

INVEST IN



EVERY DAY, BC AND YUKON'S SMALLEST, SICKEST, AND MOST VULNERABLE NEWBORNS BEGIN THEIR LIVES AT BC WOMEN'S HOSPITAL + HEALTH CENTRE NICU.

The birth of a child is one of life's most awe-inspiring and life changing moments. Despite the anxiety often felt by expectant parents and their extended family, the vast majority of deliveries result in the safe arrival of a healthy newborn.

For some families, it's a different story. Complications during pregnancy or delivery can lead to an unanticipated and urgent admission to the BC Women's Neonatal Intensive Care Unit (NICU). Emotions run high as parents are told their precious new baby will need specialized intensive care. Suddenly finding themselves in a world of uncertainty, parents meet the expert team at BC Women's Hospital + Health Centre, who step in to provide lifesaving care and offer holistic, wraparound supports for the whole family.

ABOUT THE BC WOMEN'S NICU



- Babies who have undergone urgent surgical procedures to repair an abnormality or a congenital malformation regularly require advanced intensive care within the NICU.

In all these scenarios, time is of the essence. Providing lifesaving care for these newborns requires critical diagnostic information. For many babies, magnetic resonance imaging (MRI) scans are vital to confirm a diagnosis, optimize their care plan, and make arrangements for the ongoing interventions and therapies that will give them their very best chance in life.

The Neonatal Intensive Care Unit (NICU) at BC Women's Hospital + Health Centre (BCWH) is a world leader in neonatal care, receiving the most medically complex and premature infants and providing the highest level of neonatal intensive care across British Columbia and the Yukon Territory.

Co-designed with physicians, nurses, allied health professionals and NICU families, the BCWH NICU cares for up to 1,200 premature and critically ill infants each year. The NICU has 70 single family rooms located in 6 pods over two floors, with a unique patient and family-centered design that eliminates the separation of mothers, newborns, and families and enables parents to participate in their baby's hands-on care, building the necessary skills and confidence to care for their newborn safely at home.

BCWH NICU has 24-7 flex capacity to receive critically ill newborns arriving by medical transport from anywhere across BC or the Yukon:

- Preterm birth (delivery < 37 weeks) is the most significant factor contributing to neonatal death, brain injury and disability, and is the most common reason for NICU admission. BCWH NICU cares for babies as early as 22 weeks' gestation. Babies who survive face increased risks of neurodevelopmental impairment, physical disabilities, mental health challenges, and cardiovascular disease.
- A difficult birth can lead to a newborn being deprived of oxygen and a subsequent brain injury, resulting in an uncertain future.
- Some babies are born with heart or brain abnormalities, while others may experience sudden seizures resulting from an infection, sepsis, meningitis, or a stroke.

BC'S ONLY LEVEL 4 (QUATERNARY) NEONATAL CARE CENTRE

The **largest** NICU in
Western Canada

Caring for up to **1,200**
premature and critically
ill infants each year





OUR VISION: A STATE-OF-THE-ART NICU MRI

BC Women's Health Foundation is raising \$6.5 million to purchase and install a ground-breaking new piece of equipment: The Embrace Neonatal MRI Scanner (Aspect Imaging). As the only Health Canada-approved MRI scanner designed specifically for neonates, it will be solely reserved for NICU use, providing quick and easy access for BCWH newborns who need it most. Only 5 hospitals currently use the Embrace MRI worldwide. BCWH will be the first in Western Canada.

Designed for low field strength MRI, this purpose-built MRI means the NICU's tiny patients do not require any additional preparation and there is no modification needed to accommodate their lifesaving equipment. The scanner will be located in close proximity to all NICU care pods making rapid access the new standard of care. The NICU care team and the newborn's parents can be present for the entire procedure, ensuring seamless continuity of care, and reducing parents' anxiety. Should there be any complications, the clinical team that knows the baby best is present to respond in a timely fashion.

THE STATUS QUO

Currently, BC Women's NICU has limited access to an MRI located in the pediatric imaging centre located elsewhere in the hospital, which must also serve inpatient pediatric patients, outpatient pediatric patients, breast imaging patients, and pregnant patients with fetal abnormalities. This poses significant challenges:

- With outpatients waiting up to 18 months for their MRI, only one third of NICU babies qualify for an MRI.
- With only a 30-minute window for their MRI, newborns must lie still, which often means they must be sedated or even anesthetized, exposing their brain to powerful medications that would otherwise not be needed.
- Moving newborns from the NICU to the pediatric imaging centre requires the involvement of the entire NICU care team. Multiple team members must painstakingly prepare and physically move the incubator and equipment, taking up to four hours from start to finish.
- During the scan, only MRI-trained hospital staff can be present with the patient; therefore, the team that knows baby best must temporarily sign over care and stand by in case urgent interventions or resuscitation is needed.
- Parents are not able to accompany their baby during the MRI, which causes significant anxiety and concern for several hours.



Embrace Neonatal MRI Scanner (Aspect Imaging)

A CATALYST FOR NEW DISCOVERIES AND EFFECTIVE FOLLOW-UP CARE

The NICU MRI will also be a vital tool to unlock new knowledge about the developing neonatal brain. Newly arrived Neonatal Neurologist Dr. Thiviya Selvanathan is a leading clinical researcher who has already developed a world-first methodology to map connectivity and healthy functioning within the developing neonatal brain. Understanding these pathways and how they influence motor movement, cognition, and emotion means that clinicians can now pinpoint the location and extent of brain injury, and more accurately predict long term outcomes for newborns.

Building on this innovative work, Dr. Selvanathan plans to utilize the NICU MRI to accelerate her research into babies born at term who have experienced a brain injury due to a disruption of oxygen to the brain during delivery. Discoveries enabled by the MRI studies will then extend to the Neonatal Follow Up Clinic, in order to:

- Evaluate the short- and long-term results of neonatal intensive care at critical developmental milestones from infancy through early childhood and beyond.
- Inform the ongoing care of high-risk infants to ensure appropriate and timely interventions, minimizing the severity of disability or developmental delay.
- Translate research breakthroughs into new NICU care protocols and education for neonatal health professionals, to continue the evolution and improvement of neonatal intensive care.

Access to this critical equipment will mean that no baby deserving of early intervention is left behind, and future NICU babies will receive the very highest standard of care.

Embrace Neonatal MRI Scanner (Aspect Imaging)



“Parents always want to know, ‘how is my baby going to do long term?’ Utilizing the NICU MRI to support our research will allow us to pursue the science to identify which babies are at highest risk for neurodevelopmental impairments, which kids will need extra supports and referrals to additional resources, and who will need earlier and more regular follow up.”

DR. THIVIYA SELVANATHAN, PHD

STEPPING UP FOR BC'S MOST VULNERABLE NEWBORNS

Thanks to you, when a family walks through the doors of the NICU at BC Women's Hospital + Health Centre, they will know that their tiny bundle of joy will receive the best care possible. Your investment in a dedicated NICU MRI will ensure our world-leading team has the tools to provide the very best lifesaving neonatal care for BC and Yukon's most vulnerable newborns.

Thank you for giving BC and Yukon's newborns and their families hope for a healthy future.