

# Northern Alberta Neonatal Program



ANNUAL REPORT 2016-2019

PUBLICATION IN PARTNERSHIP WITH ▶





All the while we are taking our lead from our patients - the sickest babies and their families - within the settings they are most comfortable, in the way that we can ensure they thrive.

Po-Yin Cheung

# Table of Contents

4	Introduction
5	Who we are
6	Our Patients
8	Where we work
10	<b>Story: Making Hospitals Feel Like Home for Babies</b>
12	<b>Story: Resuscitation Revamp</b>
14	Our Activities
15	Other Flagship Programs
16	<b>Story: Small Patients Big Conversations</b>
18	<b>Story: Letting Baby Lead</b>
20	Research and Education
21	Research, Publications & Presentations
22	<b>Story: Supporting Babies and their Families in Communities Near and Far</b>
24	<b>Story: Always Improving At Home and Abroad</b>
26	Our Neonatologist Team
27	Division Members

# Introduction

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I am pleased to introduce the accomplished and impactful work of the Northern Alberta Neonatal Program, and the supporting interdisciplinary teams who help make our focus on newborn health and their families a reality. Within this report you will read about the research, thoughtful care, education and on-the-ground clinical work that our program accomplished in 2016-2019.

The breadth of skill of our team allows more families to access high quality care not only within Edmonton and area, but in northern Alberta, portions of northern BC and the Yukon territory, parts of the Northwest Territories and Nunavut. And our work reaches beyond Canadian borders; we are sharing with and learning from international partners around the globe, including communities in Asia and Africa.

With the support of many distinguished research and funding bodies, the leading-edge Alberta Health Services and Covenant hospitals, and the University of Alberta, within which we teach, research and practice, we have made great strides toward laying an even greater foundation to face challenges and make new discoveries in 2020 and the years to come.

All the while we are taking our lead from our patients - the sickest babies and their families - within the settings they are most comfortable, in the way that we can ensure they thrive.

Respectfully submitted,  
*Po-Yin Cheung*  
*Zone Section Chief (Interim), Newborn Health*  
*Professor, Divisional Director*

# Who we are

## Neonatal-Perinatal Care (NICU) 2016-2019\* Division Highlights

Together, the Division of Neonatology and Alberta Health Services' Northern Alberta Neonatal Program care for infants who require special medical or surgical attention, including extremely premature newborns and those with cardiac diseases. The program operates Neonatal Intensive Care Units (NICUs) and intermediate care nurseries in five hospitals and a neonatal follow-up clinic in Edmonton.

NICUs are multidisciplinary teams of nurses, respiratory therapists, dietitians, pharmacists, social workers, lactation consultants, unit clerks, administrative professionals, housekeeping staff, therapists, residents and fellows, clinical assistants, nurse practitioners, neonatologists, other allied health professionals, and of course patients and families.

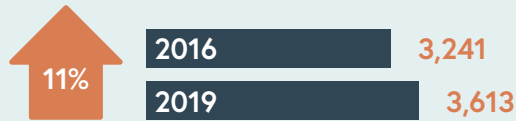


\*Annual report cycle is July 1 to June 30. Detailed reports available upon request.

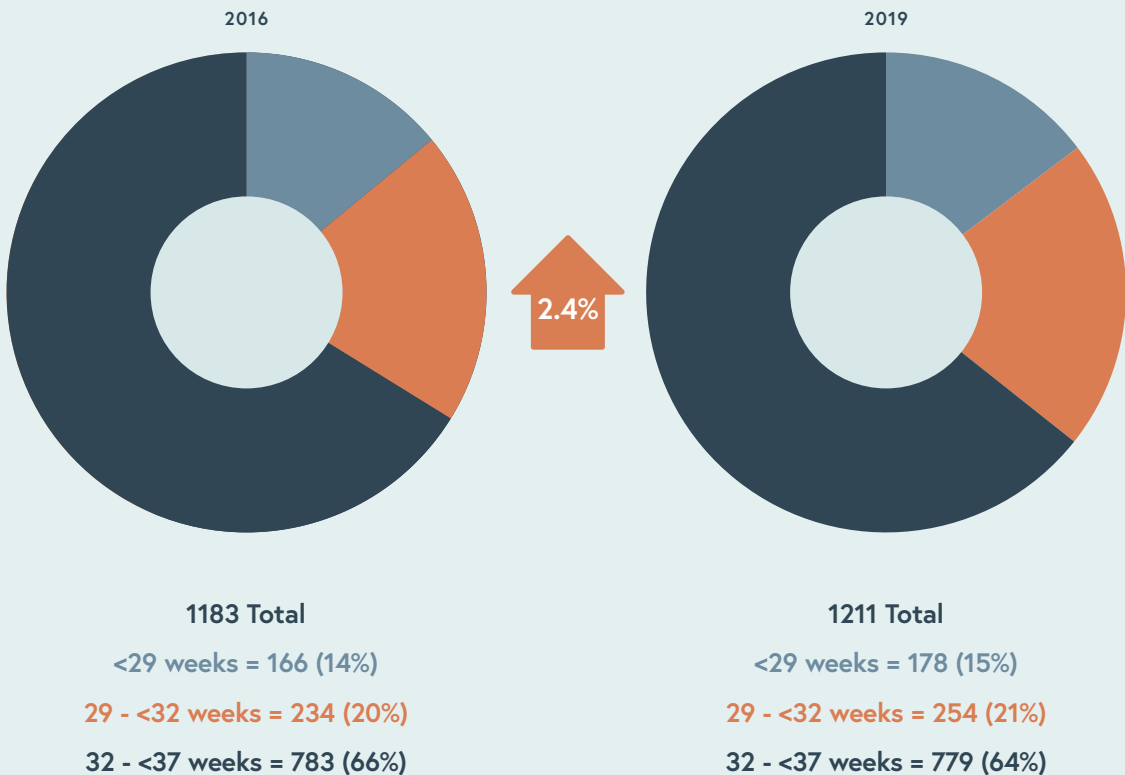
# Our Patients

Although both the number and complexity of patient cases increased in 2018-2019 when compared to those in 2016-2017, the program has been able to improve care by shortening the days of care interventions (like ventilator support), and decreasing the overall length of hospital stay.

## Total number of patients

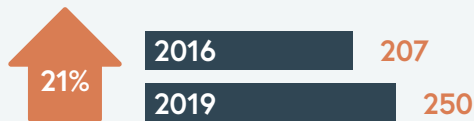


## Number of admissions with prematurity



# Our Patients

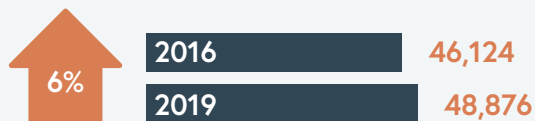
Number of infants with cardiovascular disease



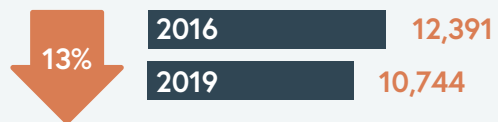
Number of infants with surgical problems



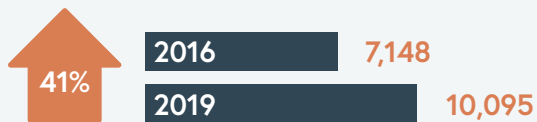
Total patient hospital care days



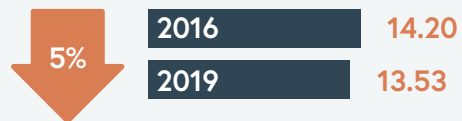
Total days of ventilator support



Total days of parenteral nutrition (feeding directly into the bloodstream)



Average length of stay



# Where we work



**Kristy Cunningham**  
Executive Director, Stollery Children's Hospital  
Critical Care & Respiratory Therapy



## Stollery NICU at the Royal Alexandra Hospital

*One of the largest Level 3 Neonatal-Perinatal Centres in Canada*

**69 BEDS**

**Facility Lead** Kumar Kumaran  
**Patient Care Manager** Karen Pelletier



## David Schiff NICU at the Stollery Children's Hospital

**18 BEDS**

**Facility Lead** Chloe Joynt  
**Patient Care Manager** Sarah Bieganeck



## Neonatal Follow-Up Clinic at the Glenrose Rehabilitation Hospital

**Medical Director** Amber Reichert  
**Patient Care Manager** Christine Gillen



## Stollery NICU at the Sturgeon Community Hospital

**6 BEDS**

**Facility Lead (Interim)** Ernest Phillipos  
**Patient Care Manager** Lisa Leniuk

In October 2019, the Stollery Sturgeon NICU opened to provide care closer to home for the St. Albert and area community. The six beds provide specialized care for babies and their families. The Alberta government's Infrastructure Maintenance Program and the Stollery Children's Hospital Foundation funded the expansion to support the highest care.



# Where we work



**Gail Cameron**  
Senior Director, Operations  
Women and Child Health



## Grey Nuns Community Hospital NICU

**25 BEDS**

**Facility Lead**  
Paul Byrne

**Patient Care Manager**  
Valerie Harrison



## Misericordia Community Hospital NICU

**18 BEDS**

**Facility Lead**  
Sharif Shaik

**Patient Care Manager**  
Lesa Fee



## Providing care in six Edmonton and area hospitals

*Photo Captions: David Schiff NICU at the Stollery Children's Hospital (LtoR): Maria Donaldson (NP), Ali Hussein (Fellow), Haley Greenslade (SW), Lily Su (RN), Cheri Butchart-Parker (TRN), Krista Kobzey (RN), Julie Canham (Charge RN), Brenda Law (Neo)*

*Stollery NICU at the Sturgeon Community Hospital (LtoR): Trystyn Giroux (RN), Lindsay Terry (RN), Kristy Ross (LPN), Jon Choi (RRT), Lisa Lenuik (PCM)*

# Making Hospitals Feel Like Home for Babies

It wasn't long after Shannon Anderson returned from her own maternity leave that the clinical nurse specialist had a visit from Gail Cameron to discuss a program aimed at making Covenant Health hospitals in Edmonton and other parts of Alberta more welcoming to babies and their families.



Rosalytia and baby Vivian participated in the Baby Friendly program

Cameron, senior director of operations for Women's and Children's Health with Covenant Health, heard about the World Health Organization's Baby Friendly Hospital Initiative (BFHI) at an early-adopter hospital in Vancouver in the late 1990s, and was ready to start taking steps toward implementing the program at Edmonton's Grey Nuns and Misericordia Hospitals.

"When she walked into my office and said, 'I want you to take the lead for the Baby Friendly Initiative,' she walked out and the first thing I did was type, 'What is Baby Friendly Initiative?'" laughs Anderson, who is certified in Neonatal Intensive Care Nursing and has a Masters in Nursing Administration.

It didn't take long for Anderson to share Cameron's enthusiasm for the program.

The BFHI grew out of the World Health Organization's renewed commitment to protect, support, and promote breastfeeding and nutrition for infants in the developing world in the 1990s, Cameron explains, though it soon became clear that the developed world could use a hand in that department, too.

To become accredited as Baby Friendly, hospitals must follow a set of 10-Steps to prepare hospitals and staff to not only support breastfeeding through-

out the hospital, but also to encourage bonding within families through routine skin-to-skin contact between parents and babies immediately after birth and with shared rooms that allow babies to remain with mothers throughout the mothers' stay in the hospital.

"The entire hospital gets certified as Baby Friendly," Cameron explains. "We are the largest organization in Canada that's not a free-standing maternity hospital that was able to achieve this. That means that if you're going to radiology, if you're going for a CT scan, or whatever, your baby is welcome."

The Grey Nuns Community Hospital and Bonnyville Health Centre were designated as Baby Friendly in 2017, followed by Misericordia Community Hospital in 2018. St. Mary's Hospital in Camrose will seek similar accreditation soon.



Melissa Baker (left) is a Maternal & Newborn Nurse and Michelle Stadler (right) is a Clinical Nurse Educator



Breastfeeding rates have jumped to around 90 percent at the hospitals since the BFHI came in.

At each site, the accreditation is renewed every five years based on results from an external evaluation. The initial designations did not come about overnight, but were the results of many years of preparation and iterative improvements that spanned all parts of the hospital.

“To start this kind of program, it has a lot of sticking points that are hard for hospitals to do, which is why it hasn’t been taken up by everybody across the country,” Cameron says, pointing to hurdles around hospital design, clinician and support staff preparation, and contracts with baby formula companies, which are not permitted at BHFI-accredited hospitals.

Anderson emphasizes that mothers who opt for, or require, formula are still supported and provided with the information and education they need to feed their babies safely. For those moms, formula remains free in the hospital setting, with the hospital footing the bill rather than participating in contracts with formula companies to get it for free.

For moms or staff members who are breastfeeding, support extends beyond into all parts of the hospital—from the emergency room to post-surgical suites. Staff are provided with time to pump or breastfeed as needed, while breastfeeding moms who might be coming into the hospital after birth are supported across wards and can bring their baby into hospital rooms with them.

“You’re not expected to hide away in a corner or breastfeed in the bathroom,” Cameron says, noting that all of the staff at Covenant Health’s BFHI hospitals complete a 20-hour breastfeeding course and a four hour mentorship with a lactation consultant, senior nurse, or educators so that they are prepared to offer consistent information and support to mothers in all areas.

The hospitals offer lactation services through two ambulatory breastfeeding clinics where moms are referred by NICU or Obstetrical nurses and physicians to discuss issues that may arise after discharge as babies get older.

The first hour after birth is prioritized at the Baby Friendly sites, as a window

to introduce breastfeeding, Cameron explains, but also a time to encourage bonding between babies and their parents, which can help to reduce the time babies spend in hospitals. Rather than being whisked away for weighing or cleaning, babies are placed with one or both parents immediately, unless they require urgent care.

Both the Misericordia and Grey Nuns Hospitals also closed their well-baby nurseries, and built Neonatal Intensive Care Units with single rooms, so that moms and babies can stay together in the hospital, even when babies need intensive care.

“The NICUs are really in sync with trying to get the breastfeeding going,” Cameron says, adding that breastfeeding rates have jumped to around 90 percent at the hospitals since the BFHI came in.

“At the beginning, it seemed daunting, but supporting breastfeeding is integral to newborn and maternal health and it is best practice” she says. “I must admit, this is a passion of mine.” ■

# Resuscitation Revamp

From finding better ways to plump vulnerable little lungs to playing board games, Georg Schmölder is on the hunt for resuscitation training and techniques that will keep more babies alive.

The research is particularly important for babies born premature, who may struggle to breathe with small, underdeveloped lungs, says Schmölder, a neonatologist with Alberta Health Services' Northern Alberta Neonatal Program and director of the Royal Alexandra Hospital's Centre for the Studies of Asphyxia and Resuscitation.

"On top of everything, when they come out, the kids have struggles breathing," explains Schmölder, who also holds an appointment with the University of Alberta's pediatrics department and a Heart and Stroke Foundation-University of Alberta Professorship in Neonatal Resuscitation. "The lower you go in gestation, the more likely they need help."

Together with his once post-doctoral supervisor Po-Yin Cheung, the neonatologist developed a CPR method for babies that forgoes manual rescue breathing and chest compressions in favour of squeezing a baby's chest to force air in and out after initially applying high airway pressure.

"When you squeeze the chest, you force

air out of the lung, and when you release the chest, air goes back in. So you don't have to do those rescue breaths anymore," Schmölder says. "When we did that technique, we found that it was 75 per cent faster for the heart to start beating again. So there was a significantly shorter time of chest compressions."

Those early results prompted a Canadian Institutes of Health Research- and Thrasher Research Fund-supported trial known as SURVIVE to test the method more broadly at hospitals in Canada, Europe, Australia, New Zealand, and China. That trial is still underway, in part because chest compressions are needed only rarely in babies from each participating site.

"A lot of ethics committees struggle with chest compressions," Schmölder says, explaining that more sites are coming on board for the trial as additional safety data from infants who received the alternative resuscitation intervention become available.

For other projects, play is making its way into resuscitation research and

training. Schmölder and collaborators from the Faculties of Education, Science, Computing Science, Academic Technologies, and Medicine & Dentistry used insights from more than 270 newborn deliveries to come up with the clinical scenarios behind a game called RETAIN, aimed at helping healthcare workers learn and brush up on their resuscitation skills.

[retainlabsmedical.com/index.html](https://retainlabsmedical.com/index.html)

Recreating with RETAIN seems to pay off: in a study published last year, researchers reported a 12 per cent jump in resuscitation skills in more than two-dozen healthcare workers at the Royal Alexandra Hospital who played the board game for just half an hour. Such knowledge seems to last several months, Schmölder notes, hinting at its potential for helping to reduce infant deaths.

[www.ncbi.nlm.nih.gov/pmc/articles/PMC6365420/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6365420/)

"The digital game is in the final stages of development, and the tabletop game



Georg Schmölzer is a researcher and director for the Centre for the Studies of Asphyxia and Resuscitation (CSAR Research 4 Babies)

is available for sale,” he says, calling it “a novel way of teaching.”

A digital version of RETAIN is in its final stages of development, and the game may eventually enter the virtual reality realm. In the meantime, though, a more affordable tabletop version of the game that can be played anywhere is being sold in Alberta and internationally.

In addition to his own work as a neonatologist, Schmölzer and his team have also made headway on the research front over the past few years—from graduate student efforts to test digital heart rate tools and eye tracking technology at the Centre for As-

phyxia and Resuscitation, to progress made evaluating a new infant resuscitation approach.

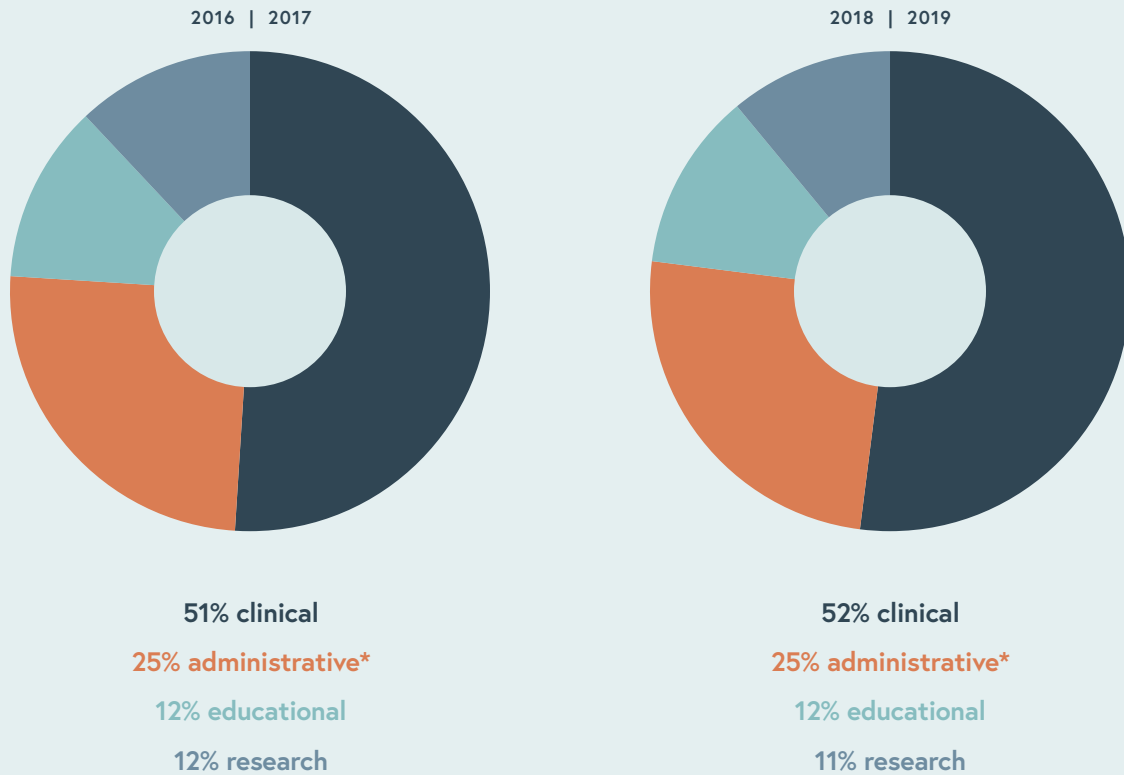
More recently, Schmölzer and his team secured some \$2.2 million from the Canadian Institutes of Health Research this year for the “Hi/Lo” clinical trial—an upcoming effort to narrow in on a standard starting oxygen concentration for resuscitating babies born preterm.

While the projects may vary, the focus remains the same: developing, testing, teaching methods to help more clinicians bring life-saving breath to babies in need. ■



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# Our Activities



## During 2016-2019, the Northern Alberta Neonatal Program first introduced:

- 1. Virtual health initiatives** including virtual health consultation program, and virtual family visitation and care (e.g. NowICU iPads project and NICview).
- 2. NICU Critical Incident Stress Management (CISM)**  
Teams received recognitions for teamwork and quality improvement activities including the Department of Pediatrics "Co-operation, Coordination and Team Work" award (2016), Alberta Health Services "AHS President's Excellence Award in Outstanding Achievement in Quality Improvement" (2017), Health Quality Council of Alberta Patient Experience Award (2019).

Our work and these initiatives were well-covered in news media and received the attention from international and national audiences including clinicians, administrators, researchers and family groups.

\* Administrative includes clinical, educational and research committee meetings, reports, and other activities such as guidelines and standards of practice development for institutional, provincial, national and international bodies.

## Other Flagship Programs

### Neonatal Nursing Practitioner Program (NNP) at the University of Alberta

Following negotiations begun in 2016, the Faculty of Nursing, University of Alberta and the Stollery Children's Hospital NICU Program entered into a contract to reopen the Neonatal Nurse Practitioner (NNP) Program (Master of Nursing), with funding supported by the Stollery Children's Hospital Foundation.

A national consortium into NNP education supported the reopening of the UofA NNP program after a 10-year hiatus and an accredited curriculum was developed. Teaching has been supported by NNPs in the program. Students were accepted in September 2018 and graduated in the fall of 2020, and the second cohort started in 2019.

This program currently is the sole graduate program leading to NNP designation in Canada.

# NNP

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### Stollery Neonatal Transport Program

Reaches northern Alberta, northern BC, western Saskatchewan, Yukon, NWT & Nunavut.



Neonatal Transport Team (LtoR) Brianne Price (TN) & Brittany Power (RRT)

- 500 ~ 700 babies\* per year were transported with help from specialized nurses and respiratory therapists
- caring for 3,000 babies in zone NICUs annually on average

*\* this number does not reflect repatriation transports.*

# 500-700

Babies per year were transported with help from specialized nurses and respiratory therapists

# Small Patients, Big Conversations

Michael van Manen is having the difficult conversations needed for providing ethical neonatal and pediatric care.



Michael van Manen is pictured outside the Stollery David Schiff NICU at the Walter C. Mackenzie Health Sciences Centre and is currently Director and Endowed Chair in Health Ethics at the University of Alberta

Caring for vulnerable newborns, infants, and children is fraught with difficult decisions and potential ethical landmines.

That's where Michael van Manen comes in.

The neonatologist, who holds an endowed chair of health ethics and directs the University of Alberta John Dossetor Health Ethics Centre, is tackling the thorny ethical issues that arise for physicians who work in neonatal, perinatal, and pediatric units, caring for those who may not be able to directly communicate their wishes or experiences.

“Fundamental to all the projects really is that concern of ethics, of trying to understand how we navigate different decisions, how we understand how different people make sense of their experiences, and also trying to get an understanding of the lived experience of both every day and extraordinary events in our patients' lives,” says van Manen, who has a clinical practice in neonatal and perinatal medicine at the Stollery Children's Hospital.



For a study published in the journal *Pediatric Clinical Care Medicine* in 2017, for example, van Manen and colleagues from the Northern Alberta Neonatal Program carried out a qualitative research project aimed at developing guidelines around organ donation after a circulatory determination of death (known as DCD), based on information drawn from front-line staff, parents with critically ill newborns, and members of other groups that may be impacted by such events.

 [pubmed.ncbi.nlm.nih.gov/28925929/](https://pubmed.ncbi.nlm.nih.gov/28925929/)

“Essentially, the question was beginning to be raised among transplant services: ‘Would this be something that our institution could support?’ — meaning, organ donation after a circulatory determination of death — knowing that we have donors every year who are sitting waiting for organs,” van Manen recalls.

That work led to an Alberta Health Services-approved policy around infant organ donations after a circulatory death that has since been adopted by hospitals in the Edmonton zone.

“This remains an ethically-charged area in medicine, and clearly there has to be local appetite for institutions to invest in, and adopt, a guideline,” he notes, adding that “it’s still a really rare and uncommon event that a newborn would pass away in a situation where their organs were in such a state that they could be donated to another child, and that there would be a recipient waiting for the organs at the same time.”

Still, having a policy in place pro-



This remains an ethically-charged area in medicine, and clearly there has to be local appetite for institutions to invest in, and adopt, a guideline.

vides a framework for physicians who might encounter such a situation, explains van Manen, who routinely draws from his own experiences as a physician—as well as conversations with his colleagues in the field—to choose ethics research projects that may be practical, meaningful in the clinic, not only for patients but also for their family members and for physicians themselves.

In another project, for example, van

Manen considered the ways that children living with implanted medical hearts experience the world—an area that is becoming increasingly pertinent as technologies that once remained inside hospital walls make their way into the community. These advances are rife with ethical questions, including the potential benefits and burdens placed on children who rely on the technologies.

Along with his research, work as a newborn intensive care physician, and responsibilities at the helm of the Dosseter Centre, van Manen is also conveying key ethical concepts to others in his work as a book author, three times over. In the past few years alone, he penned books on everything from ways of understanding what life is for infants in intensive care to the broader ethics at play in neonatology or classic research studies used to explore a form of consciousness known as ‘phenomenology.’

He and his colleagues at the Dosseter Center are also responding to societal issues of the day that impact health-care for all members of society, from work around diversity and inclusion in medicine to programming centred on new issues and events that arise in society over time.

From world-altering events to the day-to-day decisions that doctors may struggle with on the ward, he and his team are finding ways to navigate difficult ethical landscapes and support ethics-centred research that impacts all of us in one way or another—from tiny infants in the NICU, to communities as a whole. ■

# Letting Baby Lead

**NIDCAP - Newborn Individualized Developmental Care and Assessment Program - responds to a baby's communication needs and helps parents learn how to respond in the NICU and beyond.**

An infant in the Neonatal Intensive Care Unit (NICU) sends out subtle, but discernible, neurobehavioral signals that can communicate their needs in ways that are easy to miss.

With the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) — a baby-and family-centred treatment approach — parents, clinicians, and caretakers are learning how to read those behavioural signals to improve care that babies receive in the NICU, as well as their outcomes down the road.

“The catch phrase today is neuroprotection or brain protection, and NIDCAP is a brain protective method of care. The baby’s behavioural communication indicates how the brain is working, and this is what guides our care,” explains Juzer Tyebkhan, a neonatologist and NIDCAP Trainer at the Stollery Children’s Hospital.

The nature of that communication varies with gestational age and concurrent newborn diseases that require hospitalization, Tyebkhan notes. Beyond the type of treatments a baby might need, and the way they are administered, the NIDCAP approach considers the role

that parents can have in the way their child experiences this care.

This type of parental involvement may seem intuitive these days. But just a few decades ago, infants being treated in NICUs had far different experiences, Tyebkhan recalls. For example, parents were not allowed on the unit during morning ward rounds, and more often than not, they were asked to leave if their baby required a medical procedure.

The NIDCAP strategy — which began in the United States in the 1980s and 1990s and spread out internationally from there — turns that notion on its head.

The shift began when Tyebkhan and his colleagues set out to study the effects of NIDCAP at the Royal Alexandra Hospital with a randomized trial that included 60 very preterm infants who received NIDCAP care and 60 infants who received standard care in the NICU.

“We started to invite families in and say ‘We’d like you to be here for rounds,’” he says. “And not only were they invited to be on rounds, but they were part of the rounds. We started asking mothers

and fathers, ‘What can you tell us about your baby?’ and then went on to involve parents in different procedures.”

Parents not only received copies of the neurobehavioural assessments for their infant, but were often involved in care-giving procedures as well, Tyebkhan explains. Parents were guided to be with their babies, to hold, cuddle and interact with them even if their baby was on a ventilator, connected to wires, tubes and IVs. It also included parents holding and comforting an infant during a routine uncomfortable or painful procedure such as a blood draw, all the while following their baby’s neurodevelopmental prompts during and after these necessary medical procedures.

“Parents now are more involved in what’s going on. And understanding the baby’s communication comes from a neurobehavioral observation, which is the more detailed, complex part of NIDCAP,” he says. “When we do these observations, we then talk to the families about what their baby is trying to tell us and, therefore, how we can help their baby.”

As it turned out, the study suggested infants treated with the NIDCAP ap-

proach had significantly shorter hospital stays, fewer days on a ventilator, lower rates of chronic lung disease, and improved neurodevelopmental outcomes when it came time for their 18 month checkups—results the team reported in a 2009 paper in the journal *Pediatrics*.

[pubmed.ncbi.nlm.nih.gov/19786440/](https://pubmed.ncbi.nlm.nih.gov/19786440/)

The improved neurodevelopment at 18 months suggests NIDCAP is neuro-protective. And the approach appeared to have a continued impact because parents seemed to understand and respond more appropriately to their infant's behavioural communication, once they were home.

“You have a team of NIDCAP specialists who are trained in the NIDCAP behavioral observation, but also they are the support people, the champions that help the rest of the NICU staff understand what that means,” Tyebkhan notes, explaining that these staff in turn can help to support parents and prepare them for their role as primary caregivers at home.

After seeing the impact of their study and its results, he and his colleagues decided to go a step further: they set out a proposal to develop Canada's first NIDCAP training centre which was funded by Stollery Children's Hospital Foundation. They achieved this goal in 2017 when the NIDCAP Federation International (NFI) accredited the Edmonton NIDCAP Training Centre Canada, at the Stollery Children's Hospital Royal Alexandra Site.

To do so, the team brought in a Master Trainer from the United States for sev-



eral visits. Tyebkhan, who is now a Director of the Board of the NFI, became the first trainer.

Tyebkhan would like to see NIDCAP expand to all of Edmonton's NICUs, though he concedes that it will require a continued investment of time and staff to make that vision a reality. The Edmonton NIDCAP Training Centre Canada has recently begun outreach training in Canada and internationally.

“NIDCAP is about the baby — a human being who happens to be the tiny baby in the NICU — and how do we give that little person the respect, and the kindness they deserve, and acknowledge their humanity? Neonatology is not about a list of diagnoses, or a series of procedures that are done to babies; it's about the baby as a person.” ■



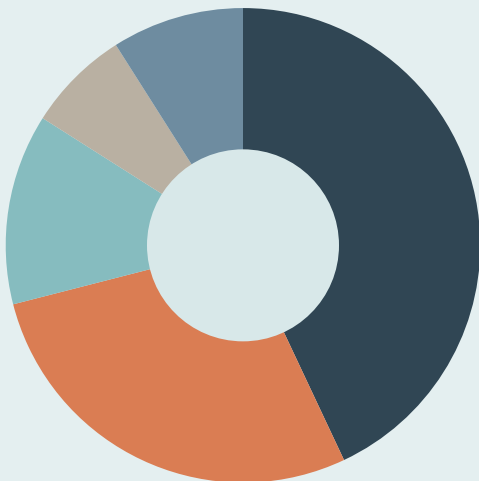
The baby's behavioural communication indicates how the brain is working, and this is what guides our care.

# Research and Education

The Division of Neonatology has a strong research program consisting of an established infrastructure and a group of academics and clinician-scientists who are recognized leaders in the fields of cardiovascular pathophysiology and pharmacology and respiratory sciences in the newborn, neonatal resuscitation and NIDCAP.

We also provide a rich training environment for academic neonatology encompassed in the Neonatal-Perinatal Medicine Residency Training Program.

2016 | 2017



**43% patient-centred (bedside)\* teaching**

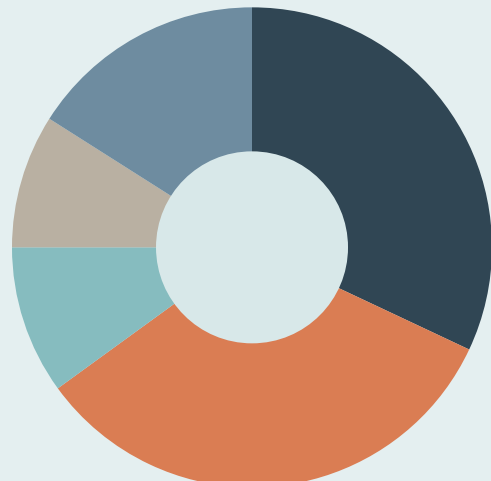
**28% in classroom (university courses, didactic lectures & in NICU rounds)**

**13% trainee supervision (residents, fellows, summer & graduate students)**

**7% summative assessment activities**

**8% other\*\***

2018 | 2019



**32% patient-centred (bedside)\* teaching**

**33% in classroom (university courses, didactic lectures & in NICU rounds)**

**10% trainees supervision (residents, fellows, summer & graduate students)**

**9% summative assessment activities**

**16% other\*\***

\* bedside teaching is multi-level, multi-disciplinary small group teaching

\*\* other teaching activities include institutional and outreach NRP courses, and international health classroom-based teaching

## Research, Publications & Presentations

2016 | 2017

# 43

43 peer-reviewed articles and  
36 scholarly products published

# \$5.2M

Approximately \$5.2M in research grants as Principal Investigator, Co-Principal Investigator or Site/Co- Investigator, of which approximately \$400,000 was Tri-Council dollars held by our members as Principal Investigator, mainly in clinical and biomedical areas

# 45

45 invited presentations;  
of which 75% national & international

2018 | 2019

# 58

58 peer-reviewed articles and  
34 scholarly products published

# \$15M

\$15M in research grants as Principal Investigator, Co-Principal Investigator or Site/Co- Investigator, of which about \$600,00 were Tri-Council funds, mainly in clinical & biomedical areas

# 39

39 invited presentations;  
of which 41% national & international

# Supporting Babies and their Families in Communities Near and Far

The Stollery Neonatal Transport Program offers consultation, clinical support, and transport options for critically ill infants in remote locations.

When babies in small towns or remote locations face a health crisis, their families and local doctors may be placed in situations that may be new and more than a little intimidating.

For rural hospitals and clinics in central and Northern Alberta, the Northwest Territories, and a portion of Nunavut—an area that together spans around one-third of Canada’s land mass—clinical support and transport options for such infants are close at hand, thanks to efforts by the Alberta Health Services (AHS) Stollery Neonatal Transport Team.

In some cases, that may involve transporting an infant by ambulance, while other, more remote sites may be better reached by AHS Air Ambulance service.

Neonatal consultations to the Stollery Neonatal Transport team are received

through the “Referral, Access, Advice, Placement, Information, and Destination” (RAAPID) coordinating call center. Through this telephone consultation process clinicians determine whether utilization of the NICU to Nursery Telehealth program could improve the consultation.

The NICU to Nursery Telehealth program uses a hard-wired connection and AHS data port to maintain a reliable connection, allowing the Neonatal Transport Team—a multidisciplinary group that includes a neonatologist, transport nurse, and transport respiratory therapist—to consult with local physicians/clinicians, help guide a baby’s care, and coordinate transfers to larger centres, as needed.

“There are several different objectives of having that audiovisual aid: One is to enhance the triage of the referrals. So,

by visual interview we might get a better impression that this is acute and we need to get our team there as fast as possible,” explained AHS neonatologist Jennifer Toye, medical lead for the Stollery Neonatal Transport Team “Or [another] baby, with a little bit of advice and support to the local team, could stay with their mom in the more remote centre.”

With over 800 neonatal transports per year, she says, “We always have two transport teams on shift. So one of those teams could be out, and we have the second transport team available. And we always have a neonatologist designated as on-call service for the transport team. We are transporting more infants, on average, than any other Canadian city besides Toronto. Because of the area covered, those trips may cover more than 700 kilometres and take up to 10 to 12 hours, depend-

ing on the site involved and transport method available.”

The current iteration of the Stollery NICU to Nursery Telehealth program comes on the heels of a pilot program in 2014 and 2015, which looked at the potential benefits of bolstering the existing telephone consultation programs with video conferencing methods, starting with three rural hospitals in High Level, Hinton, and Wetaskiwin.

The program expanded considerably since then: it now includes 39 referral sites: 36 in rural Alberta, Yellowknife and the First Nations and Inuit Health Branch nursing stations at Fox Lake, John D’Or, and Garden River First Nation. The team is working on setting up telehealth links in the Northwest Territories and parts of Nunavut.

In an effort to improve accessibility, the neonatologists have had the ability to access NICU to Nursery virtual consultations remotely (outside a hospital setting) using new secure and portable software, which allows 24/7 access to virtual consultations.

“As you can probably imagine, babies don’t care about the time of day,” Toye chuckles, “so we often get consults when we’re not in a hospital.”

Another objective of the program is to increase support to referral site clinicians to help to keep the mother-baby unit together at the remote site, when possible, while offering families with clinical explanations when transport to a larger centre is needed.

“We may be coming to pick up the baby anyway, because it’s appropriate to transport the baby to a tertiary site,



The program now includes 39 referral sites: 36 in rural Alberta, Yellowknife and the First Nations and Inuit Health Branch nursing stations at Fox Lake, John D’Or, and Garden River First Nation.

such as a preterm infant, so we’ll help them stabilize the baby,” Toye says. “If it’s a baby that has mild symptoms and is likely to improve in the next few hours, we are just providing that local referral site with the advice and support they need to do that.”

In a single year—from January, 2017 to the final days of December, 2017—the Neonatal Telehealth team took part in 54 consultations involving 49 critically ill babies at more than a dozen rural sites, ultimately advising on, and assisting in, the transport to larger sites with more specialized care for half of the neonates, according to a study by Toye and her colleagues.

But nearly as many infants were able to continue receiving care at their local hospitals, Toye recalls, and the availability of the telehealth consultation gave a boost to local clinicians’ ability to address neonatal cases, while of-

fering reassurance to families and explaining the reasons for either keeping a baby at the original referral site or moving them to a tertiary site.

Regardless of the most appropriate course of action, she explains, “we want to make sure we’re supporting clinicians.”

“We never ask them to take on more than they’re comfortable with, because different sites have different levels of staffing and resources available to them,” Toye notes. “There’s a lot of individualization of what works for the different sites.”

The support may not always be needed, but she hopes that remote doctors, their smallest patients, and family members will now have confidence knowing that the telehealth and transport options are within reach. ■

*Photo captions: (top) Dr. Jennifer Toye and Neonatal Transport RN, Shelley Skelding at the Stollery site; (bottom) Val Rogers, RN, Acute Care during a telehealth simulation between Lac La Biche and the Stollery sites*

# Always Improving, At Home and Abroad

With quality improvement approaches, Khalid Aziz and his colleagues are finding ways to enhance training and care for mother and newborns at home and abroad.

We do it all the time. All of us. We make adjustments—some of them subtle, some more marked—to try to make our lives more efficient.

With quality improvement, investigators set out to formalize those tweaks within a framework that makes it possible to measure the success of the newly established practices, protocols, or interventions. That methodology can be used to make headway across many different disciplines, including care for newborns, infants, and children in the neonatal or pediatric units.

“Research has exploded in the last 20 years—it’s grown exponentially. We know more and more about more and more, and there are more and more interventions that we know work,” says Khalid Aziz, a neonatologist at the Royal Alexandra Hospital. “The problem is we don’t know how to implement these changes, how to apply the best available research.”

That has neonatologists like Aziz — who holds a pediatrics appointment at the University of Alberta, is medical director of the U of A’s Office of Lifelong Learning, and an adjunct profes-



Khalid Aziz is a neonatologist at the Stollery NICU at the Royal Alexandra Hospital that specializes in the care of very premature infants; he is a professor of pediatrics at the University of Alberta

sor for the university’s community engagement division — turning to quality improvement methods to provide ever-better care and boost outcomes for newborns and their mothers, including projects done through the Canadian Neonatal Network’s EPIQ program.

“We’re trying to apply the best available research in systems that are very, very complex with a large number of people

and many factors that influence outcomes,” Aziz says. “The need to have solid quality improvement methodology in every health system has grown, because if we could just apply what we know we should be doing, we would make a big difference to the well-being of people around the world.”

The key ingredients in quality improvement? Gathering data, engaging and working with those involved, and successful implementation, followed by another round of data collection after the fact to measure the effectiveness of whatever changes were introduced.

While quality improvement in relatively resource-rich settings such as Canada tends to focus on improving outcomes for high-risk babies, the investigators have been bringing similar tools to places with fewer resources available for healthcare, where high rates of maternal and neonatal mortality rates are still a more pressing concern.

As part of a project in Ethiopia, for example, Aziz and his team applied quality improvement on several fronts—from evaluating and improving how midwife educators are





A screenshot from 'Lib Yaleh' or 'If you have a heart' music video about the preventable death of a woman and her unborn child.

trained, to developing perinatal care programs at tertiary care centres such as St. Paul's Millennium Medical College in Addis Ababa.

The researchers attempted to expand similar training programs into more rural locales in Ethiopia, producing proof-of-principle data that such efforts are possible, given sufficient support from that country's federal health authorities.

They also tried something a little out-of-the-ordinary in Ethiopia: an effort to reach members of the community and health extension workers with a moving song called "Lib Yaleh"—or, "If you have a heart"—about the preventable death of a woman and her unborn child. The message, conveyed in Amharic and Oromo languages by well-known Ethiopian singers Zeritu Kebede and Tadele Gemechu, respectively, is clear: expecting moms-to-be and their families benefit when women visit local clinics for care during pregnancy.

[youtu.be/s\\_EO6qdZ6\\_E](https://youtu.be/s_EO6qdZ6_E)

The song's potential impact on maternal health is difficult to measure, Aziz says. Still, he notes that the song has been played hundreds of thousands of times based on data from websites hosting a related music video.

Other projects have yielded more tangible results. For the Kangaroo Mother Care effort, for example, Aziz has worked with a team in Southern Ethiopia to scale up a quality improvement and educational training program that encourages skin-to-skin contact between mothers and their new babies, breastfeeding, and other supports for mothers.

[bmjopen.bmj.com/content/9/11/e025879](https://bmjopen.bmj.com/content/9/11/e025879)

Based on promising results in Ethiopia and India, the researchers are now piloting a program that teaches Kangaroo Mother Care alongside broader quality improvement methods in Uganda.

Along the way, he adds, the team learned a lot about teaching and applying quality improvement in another

health care setting that it subsequently brought back to Canada and used over the past two years or more.

"The quality improvement program that we refined in Ethiopia, the educational workshop, we actually brought back here and have trained residents—probably 500 to 1,000 people at the University of Alberta in that program," Aziz notes. "We learned a lot from delivering the program in rural Ethiopia, and we've used it extensively here for the last two years."

The quality programs the team has developed will likely have an even broader reach in the near future—stretching from small clinics in rural Alberta to Australia, New Zealand, India, and elsewhere, helped along in no small part by some of the same online learning platforms that more and more educators are turning to during the COVID-19 pandemic.

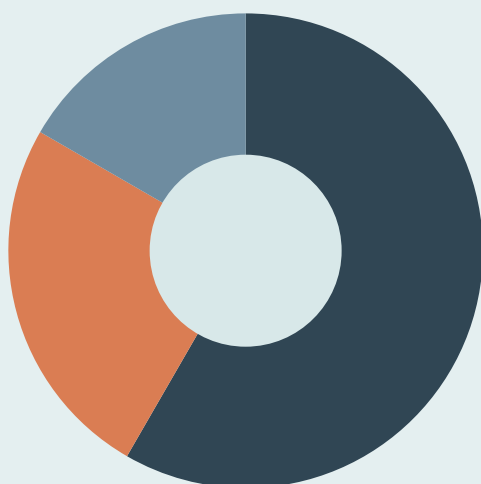
"We have modified it so we can train residents. Also we can train undergrads, and at the moment we're modifying it so we can train teams, a mixture of people—it might be physicians, nurses, even visitors, parents, administrators, patients," Aziz says. "I think the principles are sound, so just like you can translate it between health-care systems, it's translatable between different audiences."

As more and more healthcare providers learn and embrace quality improvement in settings close to home and farther afield, he adds, best practices are bound to keep getting better, benefiting moms, babies, and the broader society. ■

# Our Neonatologist Team

## 25 Neonatologists

2016 | 2017



14 clinical academic

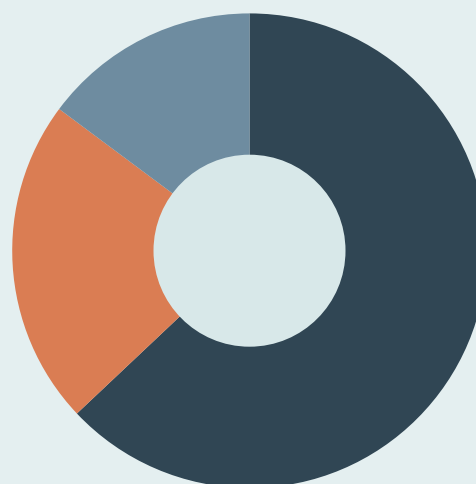
6 clinical administrative

4 research neonatologists

*\*1.0 FTE locum & 0.5 FTE sessional neonatologists who provided clinical services*

## 28 Neonatologists

2018 | 2019



17 clinical academic

6 clinical administrative

4 research neonatologists

*\*1.0 FTE locum began in November 2018 & two 0.5 FTE sessional neonatologists  
\*Two neonatologists on maternity leaves of absence*

## Division Members (as of July 1, 2020)

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**Dalal Abdelgadir**  
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Professor  
Medical Director (QI), Office of Lifelong Learning, FoMD

**Jagmeet Bhogal**  
Assistant Clinical Professor

**Paul Byrne**  
Clinical Professor

**Po-Yin Cheung**  
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**Sylvie Cormier**  
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**Santiago Ensenat**  
Associate Clinical Professor

**Sandra Escoredo**  
Associate Clinical Professor

**Matthew Hicks**  
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**Abbas Hyderi**  
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**Manoj Kumar**  
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AHS Associate Director in Medical Informatics and eCritical

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Clinical Lecturer

**Kumar (Vazhkudai) Kumaran**  
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**Marc-Antoine Landry**  
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**Brenda Law**  
Assistant Professor

**Robert Lemke**  
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Facility Lead, Grey Nuns NICU

**Linda Mahgoub**  
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**Abe Peliowski**  
Clinical Professor

**Ernest Phillipos**  
Clinical Professor

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**Amber Reichert**  
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**Mehaboob Shaik**  
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Assistant Clinical Professor

**Jennifer Toye**  
Assistant Clinical Professor  
Director, Neonatal Transport Program

**Juzer Tyebkhan**  
Associate Clinical Professor  
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Director, Dossetor Health Ethics Centre, FoMD

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