EXCELLENCE

EXCITING TIME EMBARKING ON NEW MISSION AND VISION FOR UNIVERSITY OF MINNESOTA NEUROSURGERY

Under the leadership of Stephen Haines, M.D., the Neurosurgery Department has grown over the last several years and now has fellowship-trained neurosurgeons in nearly every neurosurgery subspecialty. Reaching this point gave us the opportunity to revisit our mission and develop a new vision for the next chapter in University of Minnesota neurosurgery.

Working with Good Leadership Enterprises, we explored our history and examined our role as it relates to neurosurgery in Minnesota. Through this process, we developed a new mission statement, one that we are proud of and feel truly represents who we are:

Neurosurgical patients in Minnesota receive the safest and best care in the nation. The University of Minnesota is a destination for comprehensive, collaborative, patient-centered care of the most complex neurosurgical diseases. Through research and education, we lead the discovery of new neurosurgical knowledge and improvement of patient care throughout the world.

Our patients are our first priority
We practice innovative, team-based neurosurgery
We train neurosurgical leaders who improve our communities
Our research improves patients’ lives.

Moving forward, our new mission statement guides us in all that we do. Over the next two decades, we are committed to developing into a neurosurgical program that will lead the way in safety and care for neurosurgical patients in Minnesota. We will do so through collaborative, multispecialty, disease-centered care, will incorporate discovery into every aspect of our practice and will educate the future leaders of neurosurgery.
Pediatric Neurosurgery Department known for its quality, passion and reach

Lydia’s story is just one of many for the Pediatric Neurosurgery Department at University of Minnesota Children’s Hospital. The department has an unparalleled depth of technical expertise, but they also focus on the softer skills and are encouraged to spend time with patients and their families to answer any questions.

The Pediatric Neurosurgery team has one goal – to provide the best, safest patient care in Minnesota. Chief Pediatric Neurosurgeon Daniel Guillaume, M.D. leads the team. He is joined by Stephen Haines, M.D., Neurosurgery Department Head, and Pediatric Neurosurgeon Cornelius Lam, M.D., Ph.D. The team also includes current Chief Resident Amit Goyal; Nurse Practitioners Leah Kann and Jennifer Platt; Care Coordinator Tosha Lopez, RN; and Clinic Administrative Assistant Matt Yaeger.

Patients come to the Pediatric Neurosurgery Department from all over the world and are seen for a wide range of conditions. Thanks to pioneering research being done at the U of M, patients can get treatments not typically available at other institutions. Patients also benefit from collaborations that routinely occur across many disciplines. And the team has specialized training and experience in minimally invasive and endoscopic neurosurgery.

For more information, please call 612-624-6666.

Charting new territory to solve a baby girl’s rare, life-threatening problem

When Lydia Kohler was born in 2011, she had a small bump on the back of her head. The doctors said it would go away, but it didn’t. At her two-week checkup, Lydia’s doctor was concerned and ordered an ultrasound, which revealed an abnormality. An MRI revealed a large, blood-filled sac caused by an arteriovenous fistula, a network of abnormal blood vessels that continually flowed into the sac. Lydia’s condition was beyond rare – maybe 100 of these malformations have ever been reported in newborns. Her doctors had no roadmap.

“We knew what it was, but she was still so small and she was asymptomatic, so we decided to delay treatment,” said Bharathidasan Jagadeesan, M.D., a neurointerventional radiologist at University of Minnesota Children’s Hospital and an assistant professor in the University’s Department of Radiology.

“Because it was so rare, we reviewed the case with many, many people,” added Andrew Grande, M.D., a vascular/endovascular neurosurgeon on Lydia’s medical team, which also included vascular/endovascular neurosurgeon Ramachandra Tummala, M.D., and Chief Pediatric Neurosurgeon Daniel Guillaume, M.D., “Everybody agreed that the best thing to do was wait.”

Then at six weeks old, Lydia had a massive seizure, a result of heart failure caused by the strain of pumping huge amounts of blood into the sac. She required several surgeries, each one lasting 8 to 10 hours. The doctors decided to use a medical-grade glue that was commonly used to seal off aneurysms to fill up the sac and close off the blood vessels. It was initially injected through Lydia’s femoral artery; however, that process caused problems. The team knew it had to take a different path.

The doctors then went directly through the soft spot on Lydia’s head, something that had never been done before. It worked. Using the new technique, the team completely shut down the malformed connections, which caused the sac to shrink and Lydia’s brain to rebound into the space once filled by the sac.

Today Lydia is a running, talking, two-year-old whirlwind who will never remember days spent in lifesaving surgery … or be aware that she helped chart new territory.

Solving complicated, difficult problems through research

The U of M neurosurgical research laboratories have developed a focus on stem-cell mediated recovery from various forms of nervous system injury and include:

- **Walter Low Laboratory** – Walter Low, Ph.D., directs the neurosurgical research laboratories and has particular expertise in adult multi-potent neural stem cells. His research focuses on using stem cells for treating neurological disorders.

- **Parr Laboratory** – research led by Ann Parr, M.D., Ph.D., currently focuses on transplanting neural stem cells grown from a patient’s own skin into an injured spinal cord to help repair damage.

- **Vel, V. Richard Zarling, Earl Grande Stroke & Stem Cell Laboratory** – co-directors Bharathidasan Jagadeesan, M.D., and Andrew Grande, M.D., focus on identifying novel treatments for stroke using endogenous (originating or growing within an organism or tissue) or exogenous (originating outside an organism or system) stem cells.

- **Brain Tumor Program** – Matthew Hunt, M.D., is active in the growing number of laboratories working on basic and applied research for brain tumors.

- **Neuroanatomy Research Laboratory** – Andrew Grande, M.D., and Emiro Caicedo-Granados, M.D., jointly lead this lab for neuroanatomical dissection. The lab also serves as a training facility and as a place to do neuroanatomical research.

PARR RECEIVES GRANTS TO SUPPORT SPINAL CORD INJURY RESEARCH

U of M Neurosurgeon and research scientist, Ann Parr, M.D., Ph.D., recently won grants from the U’s KL2 Scholars Career Development Program and the nonprofit Wings for Life to support her research in using adult stem cells to help repair spinal cord injuries.

The three-year KL2 grant provides salary support and a small stipend for research costs. The grant’s goal is to produce enough high-quality stem cells for a clinical trial, get FDA approval of the trial, and enroll patients.

The Wings for Life grant is a one-year, $110,000 award that also supports Parr’s work using transformed adult stem cells to help repair spinal cord injuries. Wings for Life is based in Salzburg, Austria. The organization’s focus is on increasing funding for research aimed at curing people affected by spinal cord injuries.

RESEARCH PROJECT HOLDS OUT HOPE FOR CHILDREN WITH HURLER DISEASE

The University of Minnesota Children’s Hospital sees more kids with Hurler and Hunter’s Syndrome than any other institution in the country. That makes the U a good fit for research into these rare genetic disorders in which a child cannot break down long chains of certain sugar molecules. The effects are devastating, from shortened lifespan to heart and bone problems to severe intellectual disability. Recent work by a U of M research team may provide some relief for these children, especially in the area of intellectual disability.

Walter Low, Ph.D., Associate Head for Research of the U’s Neurosurgery Department, and a member of the project’s research team, noted that the research focused on gene therapy. The team compared the effectiveness of two methods: endovascular (delivering the corrective genes through a blood vessel) and intraventricular (injecting the genes directly into the brain via the ventricles, a network of cavities filled with cerebrovascular fluid located in the center of the brain). “Using either delivery method, we significantly reversed brain pathology in animals with a Hurler phenotype [an organism’s observable characteristics or traits],” said Low. He added that the intraventricular process was far more effective. The next step for the team is to establish a clinical trial that will include children with both Hurler’s and Hunter’s Syndrome.
Our educational programs focus on training graduate physicians to become neurosurgeons. We also provide rotations that expose medical students to neurosurgery and advanced training for graduate neurosurgeons (currently, we offer fellowships in endovascular, spinal deformity, and neuroanatomy). Our faculty members participate regularly in continuing neurosurgical education programs nationally and internationally.

Departmental research programs focus clinically on improving the quality, safety and outcomes of neurosurgical treatment. In the laboratory, we focus on stem cell-based therapies for recovery from injury (including stroke) to the brain and spinal cord.

With each issue of Inside Neurosurgery, we will bring you stories about our programs, our people and our patients. We hope that this information will be interesting and helpful. We welcome your comments and suggestions.

Stephen Haines, M.D., Professor and Chair, University of Minnesota Neurosurgery Department

Save trees and subscribe to the electronic version of this newsletter by calling 612-626-8786 or emailing julso001@umn.edu.