

INSPIRING CHANGE. MAKING AN IMPACT.

SICKKIDS INNOVATORS

MILESTONE REPORT

Over the past seven years, SickKids Innovators have invested more than \$2 million in high-impact, priority projects. In the fight for children's health, Innovators are making a difference in the lives of kids and families.

Innovators **VS** SickKids Impossible

THE IMPACT OF INNOVATORS

THE PAIN CENTRE: \$100,000 INVESTED (2013)

More than 75 per cent of SickKids patients experience pain. Through innovative pain management and prevention strategies, the Pain Centre at SickKids aims to minimize and eliminate pain for good.

Impact: SickKids Innovators funding supported three conceptual stage research projects, including the use of a small robot that soothes young cancer patients. These studies have informed SickKids and other centres on how to manage pain in less invasive ways, and enables SickKids to seek additional funding for larger-scale studies. The findings have been shared widely at pain conferences and through an Innovators-supported online pain curriculum which has more than 8,000 viewers and 10 education modules.

PAEDIATRIC ADVANCED CARE TEAM: \$190,000 INVESTED (2014)

The Paediatric Advanced Care Team (PACT) provides compassionate, high-quality care to patients and families coping with serious, potentially life-limiting illness. Working with teams across the Hospital, PACT focuses on comfort, quality of life and grief support.

Impact: Thanks to the SickKids Innovators, PACT was able to recruit and train two clinical fellows to manage and serve the over 50 per cent increase in referrals over the last few years. The positions proved so valuable that PACT integrated them onto the team full-time. Now, PACT has five physicians, two of whom were the fellows supported by Innovators.

CENTRE FOR IMAGE-GUIDED INNOVATION & THERAPEUTIC INTERVENTION: \$260,000 INVESTED (2015)

Combining robotics, imaging, and simulation, the Centre for Image-Guided Innovation and Therapeutic Intervention (CIGITI) creates image-guided procedures faster, less painful and safer.

Impact: Innovators' generosity helped support the development of an endoscopic neurosurgical tool used to perform surgery on the brain—a dynamic tool that expands surgeons' dexterity requiring a much smaller incision and a tiny opening of the skull. Building upon this success, the CIGITI team has been able to create a prototype of a similar tool, which can work in tandem with an MRI, vastly improving accuracy. Thanks to Innovators, brain surgeries will become even less invasive and more effective.

THE IMPACT OF INNOVATORS

MEDICAL PSYCHIATRY ALLIANCE: \$320,000 INVESTED (2016)

With the goal of transforming care for patients suffering from both mental and physical illness, the Medical Psychiatry Alliance (MPA) is a collaborative partnership led by SickKids, The Centre for Addiction and Mental Health, Trillium Health Partners and the University of Toronto in conjunction with the Ministry of Health and Long-Term Care.

Impact: Your support for the MPA is helping SickKids identify innovative, holistic interventions that have potential for implementation on a large scale. One example is a project studying the effectiveness of an outpatient treatment program for adolescents 12-18 years who struggle with obesity and psychiatric disorders. The program has shown great potential in helping participants normalize their eating, make healthier choices and manage their mental health.

SICKKIDS-GHANA INITIATIVE \$500,000 INVESTED (2017)

Children and youth make up 30 per cent of Ghana's population, yet there are very few health-care providers properly trained in paediatrics. As a result, more than 51,000 newborns and children under five die each year—often due to preventable illnesses like pneumonia and malaria. To address this problem, SickKids is training nurses in paediatric care. They learn. Kids live.

Impact: Innovators' investment helped support the training of 326 nurses who have graduated from the Associate Programme thus far. Thanks to you, these nurses are now empowering and advocating for vulnerable populations within their home communities using the leadership skills acquired through the Associate Programme.

RNA SEQUENCING FOR CANCER & RARE DISEASES: \$500,000 INVESTED (2018)

Rare diseases and cancer affect more than 500,000 Canadian children and often lead to disabilities and death. At SickKids, up to 70 per cent of our patients have a genetic component to their illness and could benefit from a diagnosis and treatment informed by precision genetic medicine. Currently, genetic testing is costly, only provides a diagnosis for fewer than half of patients with a rare disease, and doesn't detect many genetic changes in tumors (information that could make treatments more effective).

Impact: Thanks to SickKids Innovators, we have created a pilot study to help diagnose nearly 40 per cent of patients with a rare disease. This study aims to test more than 500 patients using a novel form of genetic testing called RNA-sequencing, which examines the expression and structure of genes. Thanks to you, we have hired four new staff in the diagnostic lab to translate our research vision into the clinic and to offer this as a test to children across Canada. SickKids has established important collaborations in Ontario and across the United States, providing us with new samples to allow us to use our technology, and to expand the test once it is fully developed. And we've only just begun.

HIGHLIGHT: LAST YEAR'S PROJECT

POINT-OF-CARE-ULTRASOUND MACHINES & NICU REDEVELOPMENT: \$420,000 INVESTED

Point-of-Care Ultrasound Machines

Ultrasound machines are routinely used in paediatric critical care units to guide the insertion of intravenous lines. They help in two important ways—speeding the process of IV insertion at critical times during stabilization and making it easier to locate appropriate veins in premature babies. Before, because of a lack of ultrasound machines, our Critical Care Unit (CCU) and Neonatal Intensive Care Unit (NICU) urgent line insertions were often delayed while staff waited for an available ultrasound machine.

Thanks to the generosity of the Innovators, we have been able to purchase three point-of-care ultrasound (POCUS) machines, whose fidelity and portability will help SickKids staff make quick, accurate diagnoses. One POCUS machine is used by the Acute Care Transport Services (ACTS) team, who provide intensive care to patients during their retrieval from other care centres, including the most sick and fragile of newborns. Using their POCUS, ACTS can enhance their first attempt success at vascular access, peripheral, and central venous lines, as well as arterial lines, to monitor cardiorespiratory function. They can also quickly assess the brain, lungs, heart and abdomen, so they know what's wrong and how to help. That's especially important during transport—when time is tight and resources are limited.

The second machine is in our NICU, where current use will guide peripheral intravenous (PIVs) lines as well as central venous catheter placements. Historically, success placing PIVs and percutaneous central lines in premature babies—some of whom are as small as 400 grams—has been only around 50%. But thanks to the POCUS machine, we anticipate our success rate will jump to over 80%, a benchmark set by other POCUS users. What's more, with a POCUS machine always on hand, fewer babies have to wait for Radiology technicians to diagnose emergent situations such as air leaks from the lungs or fluid interfering with cardiac function. Now, during emergencies, trained NICU staff can quickly detect life-threatening conditions and respond appropriately with greater accuracy.

The third machine is in our Paediatric Intensive Care Unit (PICU) and, like its usage with ACTS and in the NICU, this machine is enabling faster, more accurate insertion of intravenous lines to improve the safety and quality of care.

There is increasing evidence, much of it amassed through SickKids research, that the painful pokes and procedures critically ill infants receive during hospitalization impact the early developing brain, leading to long-term challenges with memory, pain-sensitivity, and cognitive development. By reducing the number of pokes and painful procedures that infants receive during hospitalization, these machines therefore don't just impact babies immediate health and wellbeing, but their long-term health outcomes and quality of life.

HIGHLIGHT: LAST YEAR'S PROJECT

POINT-OF-CARE-ULTRASOUND MACHINES & NICU REDEVELOPMENT - CONTINUED

NICU Redevelopment

Our NICU treats the sickest and smallest babies in Canada, patients who require immense, highly specialized care. They're extremely susceptible to infections, sensitive to noise, and many subsist on breathing machines. But we don't have the space to properly meet their needs. Outdated, crowded, noisy, lacking privacy, our ward-style rooms also cannot easily accommodate the one thing newborns need most: their families.

Thanks to the generous support of Innovators, this is changing. We are thrilled to share that the interim redevelopment of our NICU, made possible through generous donors like Innovators, has reached an important milestone. In November 2020, our brand new four-bed patient room opened. This bright, inviting space will increase our physical bed capacity from 43 beds to 47, giving us much more flexibility to adapt to patient surges as well as reduce crowding across the unit and improve patient and family comfort, privacy and wellbeing. Though it was widely reported in the spring that pandemic lockdowns led to reductions in NICU patient volumes, we did not see this at SickKids. Our NICU capacity has continued to be tested, making the opening of this new room more important than ever.

The new space includes more comfortable furnishings that make it easier for parents to stay at the bedside and moms to nurse—big chairs, cupboards to store belongings, and phone chargers so parents can stay connected with family and friends. We will test drive these new elements over the coming years to inform how we design and furnish the NICU in our new Peter Gilgan Family Patient Care Tower. Additionally, state-of-the-art T3 monitors have been set up at each bed to enable acquisition of complex real-time physiological data such as heart rate, temperature, blood pressure, etc. Once these powerful machines are activated, as they have been in our Paediatric Intensive Care Unit, they will enable improved clinical management by allowing clinicians to capture and analyse an evolving clinical picture so they can intervene earlier to prevent adverse outcomes. Next up is the redevelopment of the NICU's family space to make it more welcoming, supportive, and healing for families.

HIGHLIGHT: LAST YEAR'S PROJECT

NICU REDEVELOPMENT - CONTINUED



EXISTING ROOM



INTERIM RENOVATION - NEW ROOM