

# Chez nous

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## Matters of the heart:

Celebrating our cardiology patients

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Hôpital de Montréal  
pour enfants  
Centre universitaire  
de santé McGill



Montreal Children's  
Hospital  
McGill University  
Health Centre

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# Highlighting Heart Month

The MCH's Cardiology Clinic impacts a broad range of patients and cases

By Paul Logothetis & Pamela Toman



## Mia defies the odds

Sebastian Zapata and his wife, Diana, were anxiously waiting to find out their baby's gender at a 20-week ultrasound when their appointment took a bleak turn. Staff at their community hospital noticed a serious cardiac abnormality: a ventricular septal defect, or a hole in her heart.

"Staff members explained we had two options but, for us, there was really only one and that was to continue with the pregnancy and be followed by the Cardiology team at the Children's," says Sebastian.

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► Top: Mia underwent a life-saving, total repair of the hole in her heart at seven months.

Their first three follow-ups at the Children's were with Dr. Claudia Renaud, pediatric cardiologist, who ordered a fetal echocardiogram to better visualize their daughter's heart and paint a picture of what the future might look like once Mia was born. "Meeting with Dr. Renaud filled us with so much more hope," says Sebastian. "We knew we were still discussing a severe cardiac malformation, but we felt confident that the team at the Children's had the experience and the knowledge to help us face whatever would come."

"After having been given such little hope, I was completely devastated," says Diana. "But Dr. Renaud had such compassion and a way of explaining things, I felt like the team would do everything possible for Mia once she was born to ensure her well-being. I just kept trusting in God and trusting in the professionals."

Dr. Renaud explained Mia may require cardiac surgery and may need to be hospitalized in the Neonatal Intensive Care Unit (NICU). To their delight, Mia was in better health than expected when she arrived in October 2018. She was breathing on her own and her car-

diac malformation was less severe than projected. Still, the family spent three weeks in the hospital's NICU to monitor her condition and evaluate her need for surgery.

"We discovered that Mia had a complex cardiac anatomy along with the hole in her heart," Dr. Renaud says. "Dr. Christo Tchervenkov explained her case could be repaired with just one surgery as opposed to multiple, as we had been told may be the case before her birth."

In May 2019 at seven months, Mia underwent a successful life-saving total repair of the hole in her heart with Dr. Tchervenkov. Today, Mia is without cardiac abnormalities and is a curious, happy and rambunctious 15-month-old and proud older sister to three-month-old Isaak. "She wakes up every day smiling and loves to be active," says Sebastian. "We couldn't ask for more."

While she will continue to be followed by physiotherapy to monitor her motor skills in the short term, Mia is a thriving infant who loves to eat and is very active. "Because of her lengthy hospitalizations, she is taking a little bit longer to walk, but the team always tells



► Fifteen-month-old Mia with her little brother Isaak and parents Diana and Sebastian.

us how well she is doing," says Diana. Mia will also continue to be followed by her current pediatric cardiologist, Dr. Charles Rohlicek.

"I am so thankful to all the doctors, nurses and health professionals that we've encountered along this journey. We were given such little hope, but the staff members here truly helped give us reason to believe everything would be OK. Thanks to their expertise, my family and my faith, we are here today." ♥

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*On the cover: Mia Zapata and her mother Diana in the P.K. Subban Atrium.*

*Cover photo: Thibault Carron*

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## Iyinmide Demilade Agbe, heart malformation

Paul Agbe constantly worried about his daughter Iyinmide’s health. The 12-year-old always seemed winded, struggling to catch her breath. Doctors in their native Nigeria couldn’t put a finger on it, suggesting polio might be the cause. It wasn’t until one week after the family’s arrival in Montreal in April 2018 that the Agbes finally understood why.

Doctors detected unusual activity from Mide’s heart and sent her to the Children’s Emergency Department (ED). Dr. Tíscar Cavallé-Garrido was the cardiologist on call that night and has followed Mide’s progress ever since.

“Mide presented with a very complicated case as not only her heart was

malformed but also had an electrical problem. The malformation caused her heart to work as if it only had one pumping chamber instead of the normal two,” says Dr. Cavallé, a pediatric cardiologist. “In addition, her electrical conduction system was blocked, meaning that the electricity was not flowing from the upper to lower chambers of the heart, resulting in a very slow resting heart rate.”

This electricity problem was fixed with the insertion of a pacemaker and the benefits were immediate. Mide’s level of fatigue has decreased tremendously as her heart can now beat faster as needed during physical activity; in fact she has physically grown after years of failure to thrive.

“  
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now she has  
changed.**

”

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Unfortunately, Mide's heart malformation was not detected and therefore not operated on at birth. This has caused irreversible damage to her lung blood vessels and prevents her from being a candidate for corrective surgery. So while she can take part in more physical activities, she understands there will always be limitations to the physical exertion she is allowed to indulge in.

"There's been great improvement in the months after her pacemaker surgery, she can walk a distance without getting tired like she did before," says Paul. "She has even developed since then and is not the small girl she looked like before. She looked like a child and now she has changed." ♥



► From left to right: Oluwabukola Bunmi Agbe with her daughter Mide, Dr. Cavallé-Garrido and Mide's father Paul Agbe.



## Jacob Dawes, heart arrhythmia

Jacob Dawes doesn't remember much about the last competitive hockey game he played. The 15-year-old suffered cardiac arrest on the ice and was rushed to MCH emergency after being resuscitated through CPR and the quick use of a defibrillator (AED).

But for a teenager who has played hockey all of his life, the reality of not being able to compete at that level again so early in life remains a shock.

"I'm dealing with it. I'm not struggling trying to deal with it, but it's a big change," admits Jacob, who has also been forced to rethink his career aspirations of becoming an airplane pilot. "I was pretty overwhelmed; honestly, I wasn't sure what to think about it at the time. But I just said OK, I'm not going to let this ruin my life. I take it as a part of me now."

Dr. Sylvia Abadir says Jacob's episode is very rare — the annual incidence of presumed sudden cardiac arrest in people under 40 is around one to three deaths in 100,000 (excluding basketball players)

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► From left to right: Evan, Rose, Ashley, Rodney and Jacob have all taken CPR and first aid training since Jacob collapsed on the ice.

— and the quick-thinking actions of people at the game made a lasting impact on Jacob’s life.

“This sends a big message to the community to use CPR and the defibrillator right away if you see someone drop like that. Resuscitating him so quickly meant he recovered without any neuro deficiencies,” says Dr. Abadir, a pediatric cardiologist. “The event has had a dramatic effect on the life of the family and they have responded very positively. I reminded him that firstly, you’re alive and you will be able to do a lot of things. An optimistic outlook is necessary.”

An optimistic attitude has been right in stride with Jacob’s laid-back, surfer character, according to his father Rodney, who was at the game when Jacob collapsed.

“I felt pretty helpless not knowing what was happening, but luckily there were people that did know what to do, which saved his life,” says Rodney, who along with Jacob’s mother Rose and their younger children, have all taken CPR and first-aid training since. “None of us want to ever be caught in that situation again, with that feeling of helplessness.”

In the meantime, Dr. Abadir admits there is no conclusive reason for Jacob’s episode — the entire family has not demonstrated any underlying structural heart disease, or obvious electrical disorder. For now, there is no conclusive reason for Jacob’s episode. There could be a mutation at play, but it’s a waiting game until the genetic testing results return. ♥

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## Healing the body and mind

### Psychologist helps children and teens return to health after traumatic accidents

By Maureen McCarthy

Audrey-Ann is someone who understands how life can change from one day to the next. In August, the 16-year-old was thrown from her scooter in a road accident. She was taken to Hôpital Anna-Laberge before being quickly transferred to the Montreal Children's Hospital Emergency Department when they suspected she might have a neck injury. There, the Children's Trauma team was waiting for her. "We saw close to a dozen people when we arrived," says Audrey-Ann's father, Danny. "It was extraordinary how they got to work."

The first few days and weeks after the accident were full. Audrey-Ann had severe burns on her

left leg and had to undergo a three-and-a-half hour surgery for skin grafts in three places. Because of a fracture in her neck, she had to wear a neck brace around the clock for 13 weeks. She went back to school in a wheelchair and came to the Children's frequently for appointments with Plastic Surgery, Orthopedics, and Occupational Therapy. Her recovery was going well but Audrey-Ann was starting to experience other problems.

"At first, I didn't think the accident had affected me that much but after I started school, I became pretty tired and a bit depressed. It wasn't going at all like I wanted it to," she says. "I felt like my head was elsewhere, and that I wasn't myself

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► Top: Audrey-Ann Gagnon (left) with psychologist and Trauma team member Dr. Catherine Serra-Poirier.

anymore.” It didn’t help that she was having difficulty with schoolwork. One day, after completing a French dictée, she learned that she had left out words in some sentences. “I never had any trouble writing so it made me panic a bit,” she says. Her dad says in hindsight, she probably started back too early. “She thought she was ready but the trauma took all her energy, she couldn’t concentrate, she couldn’t write,” says Danny.

One of the Trauma team members suggested Audrey-Ann might want to meet with the team’s psychologist, Dr. Catherine Serra-Poirier. At her first appointment, Audrey-Ann says she still wasn’t doing very well: she was only going to half her classes, not taking exams, and doing no exercise or outside activities. “Nothing interested me,” she says. “I was really stressed and didn’t want to go to school anymore. Catherine told me these were signs of depression.”

### **A depth of knowledge and expertise**

During her PhD studies in Developmental Psychology at Université du Québec à Montréal (UQAM), Dr. Serra-Poirier completed a one-year residency at the MCH. “The rotation is an opportunity to work in many different services at the hospital and determine what our interests are,” she says. Once she’d worked at the Children’s, she knew she never wanted to leave. “It’s an incredible team and there’s a real depth of knowledge and expertise that you don’t find in many places.”

Dr. Serra-Poirier sees trauma as a very interesting and stimulating domain, and a natural fit given her strong interest in psychotherapy and evaluations of complex cases. She also works in the



► Audrey-Ann’s father Danny listens in ahead of an appointment with Dr. Serra-Poirier.

hospital’s Eating Disorders clinic and is currently developing and implementing psychotherapeutic group programs for patients and their parents.

As part of the multidisciplinary Trauma team, Dr. Serra-Poirier often meets with a patient a few days or weeks after their accident. Her patients vary in age from four to 18, with a broad range of difficulties related to their trauma, and sometimes pre-existing vulnerabilities.

“When Audrey-Ann first came to see me in the fall she was really in acute stress following the accident. My role initially was to help prevent the development of a post-traumatic stress disorder,” says Dr. Serra-Poirier. “She was still dealing with fear, and had nightmares at times, so a main element of our interventions was directed to that. Among other goals, our work aimed to reinstate a feeling of safety and help her process difficult emotions that accompanied the trauma.

“As the psychotherapy progressed, I could see her improvements. She was starting to show noticeable changes in

**February is Psychology Month in Canada and the Children’s would like to highlight our experts’ contributions to improving the health of our patients.**

her functioning,” she says. As Audrey-Ann’s symptoms of depression began to improve, she and Dr. Serra-Poirier then began work on the impact of the skin grafts on her body image. “Audrey-Ann’s progress is an example of how the focus and needs of a patient can evolve as we go, so we often have to change or adapt our treatment plan,” she says.

Audrey-Ann feels that her work with Dr. Serra-Poirier has been very beneficial.

“I didn’t always feel that people understood what I was going through, but she listened, she understood, and she helped me feel better.”

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## Working closely with schools

Dr. Serra-Poirier explains that their work with patients also involves communicating regularly with teachers and school staff. “Part of this involves ensuring that the child or teen is going at a pace they can tolerate, and that they don’t get so far behind that they face a big uphill battle to get back to a full-time schedule,” she says.

Audrey-Ann has gradually worked her way back to a full course load, and is about to start writing exams again. Not only is she scheduled to graduate with her classmates in June but she’s on track to start CEGEP in the fall. “I really do feel a lot better now,” she says. “I’m excited for what’s to come.” ●



► Audrey-Ann attributes Dr. Serra-Poirier’s work to helping her regain a sense of normalcy.

# New certification highlights pediatric nursing as a specialty



► Stéphanie Lepage (left) and Eren Alexander

When it comes to validating knowledge and enhancing nursing practice, certification is an important credential that can demonstrate valuable expertise and a commitment to ongoing learning. That’s the thinking behind a brand new Canadian Nursing Association (CNA) Certification highlighting the specialty of Pediatrics. Two of the very first of 40 Pediatric-Certified Nurses in Canada are Montreal Children’s Hospital staff members Eren Alexander, Nursing Coordinator, and Stéphanie Lepage, Nursing Professional Development Educator (NPDE). The two were certified by reciprocity this January to honour

their contribution to the development of the first-ever iteration of the Pediatrics Certification exam, and their validation of the French questions for a Quebec audience of nurses.

“This certification is significant because it recognizes the specialty of pediatric nursing,” says Eren Alexander, whose collaboration with the CNA on this project began over three years ago. “Not only is it a personal achievement to write and pass the exam, it’s internationally recognized, and reflects an added level of expertise and standards that reinforce how pediatrics is a unique specialty. While there is some effort involved to complete it, we encourage all of our nurses to consider taking the exam. Thanks to support from the Montreal Children’s Hospital Foundation, there is no cost to writing the exam and it’s a wonderful opportunity to enhance nursing practice and improve patient safety.”

## Nursing certification at the Children’s

There are roughly 20 nurses who have received specialized certification from the Canadian Nursing Association. These include:

- 15 PICU certifications
- 2 NICU certifications
- 2 Pediatric certifications

# Improving care for premature babies

By Paul Logothetis



► Dr. Marc Beltempo, a NICU neonatologist who helped lead the study.

Since 2004, survival rates for premature babies have improved by 25 percent thanks to the implementation of quality care practices, according to a leading study involving a Montreal Children's Hospital neonatologist.

Researchers studied nearly 51,000 infants born before 33 weeks' gestation who were admitted to Canadian tertiary neonatal intensive care units, which were also participating in the Evidence-based Practice for Improving Quality (EPIQ) program initiated by the Canadian Neonatal Network (CNN). The study found that from 2004 to 2017, the rate of survival for infants with major health complications rose from 56.6 percent to 70.9 percent.

"The results have really shown the benefit of the cross-country decision to instill optimized quality care initiatives," says Dr. Marc Beltempo, a

neonatologist in the Children's Neonatal Intensive Care Unit (NICU) and one of the co-authors of the study, which was recently published in the Canadian Medical Association Journal (CMAJ). "Canada has gone from being one of the worst industrialized countries with respect to premature deaths to one of the top three as a result of these long-term care improvements."

Encouraging results included the improved survival rate of infants born at 23 to 25 weeks' gestation, with an increase from 70.8 percent to 74.5 percent.

## Initiating better practices

Some of the key changes included giving antenatal steroids to expectant mothers 24 hours before delivery, and better administration of surfactant, a therapy for premature babies that keeps alveoli from sticking together inside the lungs to help infants breathe easier.

There was also a reduction in the use of invasive ventilators to assist with breathing and an emphasis on ensuring newborns were placed on specialized warming beds at birth to aid in maintaining body temperature.

"We know what works for babies but it's also about learning from others on how to implement it. In other words, doing better with what we know works," says Dr. Beltempo, who is also the Associate Director of the CNN. "The collaboration between institutions across the country meant we visited certain hospitals and some neonatology teams visited us so we can all improve the outcomes for our patients."

This study was launched by the CNN and included all 31 tertiary level neonatal intensive care units (NICUs) in Canada. There are 360,000 births in Canada every year with approximately 7 percent needing neonatal care. ●



## Bridging the gap between AI and the clinic

The power of artificial intelligence (AI) in medicine lies in its ability to find important statistical patterns in large datasets. A study by researchers from the Children's and The Neuro (Montreal Neurological Institute-Hospital) provides proof of concept for how AI can help doctors and brain tumour patients make better treatment decisions.

Meningiomas are tumours that arise from the membranes that surround the brain and spinal cord and are typically the most common primary central nervous system tumour. Meningiomas in children are typically rare – 0.32 percent – but are associated with aggressive subtypes so they can be more deadly. Being able to predict malignancy and accurately estimate survival is therefore incredibly important in deciding whether surgery is the best option for the patient.

In this study, published in the journal *npj Digital Medicine*, researchers trained machine learning algorithms on data from more than 62,000 patients with a meningioma. Their goal was to find statistical associations between malignancy, survival,

and a series of basic clinical variables including tumour size, tumour location, and surgical procedure.

They also developed an open-source smartphone app to allow clinicians and other researchers to interactively explore the predictive algorithms described in the paper. They hope that making the app entirely free and open source could help future projects translate newly developed machine learning algorithms to real-world clinical practice.

“This is important because for the first time we have individual patient models,” says Dr. Roy Dudley, a clinician-scientist at the Children's who adds these types of tumors are rare in children but often more malignant. “This is a first step for others to link in to the app and we hope they will test our model. And if we can add molecular and imaging data, we could hopefully use it in the clinic in the future.”

The app is available here for demonstration: [www.meningioma.app](http://www.meningioma.app) ●

► Top: Dr. Roy Dudley (left) of the Children's with his Neuro colleague and collaborator Jeremy Moreau.

# Readied defenses

The Montreal Children's Hospital has been proactively working to keep the Novel Coronavirus — now termed Covid-19 — from affecting our patient populations amid the flurry of activity that accompanies the flu season.

The risk of contagion in Quebec remains very low. Moreover, the Children's wants to ensure that our patients and employees are well prepared.

## FOR PATIENTS & FAMILIES:

We remind all patients and parents of patients upon arriving at the hospital to please wash or sanitize

hands and to put on a face mask if flu-like symptoms of fever, cough, or difficulty breathing are apparent. In addition, we ask you to please inform our staff immediately if, over the past two weeks, the patient has traveled or has been in contact with a sick traveler.

## FOR OUR STAFF:

Employees should refer to the dedicated Coronavirus 2019 page on MyMUHC to find updates and clickable links to protocols, communication tools, FAQs plus videos, how-tos and links to the latest ministerial messages. ●

**Fièvre, toux,  
difficulté à respirer?**  
**Fever, cough,  
difficulty breathing?**

**À votre arrivée  
On arrival**  
**SVP lavez vos mains.  
Please wash your hands.**

**SVP mettez un masque.  
Please put on a mask.**

**Avez-vous voyagé  
dans les dernières 3 semaines?**  
**Have you traveled  
in the past 3 weeks?**

**Informez-nous IMMÉDIATEMENT.  
Tell us about it IMMEDIATELY.**