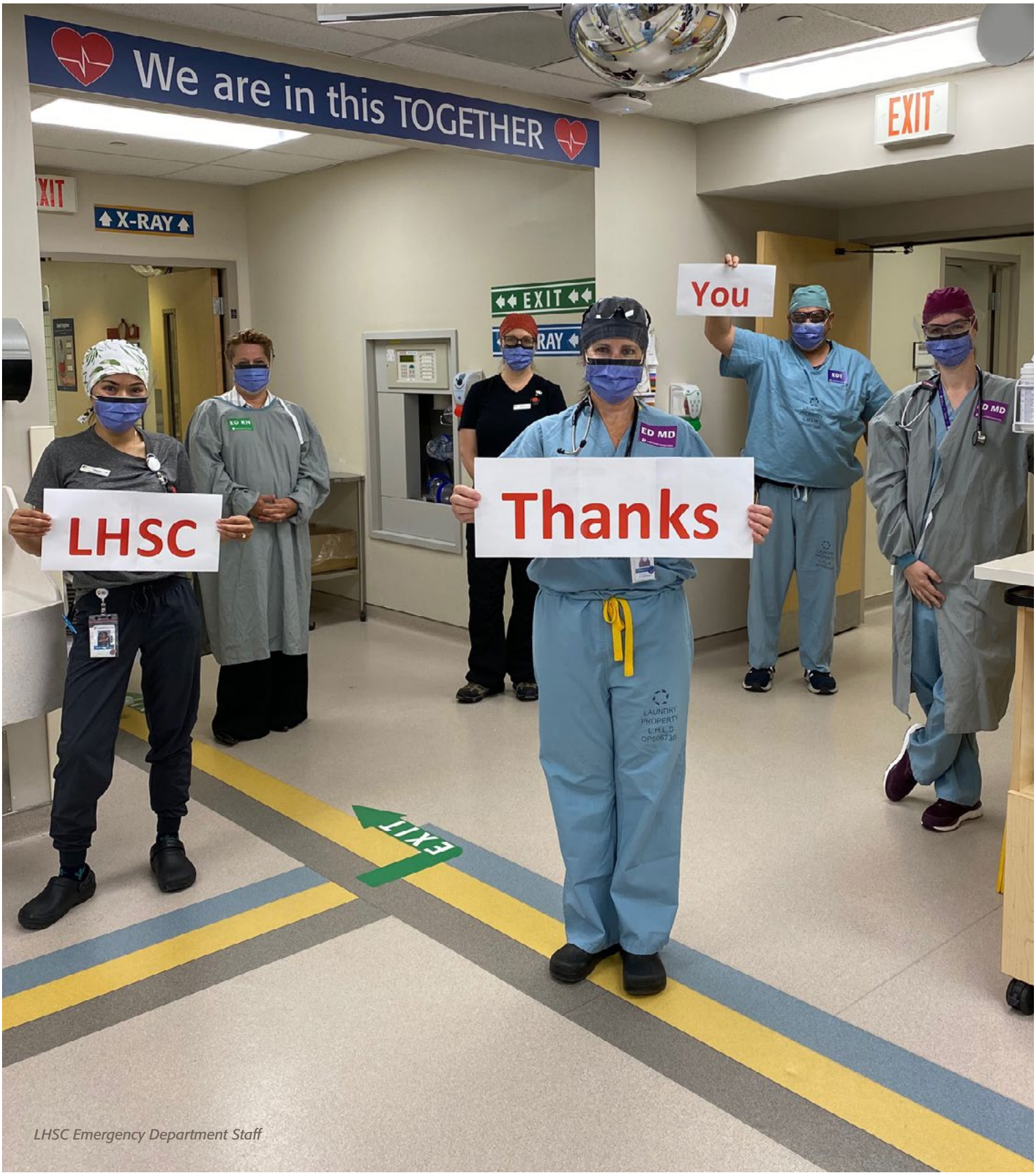
London Health Sciences Foundation

Your IMPACT

ISSUE 04 | SUMMER 2020



LHSC Emergency Department Staff

Your IMPACT

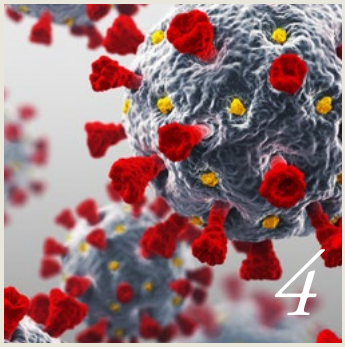
Welcome to the 2020 Summer issue of *Your IMPACT* magazine. Though this year has had its challenges, donors have been with us every step of the way, supporting advanced treatment, education and research at London Health Sciences Centre (LHSC).

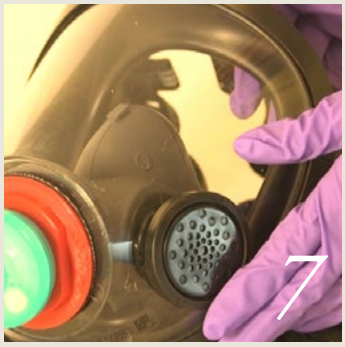
All of the items and projects featured in this magazine are generously supported by you, our donors. Your contributions are making a tremendous impact on enhancing patient care and moving forward life-saving research. Your support is also critical to our hospital's fight against COVID-19.

Quite simply, you are making an incredible difference to the patients and families LHSC cares for each and every day.

Thank you.

On the Cover:
From left to right -
- *Theresa Hua, RN*
- *Elizabeth Baldassarre, Manager, ED*
- *Deneen VanEindhoven, Emergency Department Technician (EDT)*
- *Dr. Christie MacDonald, Interim Chair/Chief, ED Physician*
- *Jim Fayad, EDT*
- *Dr. Allison Meiwald, ED Physician*





The impact of your generosity

MESSAGE FROM THE FOUNDATION CEO

Since the outset of this pandemic I have been overwhelmed by the community support for our hospital and our front-line workers. I want to say thank you, to you our donors, for believing in the power of making a difference.

Our hospital rose to the challenge of this medical crisis. They guided the response and mobilized teams so that staff could remain safe while patients were prioritized.

While I'm encouraged by the slowing trend of COVID-19, we will continue in this battle with the full and comforting knowledge that our donors are with us.

In the spring, we redirected our efforts to support the COVID-19 Response Fund, but we have not taken the momentum away from our other priorities. While the hospital slowly and fully reopens we will be championing the unmet needs of the hospital.

We have all had to adapt to how we live our lives, and for LHSF, how we fundraise. It is out of adversity we have found resilience, fortitude and innovative ways to connect with our community and continue supporting our hospital and front-line staff during the fight against COVID-19.

In this report we bring you the story of a patient's journey with surviving COVID-19. We have stories of progress in COVID-19 research, cancer research, global trials, the opening of an entirely donor-funded operating suite, and a life line for young people in need of mental health care.

These are remarkable times we live in. Throughout this crisis, the support from our community has been unwavering. I'm personally grateful to each of you.

Best regards,

John MacFarlane, BBA, LL.B, MPA
President & CEO
London Health Sciences Foundation

COVID-19 research breakthroughs

First study in the world to identify potential therapeutic targets for COVID-19

The legacy of our estate donors is changing the face of how COVID-19 is tested and treated. Donors who had the foresight to leave gifts in their Wills have positioned LHSF as the lead funder for a globally acclaimed study happening right here in London. Led out of Lawson Health Research Institute, the research arm for LHSC and St. Joseph's Health Care London, this study is the first in the world to profile the immune response to the COVID-19 virus and identify potential targets to treat critically ill patients.

Dr. Douglas Fraser, a paediatric critical care physician and Lawson scientist, along with his team, compared local blood samples of critically ill patients with COVID-19 with samples from patients not infected with the virus.

Reports from scientists and physicians have found that some patients' immune systems go into overdrive when faced with the virus, causing an exaggerated response known as a "cytokine storm" that can cause irreparable damage to the lungs and other organs. Essentially, cytokines help repair the body when released in small doses, but if released into the bloodstream at an unstoppable rate – as is the case for some patients with COVID-19 – they can be fatal. These are the patients who end up in critical care with few known treatment options.

However, Dr. Fraser and his team identified six molecular biomarkers that play a key role in the body's heightened immune response (published in June in *Critical Care Explorations*). He believes that these potential targets in our cells could be treated with therapies that could slow or block this fatal response enough to provide patients with better outcomes.

"Our Ontario-led research is positioned to identify novel COVID-19 therapies that will save lives provincially, nationally and around the world," Dr. Fraser says.

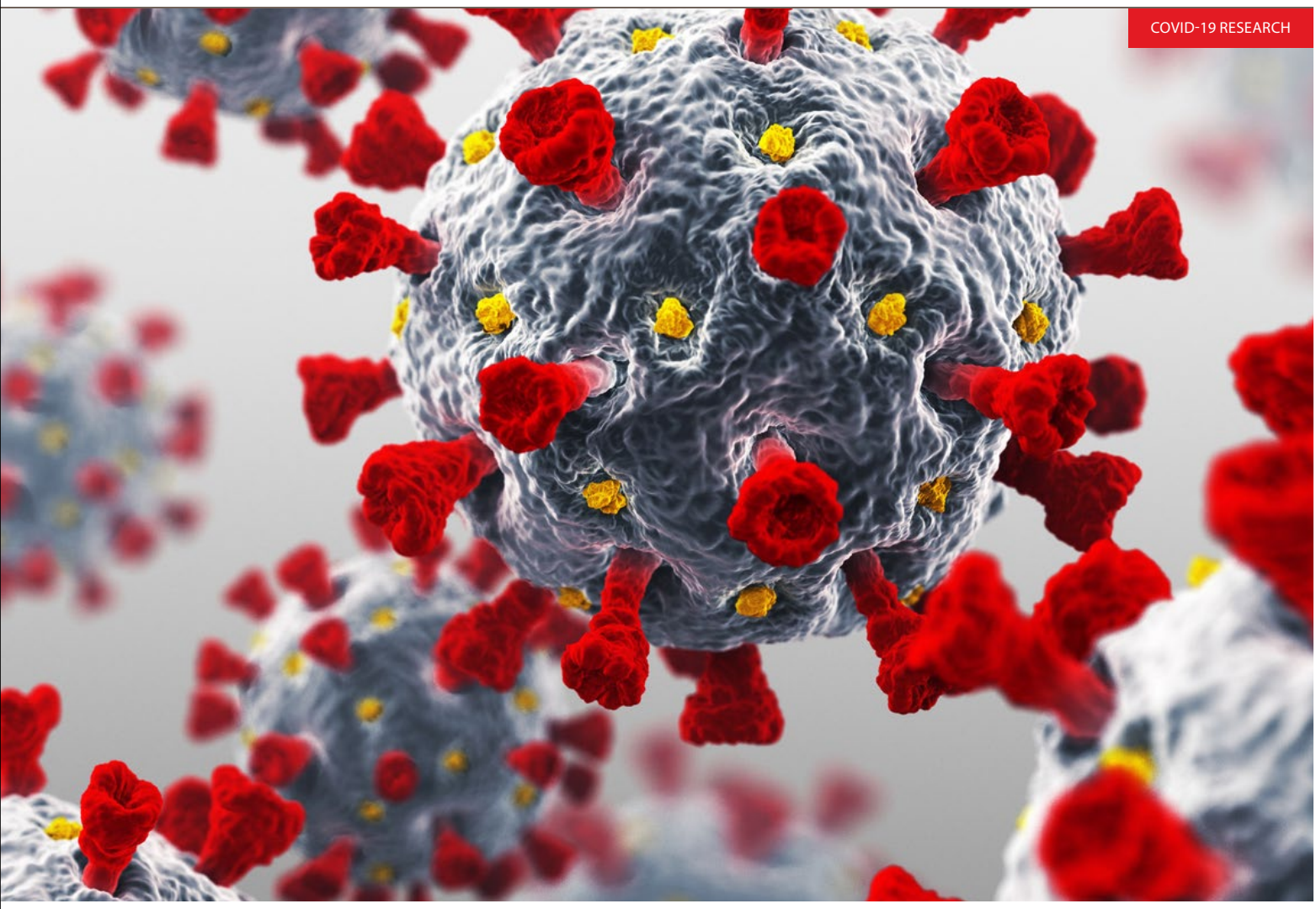
Studying a human protein in the treatment of critically ill COVID-19 patients

Thanks to the help of donors, a local team is the first in the world to study a protein called annexin A5 as a potential therapy for patients with COVID-19.

"In the most severe cases, COVID-19 is complicated by hyperinflammation that can lead to sepsis, acute respiratory distress syndrome (ARDS) and multi-organ failure," says Dr. Claudio Martin, a scientist at Lawson and intensive care physician at LHSC.

Sepsis is a life-threatening condition that occurs when the body's response to an infection is out of balance, triggering hyperinflammation that can damage multiple organs. Many critically ill COVID-19 patients develop sepsis one to two days before ARDS, suggesting that sepsis is a major contributor to the development of respiratory and multi-organ failure.

Led by Dr. Martin, this clinical trial aims to fight sepsis in COVID-19 patients with a manufactured form of annexin A5 – a human protein that has strong anti-inflammatory properties. The team believes the protein will prevent cell death and blood clots associated with COVID-19, thereby preventing respiratory and multi-organ failure and potentially saving patients' lives.



London's participation in a world-leading global trial

"Patients with COVID-19 admitted to the ICU have a high mortality rate, and only supportive therapies are currently available. Our research team of international clinicians/ scientists is uniquely positioned to rapidly identify novel therapeutic targets to optimize the care of critically ill COVID-19 patients."

- Dr. Douglas Fraser

Donations to LHSF's COVID-19 Response Fund are supporting LHSC's involvement in a worldwide World Health Organization trial headquartered in Canada at Sunnybrook Research Institute.

The Solidarity Trial is testing three promising therapies, which are used as therapeutic agents for other illnesses, as treatment for COVID-19. This two-year trial, conducted locally by Lawson through LHSC and St. Joseph's Health Care London sites, will be run in conjunction with countries around the world and is designed to evaluate the efficacy of these drugs in combatting COVID-19.

Global participation means scientists can find answers sooner than if each centre was running its own independent trial, and they can adapt their approaches as the trial progresses.

Dr. Michael Silverman, London's city-wide Chair/Chief of Infectious Diseases and Lawson scientist, is the local principal investigator for the study and is encouraged that donor funding helped facilitate London's involvement in the trial.

"Our engagement in this trial not only allows our patients to benefit from access to potentially helpful agents, it also enhances staff morale in being able to offer specific antiviral therapeutics to our patients while engaging LHSC in a global effort to help rapidly find optimal treatments for this pandemic," Dr. Silverman says.

Life-saving equipment

Ventilators. Testing Kits. Personal Protective Equipment (PPE). We've heard these words repeatedly in the media — the shortages and dire need for more — and our donors heeded the call.

In addition to the incredible community contributions of PPE, shown in this graphic, donors helped LHSC purchase the following equipment, giving patients improved access to the highest level of care:

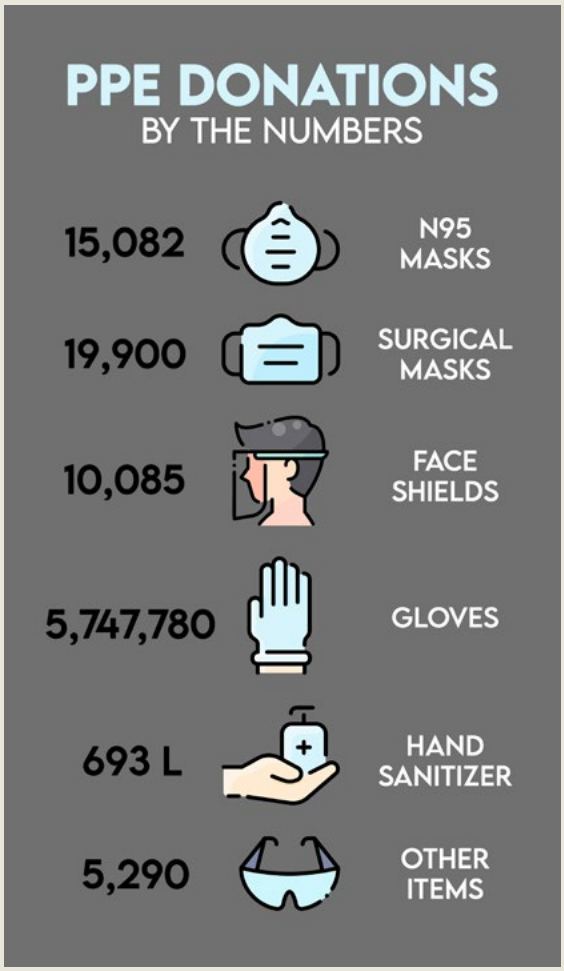
The Gift of Breath: Ventilators are providing life-sustaining oxygen to COVID-19 patients in the critical care unit. In the most severe cases, COVID-19 damages healthy tissue in the lungs, making it hard for the lungs to deliver oxygen to the blood. Mechanical ventilators feed oxygen into the lungs through a tube inserted down the throat, also adding heat and moisture to match the patient's body temperature.

Relief in Seconds: Glidescopes are necessary tools for intubating patients (inserting a breathing tube) and connecting ventilators. The new donor-funded units have disposable parts, which cuts down the time required to prepare the glidescopes between patient use. Doctors can intubate patients at the first signs of airway distress, providing them fast relief from the more severe effects of COVID-19.

Optimal Comfort: Critical care patients are immobilized for long periods of time. New ICU beds outfitted with vital monitors and IV carts are helping to keep them comfortable while their care teams work around the clock to save their lives.

Faster Diagnosis: LHSC began providing COVID-19 tests for 46 patients per day, with a two-day turnaround for results. Through the purchase of DNA extractors, the Pathology and Laboratory Medicine (PaLM) team at LHSC now performs more than 1,300 tests per day. LHSC also offers this testing as community outreach to vulnerable patients in long-term care homes. These DNA extractors help diagnose patients earlier and allow treatment to begin sooner to prevent further spread of the virus.

This essential equipment is improving patient access to care in the Critical Care Unit, and will continue to do so well beyond this time.



Estimates as of June 2020

"Donors have been vital to helping us fight this pandemic," says Dr. Christie MacDonald, Interim Chair/Chief, Emergency Medicine (pictured on the cover). "We are so grateful for their incredible support."

A non-invasive mask for ventilation

A new device that comfortably delivers oxygen to the lungs without the need for intubation could relieve the demand for traditional ventilators and glidescopes.

COVID-19 is spread primarily through inhalation of respiratory droplets. As we know, the most severely ill patients require a ventilator to help them breathe. Unlike invasive ventilators, which require a forced opening of the airway, non-invasive ventilators (BiPAP and CPAP machines) help patients breathe through a mask that provides positive pressure to keep the lungs open and functioning. While non-invasive ventilators may be effective for some COVID-19 patients, their use comes with a much higher risk of spreading infection through airborne droplets. Until now.

A new mask developed at LHSC and Lawson in partnership with University Health Network (UHN) and General Dynamics Land Systems-Canada eliminates that risk. Unlike traditional masks, it creates two tight seals – one around the patient's nose and mouth that connects to the non-invasive ventilators, and another around the face. Patients breathe in and out of a filter that captures any viral particles before they are released into the air.

The new mask, if successful, could put non-invasive ventilators back to work and greatly reduce the pressure on health care systems for traditional ventilators. Thanks to the help of donors, the device is now in clinical trials, with hopes of expanding its use beyond our borders.

"We hope it will help not only those in urban centres like Toronto and London, but people in remote communities around the world," says LHSC emergency physician and Lawson scientist Dr. Tarek Loubani.

In addition to patients with COVID-19, trial participants will include patients with asthma, chronic obstructive pulmonary disease (COPD) and congestive heart failure. The device will be used in emergency departments and has the potential to be used in ICUs, remote nursing stations and ambulances. It has also been designed for easy production (through 3D printing) in resource-strained locations, meaning this donor-supported technology could save lives in some of the most threatened areas of the globe.

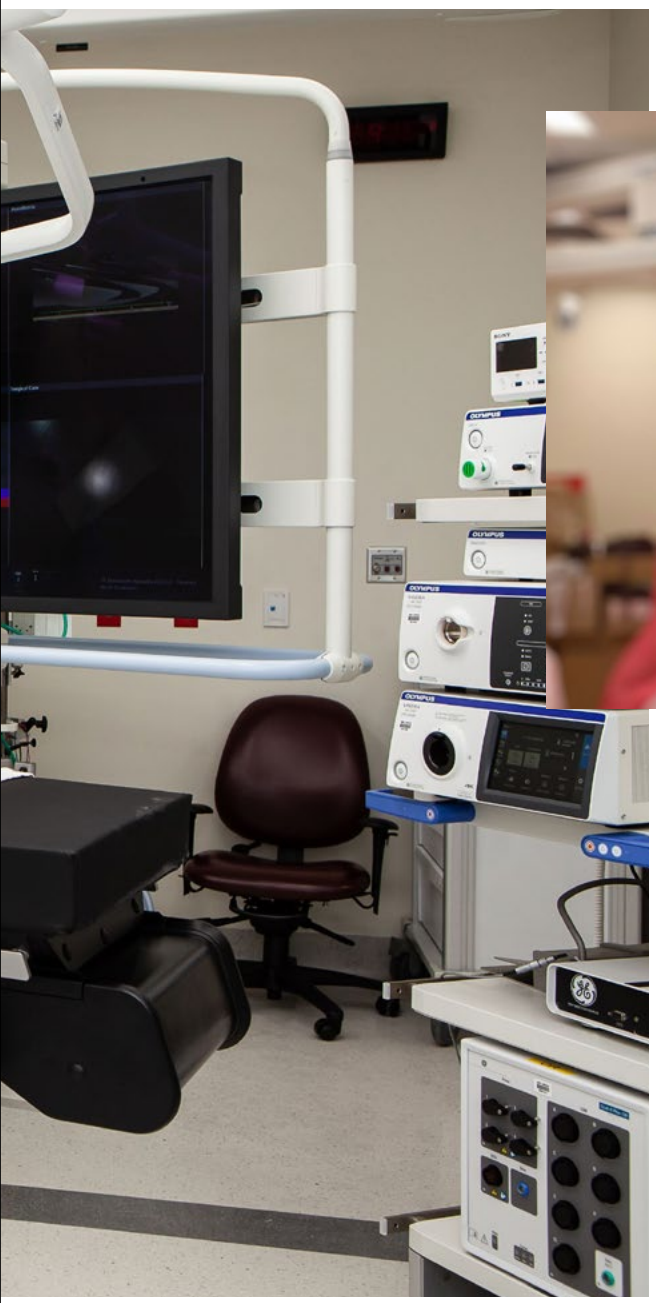
Donor funding is helping Dr. Loubani and his team scale up the prototype of the mask to get it approved by Health Canada and into the hands of clinicians around the world.

The dream of a Cardiac Hybrid OR made a reality

After years of anticipation and an outpouring of generosity from many donors, our community celebrated the opening of the Cardiac Hybrid OR (Operating Room) this past March.

This new operating suite, located at University Hospital, is the first of its kind in Canada and serves as a launching pad for medical discovery while expanding the types of services offered to patients across southwestern Ontario.

The Cardiac Hybrid OR integrates interventional cardiology and cardiac/vascular surgical procedures to provide the most minimally invasive care for patients. It combines life-saving surgical facilities with the resources of a catheterization lab or "cath lab". The cath lab is where non-surgical procedures, such as angioplasties to open clogged arteries, are performed by interventional cardiologists using a continuous x-ray technique called fluoroscopy.



Dr. Michael Chu

"Donors are really what make this successful. Without donor dollars, we would not be able to have this technology in London. It allows us to offer our patients a much broader array of procedures and we are able to provide less invasive operations, faster recovery times and even better care."

– Dr. Michael Chu

Often the Hybrid OR will be used while surgeons perform dual functions at the same time. For example, a high-risk patient could receive a mitral heart valve repair and transcatheter aortic valve replacement implantation (TAVI) under the same anaesthetic. This means patients just have one procedure, which reduces their exposure to infection while shortening their recovery time.

In more challenging circumstances, the Cardiac Hybrid OR will act as a specialized room for emergency surgery. Imagine a heart patient undergoing a routine procedure in a small lab to treat their chest pain. Due to unexpected complications, the patient needs to be rushed to an OR where emergency open-heart surgery is performed, but potential delays in transferring the patient could mean the difference between life and death. That's why a Cardiac Hybrid OR that combines these two spaces in one unit is essential.

"This OR provides us with an exciting opportunity to push the frontiers of medicine. Our entire team is grateful to have donors as partners in delivering world-class care to cardiac patients," says Dr. Michael Chu, Chair/Chief, Cardiac Surgery, LHSC.

Thanks to the incredible vision and dedication of you, our donors, the longtime dream of a Cardiac Hybrid Operating Room is now a reality!

Thinking outside the box for cancer patients: trials research

Clinical trials have the potential to save and extend lives. LHSC clinicians and Lawson scientists are leading the charge in discovering ingenious new ways of treating patients with cancer, in the hopes of implementing novel approaches that could change care.

Priming the body to better treat kidney and skin cancers

Dr. Saman Maleki

Immunotherapy has shown incredible potential over the last decade and has become an increasingly important treatment option for cancers. Yet some immunotherapy drugs can be toxic, forcing the patient to stop treatment and leaving them with no other options but palliative care. Now, there is hope.

Thanks to donor support, Dr. Saman Maleki, a tumour immunologist, and Dr. Ricardo Fernandes, a medical oncologist, are part of a team in London studying whether immunotherapy drugs can be tolerated by altering the composition of patients' gut bacteria through fecal microbial transplantation (FMT) – a treatment method commonly used to treat patients with C.difficile bacterial infections.

For patients with kidney cancer, a powerful cocktail of immunotherapy drugs has been approved for treatment, but these can be highly toxic when they react with the bacteria in patients' digestive systems. That's where altering that bacteria comes in.

"We're one of the first in the world to study FMT for cancer patients," Dr. Maleki says.

Donor support, including a donor-funded Catalyst Grant and other funds, have allowed the team in London to begin offering the combination of immunotherapy with FMT as a trial treatment to patients with kidney cancer.

The PERFORM* trial opened in early 2020 with one patient trialling the treatment and more to be recruited as the impacts of the pandemic subside.

"We have successfully recruited and treated the study's first patient on this trial despite the limitations of COVID-19," Dr. Maleki says. "We opened this trial in record time thanks to donor support that enabled us to hire the right people for the study right away."

FMT is also being tested as a way of increasing the effectiveness of an immunotherapy drug for patients with melanoma (skin cancer). The MIMic* trial, which received widespread media attention in 2019, is the first trial of its kind in Canada for patients with melanoma and is also boosted by generous donor funding.

Dr. Ricardo Fernandes

Locating cancer spread and stopping it in its tracks

Jody Mahon

Dr. David Palma, a radiation oncologist, has been leading the donor-supported international clinical trial SABR-COMET* since 2012 that tests high-dose, targeted (stereotactic) radiation in patients whose cancer has spread to up to five areas of the body, a treatment that can extend or save their lives.

Now, the second phase of the trial is testing the treatment in up to 10 sites in a patient's body, which could save even more lives. Working with cancer scientist Dr. Alison Allan, the research team is looking for markers of cancer activity in the blood, which should provide a way to determine, in the future, which patients are best treated with stereotactic radiation.

As of May 2020, the trial has enrolled about 15 per cent of its target of 159 participants from centres around the world. Donors continue to support this trial that's leading to better outcomes for patients across the globe.

Cancer that has spread to this extent would normally be considered incurable, but it is hoped that by treating all the spots, the cancer may not come back.

"If I hadn't participated in this trial, I don't think I would be here today." – *Grateful Patient Jody Mahon*

A better quality of life for patients with head and neck cancer

Eight years ago, Dr. Anthony Nichols, a head and neck surgeon, and Dr. David Palma launched the world's first clinical trial comparing trans-oral robotic surgery (TORS) against radiation therapy for the treatment of head and neck cancer. The goal was to compare quality of life, particularly swallowing function, between the two groups of research participants. The team published their findings in 2019 and, to their surprise, the participants in the radiation group experienced slightly better swallowing outcomes.

Now they've launched the second phase of the trial, ORATOR2*, which further compares TORS against radiation and chemotherapy. The goal is to reduce the intensity of radiation and chemotherapy to improve quality of life while maintaining survival rates. The team has recruited 47 out of 140 participants in seven hospitals in Canada and one in Australia.

This research is largely driven by individual donors and proceeds from the annual Head and Neck Above Cancer walk, which is going virtual this year on August 16 to raise more money for head and neck cancer research (lhsf.ca/headandneckabovecancer).

"Donor funding lets us pursue clinical trials and high-impact research projects quickly and aggressively," Dr. Nichols says. "This is perhaps the highest impact head and neck cancer trial that has ever been run out of Canada, and we're so grateful for the support."

Dr. Anthony Nichols

*Trial Names:

MIMic - Fecal Microbial Transplantation in Combination with Immunotherapy in Melanoma Patients

PERFORM - Preventing Toxicity in Renal Cancer Patients Treated with Immunotherapy Using Fecal Microbiota Transplantation

ORATOR2 - Primary Radiotherapy Versus Primary Surgery for HPV-Associated Oropharyngeal Cancer

SABR-COMET-10 - Stereotactic Ablative Radiation Therapy for Comprehensive Treatment of Oligometastatic Tumours

On the front lines of youth mental health care

It takes a special person to be able to help new patients at the First Episode Mood and Anxiety Program (FEMAP) open up about their mental health.

Asha Howard is that individual – the friendly, calm and cool social worker who will build trust with new patients, relating to them on a personal level with her easy ability to put herself in others' shoes. Her unique approach helps youth go from scared and withdrawn to open and relaxed.

Asha's vital role as intake social worker is 100 per cent donor funded. More than 140 patients per year go through an intake meeting with Asha before starting treatment, where she'll speak to them for up to two hours to get to know who they are: their background, family life, concerns, and hopes for the future.

"I don't know anywhere else that offers a one-to-two hour intake assessment, but it is critically important," Asha says. "How can you make treatment recommendations for a person after one questionnaire and a quick chat? Mental illness requires a holistic understanding of the person. I love that FEMAP embraces this comprehensive level of care."

After the much-important first meeting, Asha will take her assessment to the FEMAP team of psychiatrists and psychologists, and together, they map out the best treatment path based on peer-reviewed research and the individual's unique needs.

"FEMAP is unique in that there are no set number of appointments," Asha explains. "In most cases, we won't stop seeing them until patients feel confident they have the tools they need to manage their mental health. We're preventing people from experiencing chronic mental illness because our treatment intervenes at an age when their brain is still developing, so we have the potential to really make an impact."

Sometimes young people come to FEMAP and require immediate interventions, meaning that putting them on the waitlist could be a detriment to their safety and well-being. Asha is there to help. She is trained in crisis management and psychotherapy, and can offer that to them briefly for a few sessions while they're waiting to see a psychiatrist, and connects them to other services in the community that can help.

Asha also facilitates therapy groups including a stabilization group for patients who have experienced trauma and a group for anxiety management. Through these groups, she's able to see dramatic transformations as patients journey through their treatment.

"When I see a person go from struggling to thriving, it's incredibly rewarding," Asha says. "I've had patients who barely spoke or who couldn't make eye contact during the intake assessment. Within a few months, they're cracking jokes and telling me about all the amazing things they're doing with their lives."

Asha's role, like all the others at FEMAP, would not exist without donor funding.

"I'm unbelievably thankful that there are so many selfless and compassionate people in our community who believe in our program, and this inspires our entire team every day."

The COVID-19 pandemic has not slowed down Asha and the FEMAP team. They are currently researching the effects of the pandemic on youth mental health to ultimately provide evidence-based care designed to specifically support young people during these times.

"Now, more than ever, we need to direct limited mental health resources to the right places, at the right time," says FEMAP founder and Lawson scientist Dr. Elizabeth Osuch. "This research helps identify the most vulnerable so that we can help them get back to good mental health in a timely way."

Thank you to our donors for supporting essential mental health care through FEMAP.

Your support through the pandemic helps patients like Dennis

Dennis and his wife Patricia fell ill with COVID-19 following a turbulent eight weeks of caring for their hospitalized daughter in Toronto. Their daughter had major surgery and complications, and three weeks following her release, she tested positive for COVID-19. Dennis and Patricia returned to London immediately to self-isolate and notified the Middlesex London Health Unit (MLHU).

Patricia developed a bad cough and shortness of breath, and was very tired for about a week, but she recovered swiftly. Dennis, on the other hand, had a slight cough that quickly escalated into some very scary symptoms.

"I had a horribly bone-dry mouth with a terrible taste and I just felt awful," he recalls. By the time he ended up in the hospital, he was completely exhausted.

Dennis went to University Hospital with severe dehydration. He had been vomiting violently and had lost considerable weight. The care team performed blood work and an x-ray, and treated Dennis with an IV before releasing him home with no admission. Two days later, Dennis got a call from Dr. Michael Nicholson, one of six physicians supporting LHSC's Urgent COVID-19 Care Clinic.

"He said 'Dennis, we've got a bed for you and you need to get in here now,'" Dennis recalls.

The same day, Dennis was admitted to Victoria Hospital in the Respirology Unit, which was just set up as the new isolation unit to specialize in the management of COVID-19 patients not requiring stay in the ICU. Fortunately, he did not require ventilation, but he did need expert care. Over the next five days, doctors, nurses and aides outfitted in full PPE vigilantly monitored his vital signs, did daily blood work, checked his blood pressure and observed his oxygen levels.

Dennis' body and mind were exhausted. "You have the realization when you're fighting this very vicious virus that, with no vaccine, you only have your body to fight it," he says.

Thankfully, the days got better. The only thing Dennis could think of stomaching when he first arrived at the hospital were a liquid diet and bland cereal. By day four, he was longing for scrambled eggs and said he wouldn't be sad if he never saw cereal again. Dr. Nicholson was encouraged by Dennis' returning appetite and sense of humour.

The next day, Dennis was relieved to be advised that he could return home and reunite with his wife, who was still at home isolating herself.

"Within five days, the hospital took me from a very dark place to being able to come home," Dennis says.

"The nurses and support staff were amazing," he adds. "As soon as I entered that isolation room, they were extremely attentive. Dr. Nicholson and the other attending doctors, nurses and support staff were just terrific."

Dennis' follow-up care continues. The MLHU called him every three days for the month following his care to check on him, and the Local Health Integration Network (LHIN) has also called with offers of support. Dr. Nicholson continues to check in with Dennis and connected him with a nutrition specialist so that he can gain back the weight he lost. He will also see him for a full follow-up consultation in two months.

By June, Dennis said his energy levels had recently surged and that he is able to walk around his neighbourhood and exercise in the morning. His wife and daughter are also recovering well.

Thank you to our donors for supporting LHSC's front-line staff while they care for patients during this time and beyond. And thank you to all of LHSC's essential workers for bringing light and hope to a frightening time for patients like Dennis.

London Health Sciences Foundation

747 Base Line Road East, London, ON N6C 2R6
519.685.8409 | foundation@lhsc.on.ca | www.lhsf.ca

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