

Caring for the tiniest patients at GBMC



New Life, New Beginnings

A New NICU at GBMC



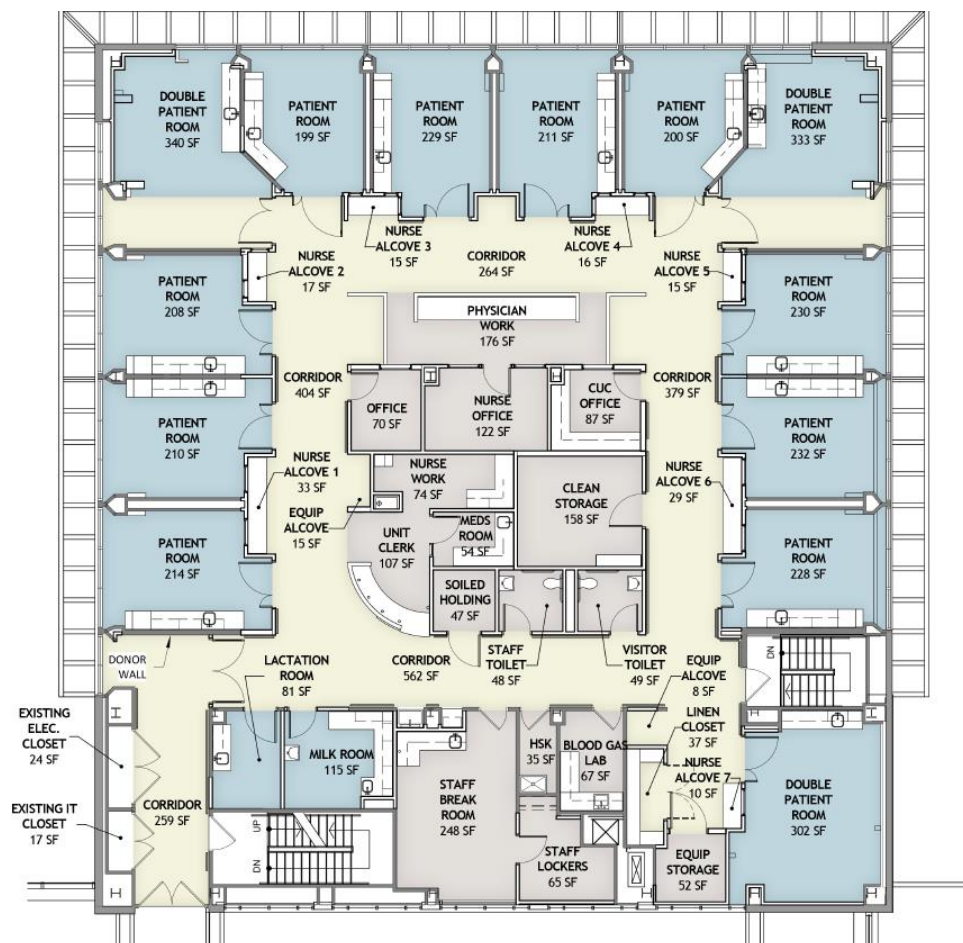
Photo above: Katie Stieber, RN, BSN. Katie has been delivering family-centered care in the GBMC NICU since 2009.

Each year, almost 3,800 new lives begin at GBMC. Close to 10 percent of these new babies enter the world too small, sick or arrive too soon. When that happens, the Neonatal Intensive Care Unit's (NICU) expert team of board-certified neonatologists, pediatricians, advanced practitioners, nurses and respiratory therapists provide around-the-clock, comprehensive, complex care. Led by Dr. Howard J. Birenbaum, the NICU sees almost 400 patients per year, modeling a philosophy of family-centered care. Parents are encouraged to hold their infants as much as possible, breastfeed and be actively involved in the care plan. Strong teamwork, long tenure and minimal staff turnover fosters a unique environment of consistent care on a personalized level, encouraging close contact between families and the neonatologists.

With patient-centered care at the heart of our work, we are updating and renovating our NICU to meet the needs of all the new precious lives that begin here at GBMC. A new NICU -- refreshed with a friendly palette of colors and new single-family rooms (SFR) lined with windows that share glimpses of nature -- will welcome our tiniest new babies and their families.

- 10 private rooms
- 3 double occupancy rooms for twins
- 16 total beds available for patient care

A recent report in the *Journal of Pediatrics* notes mothers and infants within a SFR NICU have greater opportunities for family-centered care, privacy, one-on-one interaction and skin-to-skin contact, resulting in greater rates of pumping human milk, success with breastfeeding and provision of human milk.



Enhanced Features of the New SFR Unit

Keeping Noise to a Minimum

The SFR NICU rooms have been designed to dampen noise between each patient room and the adjacent spaces. Utilizing the existing double wall construction and adding sound batt insulation in the cavity aids in providing a quiet environment. In addition to sound-insulated walls at the corridor, the design includes additional space separation from the corridor with a recess for the entry door and a remote nurse station. The remote nurse station allows staff to work and visually connect while not disturbing the family/patient. The ceiling panels in the patient rooms have a high NRC (Noise Reduction Coefficient) to minimize the sound within each patient room.

Gentle Lighting

Patient room lighting is designed at a low level for patient and family comfort while having the option for increased levels to support physician and nurse activities. A cove light is built into the wall above the door to provide ambient indirect illumination across the ceiling. Control of the lights is personalized to allow the nurse to turn work zone lights on and off from both the alcove and within the room. Exam lighting that is normally off is controlled on the headwall adjacent to the staff when working with the infant. Parents have a dedicated light to support their needs within the family zone. The windows have shades with two rollers that can either shade 90 percent of the exterior light or blackout all the sunlight to assist the staff when working with the patient.

Patient Space, Family Space and Caregiver Space

Each SFR NICU patient room is designed with three zones: a nurse zone, adjacent to the entry door; a patient zone, including space for the physician; and a family zone, adjacent to the windows with a padded window seat, sleeper/recliner chair for nursing mothers, a side chair and a wardrobe to hold visitors' belongings. Sleep spaces are provided for the parents by using the recliner chair and padded window bench. We recognize the importance of family bonding and want to encourage parents to spend as much time with their infant to practice the skills they need to ease into the passage from hospital to home.

Newly Designed Kangaroo Chairs

Our exceptional facilities offer specialized incubators and now will also offer newly designed Kangaroo chairs. These chairs are designed to promote skin-to-skin contact and early breastfeeding, both of which are important for improved clinical and neurodevelopmental outcomes. Kangaroo care is a method proven to have many benefits including: stabilization of the baby's heart rate, improved (more regular) breathing pattern, gain in sleep time and more rapid weight gain. We listened to the voices of parents whose infants have benefited from Kangaroo care and worked with the designer to choose the design of the chair based on the experts – our NICU families and our NICU nurses! Kangaroo care promotes a bond and feeling of closeness between parents and the baby.

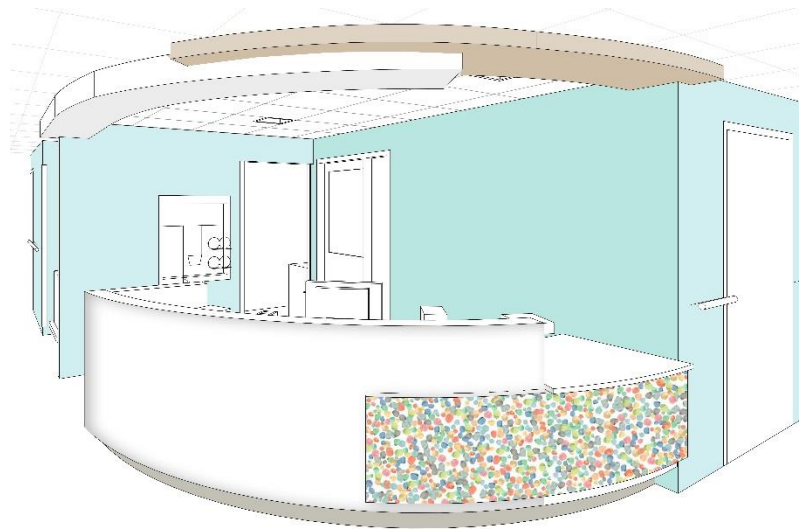


Breast Milk Drawer

Each room has a refrigerated breast milk drawer built into the cabinetry to keep the patient's milk in their room. This unique piece of equipment is the quietest medical grade refrigerator that uses less energy and is easy to maintain and clean. For the double patient rooms, an additional mobile refrigerated drawer will be wheeled into the room when occupied by two separate families.

Inviting Color Palette

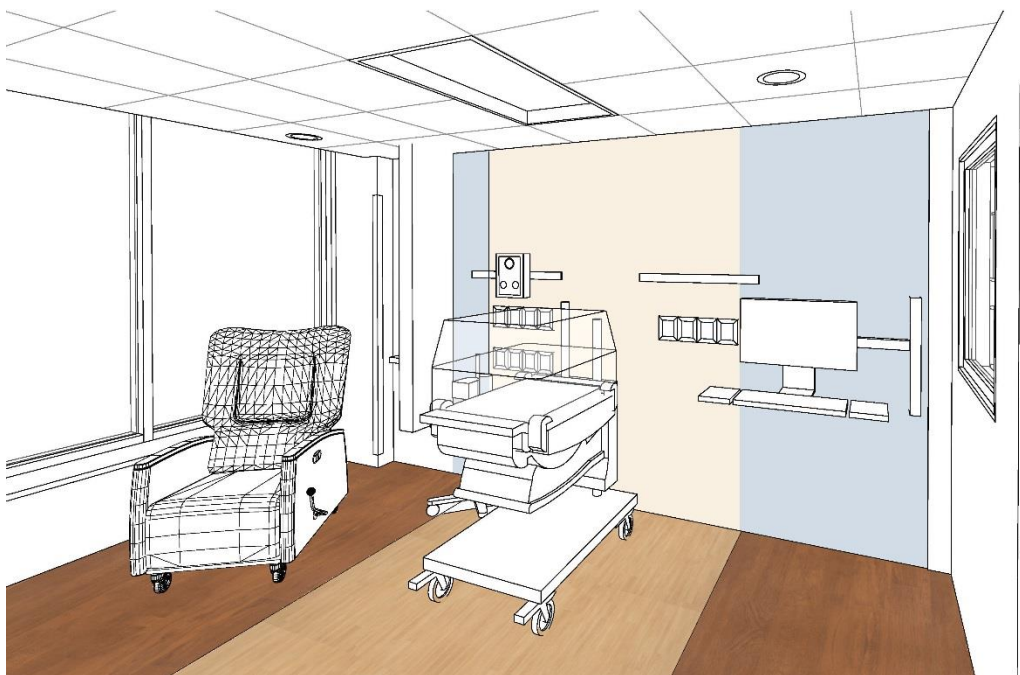
The color palette for GBMC's NICU is light and fresh. Medium-tone, wood-look floors with a simple pattern in a lighter wood tone provide a warm, homey feel to the space. A majority of the walls are an inviting off-white with accent shades of aqua and periwinkle. Subtle neutral-colored patterns in the headwall and privacy curtain, white countertops, and light wood and textural millwork add interest while keeping the overall look simple and streamlined. Pops of color in public areas are found specifically at the nurse work areas with a resin panel that displays a wide range of colors in a fun, playful pattern. The color continues into the patient rooms through accent walls and fabrics. The combinations of pattern, texture and color will make the new NICU space warm, inviting and hopeful.



Brainstorming, Innovating, Testing and Refining the Design

During the initial design, GBMC employed the Lean Methodology 3P, a powerful tool to design out waste from the onset of the project, to meet both patient and physician requirements, and grant ownership of the space to the professionals who will ultimately use it.

3P stands for Production, Preparation, Process and is ideal for healthcare, where the activities of producing and preparing services for patients with the least amount of waste depend heavily on a well-tuned process. With continuous input from our clinical team, patient feedback and the GBMC lean team, GBMC has been able to design a family-centered SFR NICU that considers all aspects of patient care, family needs and workflow into design.



Compassionate, Supportive Care for Your Family

The GBMC NICU delivers a complete range of medical and surgical services in a manner that fosters optimal development of the newborn infant as well as incorporates the family into care-plan initiatives. GBMC's NICU is a Level III NICU, caring for infants of all gestational ages and offering advanced respiratory support and care for infants requiring major surgical procedures.

The NICU works as a team with other disciplines at GBMC, ensuring the infant gets well-rounded care. Specialists include speech and language therapists to address oral motor skills and nutritionists to monitor the infant's caloric and protein needs for growth. The NICU has two dedicated social workers that engage directly with families during their stay in the NICU and following discharge. Occupational therapists and physical therapists are also key to the overall care and development of our neonates. In fact, they lead developmental care rounds in the NICU.

At a time that can be filled with fear and anxiety, families with babies in the GBMC NICU truly develop a deep connection with the NICU staff. As described by parents who lost their very premature twins, "The staff at GBMC's NICU was phenomenal, and knowing that other families will receive the support and guidance they need is of great comfort to us." The NICU also partners with the Gilchrist Kids Hospice program, which provides extensive support for parents and families of infants and children with life-limiting conditions. A NICU family support group and our family-centered care team offer compassion, comfort and empathy.

Beyond treating the infant during the hospital stay, the NICU has a discharge coordinator who helps the family prepare for taking their baby home, including obtaining insurance approval for home medications, equipment and skilled care. The coordinator also assists families with setting up outpatient specialist visits, such as occupational and physical therapy, neurodevelopmental follow-up and other visits as needed. The NICU provides a continuum of care that begins with the baby's birth and extends as long as necessary to achieve the best health outcomes.

Mollie Chin's Story



When I was at week 29 of my pregnancy, I went into GBMC since my blood pressure was high and wasn't going down. I didn't feel stressed out and I wasn't worried. As the doctors did some blood work and routine tests, I just had this feeling this wasn't going to be one of those times when I entered and exited. I was right.

Based on my protein count and blood pressure, I had developed preeclampsia and IUGR (inner uterine growth restriction). Both of which are serious conditions and landed me in the high-risk unit.

My original due date of January 27, 2013, wasn't going to happen. I could deliver at any time. My husband and I met with staff and doctors of the NICU and discussed what would happen if our son was born early. The laundry list of things that could go wrong was overwhelming.

Thanksgiving night -- at only 31 weeks -- everything went downhill. At 8 a.m. Black Friday morning, a sonogram showed our son was only receiving 0-50% blood from the placenta. The staff immediately scheduled an emergency C-section and started preparing for delivery.

At 31 weeks, 1lb 14oz, our son Xavier Eli Chin was born. I saw his small face and heard a small cry before they took him up to the NICU and was thrilled he was okay. That began the next phase in our journey: raising a NICU baby.



From kangaroo-ing to bathing, diaper changes, pumping and bottle feeding, the NICU nurses showed me how to care for our son. They set us up for success. I cry sitting here thinking about how hard they worked. I stayed long hours in the NICU and got to know the staff. Nurse Monica was amazing during the week and so was Nurse Kim, our weekend nurse. I will never forget how much they cared for our son when we weren't there. They taught us so much and showed love for a child who had a small survival rate. While being told by the doctors Xavier could be blind or deaf, or have a chromosomal or genetic disorder, we believed God had a plan. And He certainly did. God gave us angels in the NICU and they saved our son. We are forever grateful for the care we received at GBMC.



Xavier is four now, and just as feisty and active as he was in the NICU! He is talking, running, climbing, playing and constantly learning. He has a passion for construction vehicles (they are everywhere in our house!) and he loves *Frozen*.

A Commitment to Evidence Based Medicine and Clinical Research

While providing excellent and thoughtful patient care, Dr. Birenbaum encourages his staff to "remain at the forefront of the latest developments in safe, effective, and proven treatments and technology." Through his research -- published in the prestigious journal *Pediatrics* in January 2009 and in the *Journal of Neonatal Perinatal Medicine* in 2016 -- the GBMC NICU has reduced the risk of chronic lung disease in low birth weight babies by 75 percent, managing respiratory support primarily by non-invasive means. Chronic lung disease can result in prolonged hospital stays, continuation of oxygen therapy after hospital discharge, readmission to the hospital because of significant respiratory problem and, in severe cases, neurodevelopmental delays. Since 2010, few infants have been discharged home on supplemental oxygen, and our length of stay is in the lowest quartile for the Vermont Oxford Network.

The NICU participates in the Vermont Oxford Network (VON), a national NICU benchmarking initiative that identifies and promotes best practice in the care of high-risk infants and supports quality improvement. Additionally, the Division of Neonatology participates in VON's iNICQ a learning collaborative which provides opportunities for collective clinical research and quality improvement initiatives. There are many ongoing research ventures by the physicians and the practitioners and many of our NICU nurses are in clinical education programs receiving their masters and doctorates.

We have reduced many nuisance alarms resulting in a quieter environment and less stress for our families and staff. We have also reduced the percentage of infants 34 weeks' gestation or greater treated with antibiotics by almost 50 percent by employing the Kaiser Neonatal Early-Onset Sepsis Calculator. An additional intervention involves rubbing glucose gel into the mucosa of infants' cheeks and then allowing the baby to feed, significantly reducing the need for intravenous glucose. Both of these result in fewer infants admitted to NICU and less separation of mother and baby.

Disease Prevention

GBMC's NICU established a Human Milk Bank -- with the support of the Women's Hospital Foundation -- to prevent the development of necrotizing enterocolitis (NEC) in very low birth weight babies (VLBW). NEC is the most serious gastrointestinal illness in the NICU, affecting between 5 and 10 percent of VLBW infants and a mortality rate of close to 20-30 percent. Twenty-five percent of infants who recover from NEC require treatment for long-term problems, including growth and developmental delays. An infant who develops NEC will significantly extend the NICU stay and incur costs between \$74,000 and \$198,000. Introducing banked human milk with derived fortifiers to those babies has the potential to significantly improve health outcomes. It is estimated for every dollar spent on donor milk, between \$11 and \$38 can be saved on healthcare costs.

Central venous catheters (CVCs) are regularly used in intensive care units, and catheter-related bloodstream infection (CRBSI) remains a leading cause of healthcare-associated infections, particularly in preterm infants. Increased survival rate of VLBW infants can be partly attributed to routine practice of CVC placement. Infection rates can be reduced by the application of strict protocols for the placement and maintenance of CVCs and the education of NICU physicians and nurses. Thanks to the NICU's participation in a Handwashing Collaborative to reduce hospital-acquired infections, especially in central line associated bloodstream infections, we had no central line infections this past year.

Funding Opportunities

GBMC is committed to service excellence and providing our patients and their families with all the resources needed throughout their NICU journey. Donor support will help GBMC's NICU deliver the best in care in a refreshed family-centered unit.

\$1.5 million

GBMC NICU Naming

The value of a state-of the art SFR NICU cannot be underestimated as almost 400 babies are admitted to the GBMC NICU each year. The newly-designed SFR NICU offers a fresh, updated space to facilitate healing for patients and their families. Every dollar raised will be used to invest in upgrading the space where the GBMC Neonatal Intensive Care Unit expert team provides the care we would want for our own loved ones.

With donor support, we would be honored to permanently name this space. Two prominent locations have been designated to support a donor wall and department signage.

\$500,000

NICU family Breezeway

At GBMC, the patient comes first, which means patient comfort and emotional well-being is a high priority. The NICU experience begins as the family enters the NICU Family Breezeway. We strive to offer health, healing and hope to our NICU families. With donor support, we would be honored to permanently recognize the donor as one of the lead donors on the donor wall, prominently located in the NICU Family Breezeway welcoming families as they enter the space.

\$250,000

Double Occupancy Room for Multiples

The family experience has driven the design decisions made for our new, renovated NICU space. Knowing infants and families are affected by their environment, great care has been taken to meet the special needs of families with multiples. With donor support, we would be honored to permanently name each of the double occupancy rooms.

\$100,000

Family Friendly Single Family Room

A SFR NICU enables families to expose their infants to the daily activities and traditions they would experience at home. The most cited benefit of SFR care is an improved environment for the infant and family. With donor support, we would be honored to permanently name each of the single family rooms.

\$100,000

Reception Area

Families and visitors are greeted at a central reception area and directed to one of the new single family rooms. This is the nucleus of the new SFR NICU. With donor support, we would be honored to permanently name this space.

\$100,000

Caregiver Respite Room

Many studies have documented an increase in both family and staff overall satisfaction with the change to the SFR environment from the open environment. We want to be mindful of the caregivers and their well-being as well as the patients and families. This room will offer space for caregivers to catch their breath and clear their heads for a few moments. With donor support, we would be honored to permanently name this space to acknowledge the importance of caregiver well-being.

\$100,000

Physician Work Space

Patient outcomes are at the forefront of our NICU physicians work each day. Appropriate work areas include space for electronic documentation and access to patient information. We are confident that our physicians will find working in the SFR NICU rewarding. With donor support, we would be honored to

permanently name this area which is the core of the state-of-the-art care being delivered in the GBMC NICU to every patient, every time.

\$50,000

Staff Support Lockers

Providing a comfortable clean space for our care team to store their belongings is just one of the amenities that was designed to support our dedicated caregivers who work tirelessly to deliver the best in care for each baby on the unit. With donor support, we would be honored to permanently name this space.

\$50,000

Shared Office Space

Each member of the team makes a vast difference in the overall care experience for each NICU baby and their families. With donor support, we would be honored to permanently name this office space for the use of the entire team.

\$50,000

Blood Gas Lab

A blood gas is a test that can save a baby's life. The blood gas helps determine respiratory function, particularly how well a child's body is exchanging oxygen and carbon dioxide, as well as the acid/base status (pH) of the blood. The blood gas can determine how well the baby's lungs are able to move oxygen into the blood and remove carbon dioxide from the blood. This test alerts the physician if the baby needs more respiratory support. With donor support, we would be honored to permanently name the Blood Gas Lab.

\$50,000

NICU Lactation Room

New mothers have the desire to protect, nurture and care for their children. Nourishing their babies is one of the first acts of love that a parent gives to a child. Having a baby in the NICU can feel chaotic and stressful. This room is a quiet, calm space for mothers to pump breastmilk. With donor support, we would be honored to permanently name this tranquil space.

\$50,000

Nursing Office

We aim to create an environment where caregivers find purpose and joy in their work while serving their patients. GBMC recognizes the importance of our nursing staff and what they bring to patient care. Our patients are grateful, and they show that through their gifting. But they are not just grateful because they are well; they are grateful because their nurses were kind, compassionate and dedicated. These are qualities not typically seen on a nursing resume, but ones that are irreplaceable to those in the profession. With donor support, we would be honored to permanently name this office space to acknowledge the significant mark our nurses make in the lives of NICU families.

\$50,000

Clinical Unit Coordinator Office

The Clinical Unit Coordinator facilitates unit organization and patient care by assisting in the coordination of patient, nursing, physician and other health care provider office activities. This role is essential to the success of the team. With donor support, we would be honored to permanently name this office space.

\$25,000

Nurse Alcoves

In keeping with our high patient safety standards the visual field of the nurses and parents was taken into account when designing the nursing alcoves. The alcoves keep nurses and medical providers close to the point of patient care. The balance of visibility and privacy are essential for the well-being of the family and staff. With donor support, we would be honored to permanently name each alcove as pledge of appreciation for the care providers.

Funded

Milk Bank

The Human Milk Bank generously funded by the Women's Hospital Foundation is an asset and source of comfort to our NICU families. We extend Human Milk Bank resources to mothers with special circumstances. We are grateful for the support which allows us to support our patients in their time of need.



GBMC

Please contact Kate Thorne, Director of Philanthropic Engagement
with further questions or to learn how you can support the NICU renovation project.

443-849-2794 or kthorne@gbmc.org.