHN Research – YouTube.)

The worldwide spread of COVID-19 exposed our lack of preparedness, highlighting the need for more investment in pandemic preparedness and disease prevention to preserve and protect public health. One cannot separate public health and the economy. They go together. If the population is not healthy, then the economy doesn’t work either. Throughout, there hasn’t been much funding into pandemic preparedness research, nor to build capacity to do this type of work when it’s needed. We were not prepared for this pandemic. We’ve been doing many things on the fly, in real time. Learning as we go.

Modelling is vital to help us anticipate the future. And, we already see research that indicates there WILL be another pandemic. We don’t know when. And, we don’t know the extent of it. My one hope is that we will be better prepared. That work has already begun. Because I for one am determined to not let the lessons of the COVID-19 pandemic be forgotten.
With a COVID-19 positivity rate of 13 per cent and more than 1,300 Ontarians in hospital sick with the virus, the government’s plan to ease public health restrictions on Feb. 17 and lift most on March 1, including proof of vaccination requirements, puts Ontarians waiting for procedure and surgeries in danger of further delays, says the Registered Nurses’ Association of Ontario (RNAO). Given Ontario’s continued nursing crisis and the catastrophic backlog of surgical procedures, it is crucial the government maintains mandates to allow the health system to stabilize and resume health services for all, not only persons with COVID-19. On Feb. 9, Minister of Health Christine Elliott said there weren’t any imminent plans to remove the vaccine certificates, yet today the government changed its course. “Nurses recognize the importance of lifting public health restrictions when evidence indicates it’s safe to do so, however, at a time that hospitals continue to be taxed and most health resources are occupied with COVID-19 patients, it’s wrong to drop key public health measures like vaccine certificates,” says RNAO CEO Dr. Doris Grinspun. “Proof of vaccination and masking must continue until surgeries and other procedures deemed non-urgent are no longer delayed,” Grinspun urges.

Premier Ford announced businesses can choose to maintain the proof of vaccination requirement in their establishments after the mandate is lifted, but RNAO says the onus should not be placed on businesses. “Business owners have faced enough hardship throughout the COVID-19 pandemic and should not be subject to the harassment of non-compliance if they choose to request proof of vaccination from patrons, especially during these volatile times,” Grinspun adds.

In addition, only half of children ages 5-11 in Ontario have received one dose of the COVID-19 vaccine and approximately 20 per cent have received both, so the vaccine mandate must continue to be an important means to both protect children and encourage remaining Ontarians who have not already done so to get vaccinated. “The government said it themselves only last week that they would reopen the province slowly, but yet again they’re moving too soon and too quickly,” says RNAO President Morgan Hoffarth. “Nurses continue to be on the forefront of care and urge the government to maintain vaccine passports as these encourage people to get vaccinated which must continue to be a key priority to allow the health system to stabilize.”

Although the government didn’t specify a date to lift its mask mandate, Hoffarth says “the government must continue to mandate masking in all enclosed public spaces for the foreseeable future. Well-fitted masks have shown to decrease transmission and are an effective layer of public health protection.”
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Tuberculosis: A pandemic overshadowed by another pandemic

By Eftyhia Helis

For the past two years, COVID-19 has taken over the world. It has made us mindful of viruses spreading through the air. It has taught us about the importance of public health measures and vaccines. It has brought “masks,” “isolation,” “contact tracing,” and “testing” into our common vocabulary.

But another, similar infectious disease affects millions of people worldwide. Before COVID, it caused the highest number of deaths globally from an infectious disease. The disease is tuberculosis. Tuberculosis (TB) has been around thousands of years. For many, TB might be an unknown disease or a disease that belongs to the past. However, for millions of people worldwide, TB is a reality. Although the incidence of TB in Canada is low, some populations are disproportionately affected. At the time of this article, there are TB outbreaks in at least two regions in Canada.

TB is often called “a social disease with medical dimensions,” highlighting the critical role that social conditions and health inequities play in its spread among vulnerable populations.

TO IMPROVE TREATMENT ADHERENCE, IT’S RECOMMENDED THAT PEOPLE RECEIVE TREATMENT IN A CLINIC SO THEY CAN BE OBSERVED BY A TRAINED HEALTH PROFESSIONAL WHILE THEY’RE TAKING THEIR MEDICATIONS.

While Canada and the global community have agreed to end TB by 2030, COVID has reversed any related progress. In this context, this year’s World TB Day on March 24 aims to highlight “the urgent need to invest resources to ramp up the fight against TB and achieve the commitments to end TB made by global leaders.”

CADTH – an independent, not-for-profit organization responsible for providing health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, tests, and procedures – identified TB as a topic of interest among several jurisdictions in Canada. Guided by input from TB stakeholders, CADTH reviewed the clinical evidence and guidelines on topics related to the prevention, diagnosis, treatment, and management of TB. Below are some examples of evidence needs expressed by these stakeholders and related findings from the CADTH reviews.

TB VACCINES

Although more than one vaccine was quickly developed for COVID-19, there’s only one vaccine for TB. This vaccine, Bacillus Calmette-Guérin (BCG), has been in use since 1921. In Canada, BCG is used for high-risk groups, including infants in communities with high risk of infection and those working in occupations with a higher risk of TB exposure (e.g., health care workers). Although this vaccine is widely used around the world, questions about its effectiveness and safety remain.

The available research suggests that, in people with healthy immune systems, the BCG vaccine is effective at preventing TB infection (protection ranged from 49% to 85%), including pulmonary TB (TB affecting the lungs). However, this research is limited, of low-quality, and might also be considered outdated. The protective effect of the vaccine may also diminish over time and information on possible side effects is limited because they are rarely reported and researched.

SCREENING TESTS FOR LATENT TB INFECTION

While the symptoms of active TB (persistent cough, fever, night sweats, weight loss) make it easy to diagnose, people with latent TB infection (when TB bacteria live in the body but are inactive) don’t have symptoms. Although people with latent TB infection (LTBI) can’t spread TB to others, LTBI has the potential to develop into active TB. That’s why LTBI screening and treatment is important.

To confirm if a person has LTBI, two tests are commonly used: a skin test (tuberculin skin test [TST]) or a blood test (interferon gamma release assay [IGRA]). IGRA appears to be more accurate in some populations (e.g., those vaccinated with BCG). However, it isn’t always available, particularly in rural and remote communities, because of infrastructure challenges for transporting the blood. Research on the use of IGRA for LTBI screening in rural and remote populations is also lacking.

TREATMENT OPTIONS

TB treatment consists of a combination of medications that are taken for 6 months or longer. Adherence to treatment for the entire duration is critical for curing the disease and preventing any remaining TB bacteria from becoming resistant to medications. Adherence to this strict treatment sched-
EVIDENCE MATTERS

Tuberculosis (TB) treatment is challenging for TB patients. Therefore, shorter treatment regimens have been suggested. Research into 4-month regimens for treating active TB suggests they may be as effective and safe as the 6-month regimen. The effectiveness of these shortened treatment regimens depends on the combination of drugs and the dose schedule.

MANAGEMENT APPROACHES

To improve treatment adherence, it’s recommended that people receive treatment in a clinic so they can be observed by a trained health professional while they’re taking their medications. This is called direct observational therapy (DOT). However, research suggests that DOT could be just as effective if provided by a family member and as effective or more effective when provided at home, at work, or in the community. Observing treatment remotely over a video connection also appears to be an effective alternative to DOT, if resources are available.

CADTH’s review found significant research gaps related to TB care. Because rates of TB, and the resources needed to control it, vary significantly across Canada, context-specific approaches are needed. Lessons learned from the COVID-19 pandemic could contribute to improved approaches for generating new research and supporting effective TB care in Canada and worldwide.

 spitey Helis is a Knowledge Mobilization Officer at CADTH. CADTH’s Repository of TB Evidence and Resources can be found at tuberculosis.cadth.ca. If you’d like to learn more about CADTH, visit cadth.ca, follow us on Twitter @CADTH_ACMTS, or speak to a Liaison Officer in your region: cadth.ca/Liaison-Officers.

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Addressing the global antiviral deficit

By Jeremy Carver and Michel Chrétien

Canada has welcomed antivirals as a new weapon in the fight to contain the COVID-19 pandemic and alleviate the overcrowding of our hospitals and intensive-care units (ICU). Health Canada’s approval of Pfizer’s antiviral, Paxlovid, has evoked an enthusiastic response from many politicians, physicians and journalists. This endorsement of the key role for antivirals is long overdue.

In the rush to acquire vaccines, Canada overlooked the need to simultaneously create an antiviral development strategy. We need to make up for lost time.

Antivirals are essential to ending this pandemic and getting Canada back on a path of new normalcy.

It’s imperative that our federal government create a robust, sustainable, organization dedicated to delivering more antivirals as part of our commitment to improving the global response to pandemics.

Antivirals are essential to ending this pandemic and getting Canada back on a path of new normalcy. To avoid the emergence of drug-resistant SARS-CoV-2, many more antivirals will be needed.

When AZT was first approved in 1987 as a treatment for HIV, it was the only drug available. Now, thirty-five years later, there are more than 30 treatments available, and in the right combinations, drug resistance can be avoided, and symptoms managed.

Another public health benefit of antivirals is that the treatment of infected individuals at the time of diagnosis can lower their viral load and reduce transmission to immediate contacts. This has been shown with triple therapy for HIV and Tamiflu for influenza.

Antiviral treatment also reduces the severity of symptoms, benefiting the patient, reducing time in hospital or ICUs, and saving the health care system added costs.

We also need treatments for the surviving patients who are experiencing long-COVID symptoms, such as chronic fatigue and fibromyalgia, cardio-pulmonary sequelae, renal failure, anxiety or depression.

How could this be expanded to be successful?

We believe, that in addition to this Centre, Canada should create a highly focused new entity – a global collaboration for antiviral discovery and development. The mission of the new collaboration should be to establish a not-for-profit antiviral drug development pathway for academic discoveries -- all the way to patients.

We suggest that such a collaboration be made up of two parts: a focused research organization (FRO) dedicated to antiviral development, embedded in a new academic Network of Centres of Excellence (NCE) focused on antiviral discovery. Canada should urgently launch a competition for the new NCE that could bring together the medicinal chemists, structural biologists, pharmacologists and virologists that will be needed to discover new antiviral drug candidates.

The new collaboration would work in partnership with existing Canadian facilities, such as the pre-clinical testing capability at the National Microbiology Laboratory level 3 and 4 biosafety labs or the new National Research Council manufacturing facilities in Montreal. Any collaboration agreements between these entities, or others, should follow open-science protocols.

Canadian scientists and institutions would then be able to participate meaningfully in the billion-dollar philanthropic efforts represented by the World Health Organization’s therapeutics pillar of ACT-A. Such a collaboration with low- and middle-income countries, would foster global efforts for better pandemic preparedness and response.

One illustrative attempt to discover new COVID treatments has been nicknamed the “COVID Moonshot.”

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Contracted by the US Government, Dentec Safety received a multimillion-dollar PPE grant as part of the Coronavirus Aid, Relief, and Economic Security Act (CARES Act, a $2 trillion Coronavirus stimulus bill provided by the US Federal Government), and a contract for 125,000 respirators with 500,000 replacement filters for distribution to US healthcare workers.

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It is an international collaborative effort to discover potential therapeutics that was kick-started through Twitter. Even though this collaboration has rapidly succeeded in finding drug candidates, the “Moonshot” founders note that they are now at the “hard slog” stage – the need for capital to conduct numerous regulated trials, and the subsequent manufacturing and distribution of antivirals globally once they are approved by the regulatory authorities.

For too long the global community has assumed that the pharmaceutical industry will do the “hard slog” and has resigned itself to paying the exorbitant prices that follow. The experience of the Moonshot group emphasizes the need for a not-for-profit pathway for the development of treatments derived from academic collaborations. A global collaboration for antiviral discovery and development would be a pioneering initiative that Canada is well positioned to lead.

Jeremy Carver PhD is an Emeritus Professor in the Faculty of Medicine, University of Toronto, and President, CEO and co-founder of the not-for-profit International Consortium on Anti-Virals/Consortium International sur les Thérapies Antivirals. Michel Chrétien, FRS, MD is Professeur Émérite de recherche, Institut de recherches cliniques de Montréal and a co-founder of the not-for-profit International Consortium on Anti-Virals/Consortium International sur les Thérapies Antivirals.

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Climate change has been identified as the largest global health threat of the 21st century, and tackling it could be our greatest health opportunity. The healthcare system plays a major role in responding to and mitigating the effects of climate change. Not only does climate change weaken the health system's ability to respond to mounting threats, the healthcare sector is itself a significant contributor to climate change, with Canadian healthcare being responsible for 4.6 per cent of Canada's national greenhouse gas emissions. Healthcare professionals are reported to be the most trusted professionals in the public eye and are thus well-positioned to initiate and lead discussions on the health effects of climate change. The 2020 Report of the Lancet Countdown states that “doctors, nurses, and the broader profession have a central role in health system adaptation and mitigation, in understanding and maximizing the health benefits of any intervention, and in communicating the need for an accelerated response.”

The Health and Environment Adaptive Response Task Force (HEART) is a national collective of medical students across Canada that was established by the Canadian Federation of Medical Students (CFMS) in 2016. HEART’s goal is to coordinate medical student-led advocacy efforts nationally regarding current issues in environmental health and climate change. In order to mobilize Canadian medical students to improve the environmental performance of the Canadian healthcare system, the CFMS HEART Committee has launched “Project Green Healthcare/Projet Vert la Santé” (PGH/PVLS) in September 2020. PGH/PVLS is the first-of-its-kind national community of practice that equips medical student teams with funding and partners them with physicians and health sector leaders from the Canadian Association of Physicians (CAPE) for the Environment and the Canadian Coalition of Green Healthcare (CCGHC) to conduct quality improvement and medical education projects to advance net-zero Canadian healthcare.

In its inaugural year, the PGH/PVLS program empowered nine medical student teams of over 50 medical students distributed over seven medical schools in five Canadian provinces and partnered them with over 80 interdisciplinary experts, administrative offices, physicians, and green teams. Notable achievements of our inaugural cohort include developing point-of-care decision aids to encourage anesthesiologists in Hamilton, ON to choose gases with lower environmental impacts and launching online modules on the environmental benefits of the Choosing Wisely primary care guidelines for family physicians: https://www.greenchoosingwisely.com/. The new 21-22 PGH/PVLS cohort consists of 9 medical student teams distributed across seven provinces. Many of the new cohort of PGH/PVLS medical student teams have made it their mission to tackle healthcare waste; they are implementing quality improvement projects to encourage recycling and optimize waste streaming in intensive care units, emergency departments and operating rooms.

There is a critical need to build a net-zero Canadian healthcare service that promotes patient, community and planetary health in a climate emergency. Our national community of practice empowers medical student-driven local innovation to permit timely wins in low-carbon healthcare delivery and inform the rapid scale-up of effective local quality improvement project designs onto the national scale. PGH/PVLS is always recruiting motivated healthcare providers, hospital staff, and healthcare administrators across Canada who would be interested in partnering with medical students to access local resources and navigate the healthcare system and administration to execute collaborative healthcare sustainability quality improvement projects. If you are interested in mentoring a local Project Green Healthcare/Projet Vert la Santé medical student team, please complete this google form here: bit.ly/ProjectGreenHealthcareInterestForm. For more details about the program and our teams, please visit https://www.cfms.org/what-we-do/global-health/greening-healthcare-initiative

This article was provided by Project Green Healthcare.
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Sim Sam makes simulated emergency very real

By Ben Maycock

Surgical Sam, the world’s first breathing, bleeding, beating heart, high fidelity team trainer for pediatric surgery, is allowing IWK physicians and specialist teams to practice scenarios and emergencies that are very rarely encountered. Affectionately known as Sim Sam, the mannequin allows operating room and intensive care teams to immerse themselves in simulations that improve performance, safety and outcomes for children.

“Sim Sam allows us to do the most realistic simulation of an extra-corporeal membrane oxygenation (ECMO) scenario where an ECMO machine provides life support by acting as the patient’s heart and lungs,” says Dr. David Horne, a pediatric cardiac surgeon at IWK Health. “It is a high acuity, low occurrence (HALO) event so it is highly stressful and demands extreme specialization and coordination of multiple disciplines.”

Sim Sam allows the whole multi-disciplinary team (cardiac surgery, pediatric intensive care unit (PICU), respiratory therapists, operating room nurses, perfusionists and ECMO specialists) to practice their roles during ECMO emergencies.

“With Sim Sam, we are able to have vital signs change, with a change in a beating heart and pulse, do actual intubation and ventilation of the lungs and see them move, fibrillate or arrest the heart, distend it, make it bleed, and most importantly – place Sim Sam on ECMO with our actual equipment,” says Horne. “During our inaugural Sim Sam simulation, many clinicians said the simulation was so “real” that they felt the same stress they had encountered in real life ECMO scenarios.”

The realism is the product of the technical and contextual fidelity that Sim SAM brings to simulation. In addition to highly specialized clinical and technical skills, ECMO initiation requires robust leadership, teamwork and communication across and within multiple disciplines and teams. Simulation has become important grounding for health profession teams to hone what are often called “soft skills” but in fact are crucial to providing excellence in patient care.

Surgical Sam was developed by the Boston Children’s Hospital and The Chamberlain Group, a company that got its start in the movie business. (They designed the iconic “bullet time” effect in the Matrix movies). The company now uses their special effects know-how to create medical training tools – hearts, blood vessels, internal organs, limbs, etc. – that mimic the touch, feel and resilience of actual tissues.

“As an ECMO specialist and respiratory therapist at the IWK, having Sim Sam to practice emergencies and routines is so important,” says Jennifer MacNeil. “We are a low volume ECMO center and do frequent simulations to improve our skills, Sim Sam takes this practice to a whole new level, by providing real time feedback in all situations.”

The IWK averages two to six patients a year that need ECMO support.

Let’s put healthcare ahead of politics in 2022

By Linda Silas

After close to two years on the front lines of this pandemic, nurses are feeling tapped-out, exasperated and dispirited. Understaffing has plagued our healthcare system for more than a decade, but COVID-19 has only made it worse. Years of government neglect have created untenable working conditions, with acute levels of stress wreaking havoc on nurses’ mental health.

One nurse described the weight of not being able to provide the care patients deserve as “crushing.” Another nurse told us she was leaving the profession – a profession she used to love – because “no help is coming and no one seems to care.”

It’s no wonder so many nurses are looking for the exit sign. Job vacancies in healthcare and social assistance soared over the summer, representing one in seven openings in Canada – the largest increase of any sector. Openings for registered nurses and registered psychiatric nurses saw the largest increase of all occupations.

Recently, the Ontario Science Table found rates of severe burnout above 60 per cent among Canadian physicians, nurses and other healthcare professionals – a drastic jump from the equally alarming 30 to 40 per cent prevalence rate affecting the sector just a year before.

Nurses and their co-workers are beyond the point of exhaustion and exasperated at the inaction of politicians.

If we want to retain nurses and other healthcare workers, they need immediate support — they need some semblance of hope.

Provinces regularly resort to short-sighted tactics to address their nursing shortage. Often, these amount to nothing but an expensive shell game, drawing nurses from one region to another. This approach will not end this crisis. We need to look upstream to address root causes, such as a lack of appropriate data to inform evidence-based health workforce planning. Governments desperately need this data to better forecast healthcare needs and build a truly responsive healthcare system.

Recently, over 60 national health professional organizations collectively urged the federal government to create a national health workforce agency and provide immediate targeted funding to support retention and recruitment efforts.

We simply can’t afford to continue planning in the dark when it comes to healthcare. It’s time to stop pretending that a responsive healthcare system will materialize out of thin air, absent the data, tools and leadership needed to do the job.

While the Prime Minister and Premiers are inarguably busy managing the pandemic, the nursing shortage is a looming crisis that threatens to undermine those very efforts — without a healthcare team, a bed is just a bed. This crisis demands equal and urgent governmental action and collaboration. It requires working across partisan and jurisdictional lines.

Now more than ever, nurses and their colleagues are desperate for optimism. In 2022, let’s choose to put healthcare ahead of politics.
New Green health care support available for Ontario health sector

By Myles Sergeant, Sujane Kandasamy and Linda Varangu

In Canada, about five percent of national greenhouse gas (GHG) emissions come from our health care system, which has also been singled out as one of the most polluting health systems per capita across the globe. Health care workers can play a major role in reducing these emissions by integrating low carbon practices into their everyday activities.

Ontario’s health care workforce can get support for taking actions to reduce climate-related emissions from a new initiative. PEACH HEALTH, which stands for Partnerships for Environmental Action by Clinicians and Communities for Hospitals and Healthcare Facilities began six months ago with a group of volunteers starting to reach out to and connect health care environmental champions across Ontario. The essence of this provincial initiative is to engage, encourage, and empower those in the health care sector to take climate action at their work site.

An illustration of what the ideal green hospital might look like is on the website, (www.PeachHealthOntario.com) and helps demonstrate where to take actions, while the Resources section of the website provides examples. The eight categories of resources include Leadership, Education, Supply Chain, Drugs and Devices, Buildings and Energy, Food, Transportation and Natural Systems. The PEACH website serves as a central hub to share information about new initiatives and is also a platform for everyone to share ideas, resources or even collaborate on projects big or small.

Climate champions in Ontario’s health system are showing us what can be done. These champions can be individual leaders or teams with a common goal. They can be smaller projects that lead to larger ones, or system-wide approaches. Any step forward helps build momentum.

Dr. Sanjiv Mathur is an anesthesiologist working at Health Sciences North in Sudbury. Dr. Mathur championed removal of the most potent volatile anesthetic gas, Desflurane, from the hospital formulary, resulting in a reduction of 723 tonnes of GHGs per year.

The Children’s Hospital of Eastern Ontario (CHEO) in Ottawa recently announced their ‘Kick the Carbon’ strategy where approved targets will see CHEO reduce its carbon emissions by five percent each year, totaling 30% by 2025 from a 2019 baseline. This will amount to approximately 2,000 tonnes of emissions saved every year.

The University Health Network’s Toronto Western Hospital and Krembil Discovery Tower will soon be getting 90 per cent of their heating and cooling requirements from the world’s largest raw wastewater energy transfer (WET) system. The WET system will use heat from wastewater flowing through a nearby municipal sewer and significantly reduce the hospital’s usage of electricity and natural gas systems. This system will reduce direct GHGs by approximately 10,000 metric tonnes each year.

At Hamilton Health Sciences, the Smart Commute program offers options to reduce GHG emissions related to travel. Active transportation is supported by providing secure and weather-protected bike racks, lockers, and advocating for better bike lane connections to the hospital.

Clinicians and other health care workers can take action to reduce GHG emissions now and here are some ideas on how to get started:

1. Advocate for putting climate change and sustainability into your facility strategic plan.
2. Identify like-minded climate change and sustainability champions at your facility to build momentum.
3. Work with or create a ‘green’ or ‘sustainability’ team and/or become a champion of a specific initiative.
4. Integrate climate change and sustainability actions into everyday practices and agendas. Check out the PEACH website to see what others are doing!

We believe that health care workers must be actively involved, if we are going to make our hospitals greener. And PEACH HEALTH is here to help. Visit their website at www.PeachHealthOntario.com or email us at PEACH peachforhealth@gmail.com to find out more and get connected.
Comprehensive medication review: a prerequisite for patient/medication safety

By Stephanie Lo, Geoffery Ng, and Certina Ho

Jessica is a 68-year-old patient admitted to the emergency department, presenting with shortness of breath and a decreased level of consciousness. She did not bring her home medications, but her medical care team would like to assess her current medications. Conducting a comprehensive medication history is necessary to determine what and how Jessica has been taking her medications at home, so that the right medical care and medication therapy management can be provided to her at the hospital.

WHAT IS A COMPREHENSIVE MEDICATION HISTORY?

A medication history is vital to determine the safety and efficacy of a patient’s current medication regimen and guide future medication therapy management. Thus, a medication history must be current, comprehensive, and be able to alert to any potential medication discrepancies. The most common types of medication discrepancies are as follows.

• Omission discrepancy occurs when a necessary medication is not provided to a patient. This may include home medications not being ordered or administered to the patient while the patient is in hospital, or when discharge medications not being provided or included in discharge prescriptions or instructions when patient is ready to return home.

• Commission discrepancy happens when a patient’s prescription order includes discontinued medications, duplicated medications administered via different routes (e.g., in both oral and parenteral routes) or multiple drugs within the same therapeutic class being co-administered for the same indication.

• Description discrepancy involves missed doses, incorrect/inappropriate strength, extra doses, or different administration times/frequencies of the medication(s) being prescribed.

TRANSITIONS OF CARE: VULNERABLE MOMENTS OF MEDICATION DISCREPANCIES

Medication discrepancies may occur anytime during medication therapy management of a patient but knowing when and where a patient may be most vulnerable to medication discrepancies is key to ensuring patient/medication safety.

RESOURCES FOR CONDUCTING A COMPREHENSIVE MEDICATION REVIEW

There are many existing resources that outline the steps in completing a comprehensive medication review by healthcare providers. For example:

• Top 10 Practical Tips for Interviewing Patients (ismp-canada.org/primarycaremedrecguide/2_interviewingPatients.htm)

• Best Possible Medication History Interview Guide (ismp-canada.org/download/MedRec/SHN_medcard_09_EN.pdf)

We also prepared an infographic to highlight the tips and stepwise approach involved when conducting a comprehensive medication review. In addition, patient engagement is key to conducting a successful comprehensive medication review. Aside from medications, it is also important to ask about patient’s social history (Figure 1). A resource that is recommended for healthcare practitioners to introduce to patients to learn more about their medications is as follows:

• 5 Questions to Ask About Your Medications (https://www.ismp-canada.org/medrec/5questions.htm)

RETURNING TO JESSICA’S CASE

After conducting a comprehensive medication history with Jessica, it was determined that her shortness of breath (SOB) was likely caused by an incorrect administration of her chronic obstructive pulmonary disease (COPD) medication. Instead of using her COPD inhaler once daily to control and prevent her COPD symptoms, she reported using it only when she had trouble breathing. This “description discrepancy” has likely caused her respiratory symptoms and SOB. After providing her with the proper administration instructions, Jessica experienced significant improvements in her breathing.

Regarding her decreased level of consciousness, it was also revealed when inquiring about her social history (as part of the comprehensive medication history process) that Jessica has been a chronic smoker. She smokes a pack a day but has not been smoking for the past five days. This might explain her decreased mental status and prompt the medical care team to discuss and initiate smoking cessation therapy with her. Since then, Jessica’s mental status has improved and was soon ready for discharge.

TAKE-HOME MESSAGE

Conducting a comprehensive medication review is an essential part of the patient care process, especially at high-risk points/transitions of care. It is a prerequisite for patient/medication safety. Using a stepwise approach (Figure 1) can ensure accuracy and efficiency to the benefit of the patient and care provider.

Stephanie Lo and Geoffery Ng are PharmD Students at the School of Pharmacy, University of Waterloo; and Certina Ho is an Assistant Professor at the Department of Psychiatry and Leslie Dan Faculty of Pharmacy, University of Toronto.
Take part in an important project by sharing your experiences with reusable PPE

By Autumn Sypus

The Canadian Coalition for Green Health Care (the Coalition) encourages Canadian health care workers who use personal protective equipment (PPE) to take part in a short survey as part of the Coalition’s new initiative, Reducing Health Care-Related PPE and Medical Single Use Plastic Waste Through Circular Economy Principles.

The project, made possible with funding support from Environment and Climate Change Canada, will demonstrate how hospital-generated PPE and medical single-use plastics can be successfully managed by applying the principles of a circular economy: reduce, reuse and recycle as much as possible before the materials are disposed of.

The confidential five-minute online survey seeks to gather health care workers’ experiences using reusable PPE in clinical settings.

Specifically, participants will be asked for their opinion on comfort, safety and satisfaction with reusable PPE, in particular: reusable gowns, reusable elastomeric respirator, googles, and face shields.

If you are a health care worker who has used one or more of these PPE, you are encouraged to share your experiences, both positive or negative, at the survey link: https://conta.cc/3GZVycV

For those engaged in social media, you are invited to share a short testimonial, photo or video of you and/or your team wearing reusable PPE. Please use hashtag #reusablePPEproject.

Your post may be selected to appear in the Coalition’s upcoming video or on its social media channels.

For reusable PPE to be adopted into the health system, users must be and feel safe and comfortable. Reusable PPE is generally more environmentally sustainable and less susceptible to supply chain interruptions than single-use PPE.

The Canadian Coalition for Green Health Care is a national not-for profit coalition of health care organizations and professionals, a green health care resource network and a national catalyst for environmental stewardship. Our vision is a Canadian health system that is environmentally sustainable, climate-resilient and net zero. www.greenhealthcare.ca

Autumn Sypus works in communications at the Canadian Coalition for Green Health Care autumn@greenhealthcare.ca.
By Dan Rubinstein

By 2037, an estimated 10.4 million Canadians will be 65 or older, about 25 per cent of the population compared to 18 per cent in 2021. Roughly 90 per cent will want to live in their own homes for as long as possible despite becoming less independent and requiring more support.

This demographic wave, coupled with the mobility and cognition changes and medical conditions associated with aging, will create significant challenges and opportunities as demand grows for homecare services and long-term care beds.

The race is on to develop solutions and one promising approach can be found at Carleton University in Ottawa, where a team of researchers, in partnership with the Bruyère Research Institute and AGE-WELL Network of Centres of Excellence, is developing supportive smart home systems to help older adults age in place safely and with dignity.

“We’re bringing together emerging technology, aging adults, industry partners and clinical expertise,” says Bruce Wallace, executive director of the Sensors and Analytics for Monitoring Mobility and Memory (SAM3) AGE-WELL National Innovation Hub. “It’s time to get this technology out of the laboratory and into the community.”

When the COVID-19 pandemic began, Wallace took as many sensors as he could from his labs on campus and at Bruyère and set them up in his house to continue the research.

He’s experimenting with electronic pads under mattresses and on the floor. Wirelessly connected to a computer, the sensors track when someone gets up from bed, and motion sensors in the hallway monitor where they go.

If they are disoriented and walk into the living room at 3 a.m. instead of the bathroom – the most frequent destination for seniors at that hour – a pre-recorded voice coming from a home speaker could let them know where they are. Or, pre-emptively, the hallway and bathroom lights could turn on to guide them (and a light atop a walker could switch on as a reminder for those who use a mobility tool).

Open/closed sensors on the exterior doors of the smart home can detect whether they go outside, which is a risk for somebody suffering from dementia, and send a text or phone alert to a relative that their loved one might be wandering.

Meanwhile, door open/closed sensors on the fridge could track whether they go outside, which is a risk for somebody suffering from dementia, and send a text or phone alert to a relative that their loved one might be wandering.

Open/closed sensors on the fridge could track whether they’re preparing breakfast in the morning, and a thermal camera focused on the stove could tell whether they’re cooking something nutritious – and remind them to turn off the burner when finished.

Wallace, who has more than 100 sensors in his house, believes this research could become reality within the next few years.

People would have to be comfortable with and consent to the use of this technology, but studies show that seniors would indeed trade some privacy for greater independence, a conclusion affirmed by trials in the homes of about 20 volunteers in Ottawa.

“Impact sensing is one of the keys to success. It means people won’t need to wear devices and cameras won’t capture or share images. The sensors gather data that can generate a safety alert or build a profile to help family members and healthcare professionals assess a senior’s behaviour and determine when and how to intervene.

The technology could also be used in long-term care facilities to help overnight staff keep residents safe. If somebody gets out of bed and doesn’t return within a certain amount of time, a notification could prompt staff to check in.

More than a dozen Carleton students are helping fine-tune the smart home technology. Engineering master’s student Ashi Agarwal is using an artificial intelligence-equipped camera from industry partner Al turretView to measure walking speed, which can be an indicator of declining health.

“Gait analysis can tell you a lot about how somebody is doing,” says Agarwal, whose camera creates a stick figure-like image of research subjects, rather than photos or video. “This information could help doctors get insights into everyday life.”

“This leading research greatly benefits this ever-increasing demographic of the aging Canadian population,” says Rafik Goubran, Carleton’s
vice-president (Research and International), a sensors and data analytics researcher and one of the leaders of SAM3. “It enables our seniors to live safely and independently in their own homes while providing hands-on multidisciplinary experience to our students.”

From looking at the big picture and working closely with patients, Bruyère Memory Program physician and SAM3 co-founder Dr. Frank Knoefel sees the need for this type of high-tech assistance.

Dr. Frank Knoefel, Bruyère Memory Program physician and SAM3 co-founder

“Our society has a serious issue,” he says about Canada’s aging population. “How are we going to care for all these people? Technology will never replace clinicians, but it can perform a type of triage.

“At the end of the day, it’s about quality of life. People want to stay at home and remain independent for as long as they can, and this technology can help. “My hope for aging Canadians... is that we will have supportive smart homes that will allow us to age in place.”

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Canada’s largest MS clinic opens state-of-the-art $42-million centre

The BARLO MS Centre to advance MS care, education, and research

By Hayley Mick and Jennifer Stranges

Hayley Mick is the manager, media and digital strategy at Unity Health Toronto; Jennifer Stranges is a senior communications advisor at Unity Health Toronto.

Last fall, Canada’s largest clinic caring for people with Multiple Sclerosis (MS) celebrated the grand opening of the BARLO MS Centre, ushering in a new era of patient care and research at St. Michael’s Hospital.

The centre, which occupies the top two floors of the hospital’s new 17-storey Peter Gilgan Patient Care Tower, is a 30,000 square foot, state-of-the-art facility designed to offer coordinated care for patients living with MS, an autoimmune disease of the central nervous system.

People living with MS can now see a dedicated healthcare team in one location, including neurologists, nurses, social workers, neuropsychologists, physiotherapists, occupational therapists and speech therapists, neuropsychiatrists, and physiatrists. During their visit, they will be surrounded by art, soaring views and spectacular architecture, meant to both enhance the patient experience and make sure that their stay is accessible and customized to their needs.

“Since opening in 1982, St. Michael’s MS clinic has always addressed its patients’ social and psychological needs, as well as medical needs. Now, with our new BARLO MS Centre, we’re thrilled that we can match the quality of our space to our expertise,” said Dr. Tim Rutledge, President and CEO of Unity Health Toronto.

Canada has one of the world’s highest rates of MS and the reason is not well understood. MS affects two to three times as many women as men and generally strikes people in their early 30s. While there are treatments, there is currently no cure.

At the BARLO MS Centre, researchers will use laboratory and imaging techniques and epidemiological methods to understand how various biological and environmental factors contribute to MS disease onset and disease course.

The centre is led by Dr. Jiwon Oh, who is among the few clinician-scientists in the world using multiple advanced imaging techniques in the spinal cord and brain to help predict who will and who won’t develop MS, even before symptoms appear.

“The BARLO MS Centre will bring together the best of clinical care and research in one setting," she said. “Designed with patient-centered goals in mind, the centre will enable a free exchange of ideas between research learnings and clinical practice to help people living with MS achieve better outcomes.”

The BARLO MS Centre is named to honour the two families who donated $20 million to make it possible: John and Jocelyn Barford, and Jon and Nancy Love. More than 400 generous donors contributed to St. Michael’s Foundation’s $42-million fundraising campaign.

“Thanks to our fierce community of donors, volunteers, hospital partners and patients, and the vision and leadership of the Barford and Love Families, we are thrilled with the opening of the BARLO MS Centre – a transformational milestone, not only for St. Michael’s, but for the world. With the support of more than 400 donors, we have raised 100 per cent of our $42 million fundraising goal, making this new landmark in MS care possible,” said Lili Litwin, President of St. Michael’s Hospital Foundation.

Patients will have access to unique facilities tailored to their needs, including a customized gymnasium for physiotherapy and occupational therapy. In the Activities of Daily Living Lab, patients will learn how to modify their homes, and how to create the supports they need to manage in their daily lives.

The centre also has dedicated high-tech lecture spaces for teams to discuss cases, learn new strategies and treatment techniques, and teach the next generation of specialists.

Each year, St. Michael’s sees 7,500 people living with MS. They include Ardra Shephard, an advocate for those living with MS.

“What’s so special about the BARLO MS Centre is that the clinic recognizes that, while medication is a key component of treating MS, there are many additional ways that people with MS need support. To have holistic care, all in one location with a team that communicates internally feels like an exciting new approach to living well with MS.”

Hayley Mick and Jennifer Stranges work in communications at Unity Health.
Energy team saves hospital network more than half a million dollars in energy costs

By Elizabeth Benner

Part of the magic of energy management is that though it’s not always noticeable, the changes make a significant impact on the environment and often, cost savings.

Over the past two years, the Unity Health Toronto Energy Team has been tackling projects to make the hospital’s buildings more energy efficient through the Save on Energy Program, an energy rebate program offered through the Independent Electricity System Operator (IESO). The IESO directs the operation of the bulk electrical system in Ontario.

In its second year of this program, Unity Health has accrued more than half a million dollars through IESO projects. The second term report listed annual energy savings of 2.3 million kilowatt hour (kWh). This amount of electricity is sufficient to power about 280 homes for one year. This energy savings equates to a cost savings of $606,970, with almost $300,000 as a direct result from reduced energy consumption. The team has been approved for a third year in the program.

Since Energy Team was formed in 2019, the team have achieved an accumulative saving of 4.8 million kWh energy.

“T’m very proud of our team for their accomplishments,” said Katelyn Poyntz, Director of Project Engineering and Energy.

Within the Project Engineering team, the Energy team consists of two Energy Project Managers, Emily Huang and Shailesh Abhang, and an Energy and Sustainability Project Engineer, Thanish Munas. In the past year, they have found ways to reduce energy consumption in unassuming ways, such as installing fan Variable Frequency Drives and changing light bulbs to more energy efficient options. For the current year, the Energy Team plans to install Variable Frequency Drives on fans and pumps to reduce energy consumption at St. Michael’s Hospital and St. Joseph’s Health Centre.

Prior to enrolling in the program, Poyntz had already been looking into smaller projects where she could reduce energy consumption across the Unity Health sites. Applications require forward thinking and pre-planning where an organization has to submit applications several months in advance and carry out detailed calculations to demonstrate savings in order to gain pre-approval. Through the rebates offered by these programs, Poyntz was able to hire Huang as the first Energy Project Manager.

“I’m really passionate about energy management,” said Huang. “I think it’s really cool to make changes without people noticing it. A lot of the projects were done in the mechanical room and you don’t really notice it when you’re enjoying the buildings.”

Although the Energy Manager Program focuses on energy consumption, the projects also allow for renewed infrastructure, operational efficiency, and reliability. With approval for third term, Huang says they’re now considering alternative projects in addition to energy savings.
New palliative care unit designed to improve patient, staff and family experiences

By Anna Wassermann

St. Joseph’s Health Centre of Unity Health Toronto will be home to a new palliative care unit with cozy, cottage-inspired finishes, parts of which overlook Lake Ontario.

The unit, named the Lake House Palliative Care Centre, was made possible by an $11.6-million donation from Hans Koehle, in honour of his late wife, Audree Koehle, who received palliative care at St. Joseph’s in 2015. The gift is thought to be one of the largest donations to palliative care in Canadian history.

“The Koehle family wanted a space that made patients feel empowered, comforted and supported in their final days,” said Maria Dyck, President and CEO of the St. Joseph’s Health Centre Foundation. “The family’s special place was their cottage, which they called the lake house, so it only seemed fitting that we give this new space the same name.”

The 15,000-square-foot unit, which is expected to be completed this summer, will offer 10 large, private patient rooms to accommodate patients’ care teams and loved ones. The unit will feature a kitchen, dining area, work space and education centre to support patients’ families.

Dr. Jennifer Hopfner, Division Head for Palliative Care at St. Joseph’s, said that this consideration for patients and their families is what will set the space apart.

“Our philosophy for end-of-life care is about comfort, symptom management and supporting the whole family,” she said. “This new unit gives us the space and amenities to do that. We have a great palliative care program at St. Joseph’s but we’ve never had a dedicated space for palliative care.”

This unit is also being designed with staff and physician experiences in mind. Large patient rooms will allow interprofessional care teams to gather comfortably, while work stations directly outside the patient rooms will create more efficiency during rounds.

These design considerations are intended to improve education and specialization by providing clinicians with more space to collaborate and share ideas. Dr. Hopfner said that she’s looking forward to the dedicated

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expertise that will develop when the care team starts operating in this new environment.

“At this time, there’s no dedicated multidisciplinary care for patients receiving palliative care, which means that providers are constantly shifting their focus, depending on the patient’s philosophies,” she said. “There are a lot of nuances with end-of-life care. It’s a different skillset that we’ll be able to nurture in our new centre.”

The final piece of the unit is an outpatient clinic for patients who choose to receive palliative care at home. The clinic team will offer pain and symptom management, advanced care planning and support for patients who choose to transition from hospital to home and vice versa.

Dyck says that she can’t wait to see it complete and is grateful to the Redevelopment team at St. Joseph’s for making this space a reality.

“Palliative care is one of our areas of focus at Unity Health and another way that we’re delivering our vision – The best care experiences. Created together ¬ at St. Joseph’s,” she said. “The Lake House Palliative Care Centre will be a special unit for a lot of people and it means a lot to us.”

Anna Wassermann is a senior communications advisor at Unity Health Toronto.
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Synthetic water-resistant padding which allows the skin to breathe.

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An ankle immobilization walker for stability and post injury management.

**Total Contact Casting**
Custom molder to shape of foot to help support patient compliance.

**Gypsona® Roll**
Plaster of Paris Splinting System allows for low-cost all-in-one splinting applications

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