

SUMMER 2025

NeuroNEXT

from the Departments of Neurological Sciences and Neurosurgery

A Summer of Innovation and Impact

This summer, the Departments of Neurological Sciences (DONS) and Neurosurgery have been energized by innovation, growth, and meaningful impact.

Since stepping into his new role as Chair of Neurosurgery, William T. Thorell, MD, has already made a notable impact. He offers insights into stroke detection and reflects the importance of his leadership role in shaping the department's future.

We also highlight the remarkable journey of Danko Pike, who arrived at the University of Nebraska Medical Center with life-threatening complications and was diagnosed with acute inflammatory demyelinating polyneuropathy. Thanks to expert care and resilience, he beat the odds and survived. Subin Mathew, MD, MBBS, shares the moving details of this powerful case.

In May, we proudly celebrated the graduation of our 2025 residents and fellows: Kanchan Kumari, MD; Nithin Kurra, MD; Yashwanth Pulluru, MD; Courtney Venegas, MD; Mehar Zahid, MD; Kyle Greenman, PhD; and Sarah Kenroud, OD, Frank Mezzacappa, MD, Alan Wang, MD and Carlos Alvarez, MD. Their hard work and dedication have been truly inspiring. Congratulations to each of you—we can't wait to see where your talents will take you next!

This issue also features Nebraska Medicine's involvement with Americo Fernandes, MD, FAAN, in a national initiative to advance ALS (amyotrophic lateral sclerosis) research. Additionally, we

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Matthew Rizzo, MD, FAAN
*Frances and Edgar Reynolds
Professor and Chair
Department of Neurological
Sciences*



William Thorell, MD
*Professor of Neurosurgery
at UNMC
Chair of the Department of
Neurosurgery*



Howard Fox, MD, PhD
*Senior Associate Dean,
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Turning the Page from pg.1

showcase how the Great Plains IDEa-CTR is advancing dignity and inclusion through the design of a custom hospital recliner for individuals with dwarfism.

In June, DONS proudly hosted the inaugural PTSD Symposium, bringing together national leaders in psychiatry, psychology, pharmacology, and neuroscience.

We welcomed new colleagues to our departments and enjoyed the inspiring performances of the Nebraska Medical Orchestra & Choir during its 7th season, culminating in the Jan and John Christensen Concert at the UNO Strauss Performing Arts Center.

Wishing you a safe and wonderful summer! We hope you enjoy this summer issue of NeuroNExT.

Nebraska resident receives rapid, life-saving care for acute inflammatory demyelinating polyneuropathy (AIDP)

by Michelle Marx, Freelance Healthcare Writer, Nebraska Medicine
Advancing Health, Spring 2025

When Danko Pike of Ashland, Nebraska began to notice strange symptoms in early November 2024, he initially thought the zinging feeling he experienced while eating was just a problem with a crown on his tooth. After visiting his dentist, however, his symptoms progressed to include numbness at the top of his ear and swelling under the earlobe.

“I thought it was weird, so I went to the doctor but didn’t get any answers,” recalls Danko. “Two days later, my ear felt like it was on fire, so I went back to the doctor again. I was prescribed antibiotics and stayed home for a week feeling miserable, hoping to feel better so I could get back to work.”

Unfortunately, the ordeal was far from over. By November 11, Danko returned to another medical facility for a chest X-ray and CT scan. A pneumonia diagnosis led to a new antibiotic and prednisone, but he continued to feel worse. Now, the tingling in his toes and feet that he had noticed worsened, accompanied by increased difficulty breathing.

After another trip to a local hospital, Danko was told that the tingling and numbness were due to anxiety and that bloodwork showed low potassium. At this point, he and his wife, Corri, knew something was wrong.

The next day, Danko’s condition deteriorated further. He and Corri

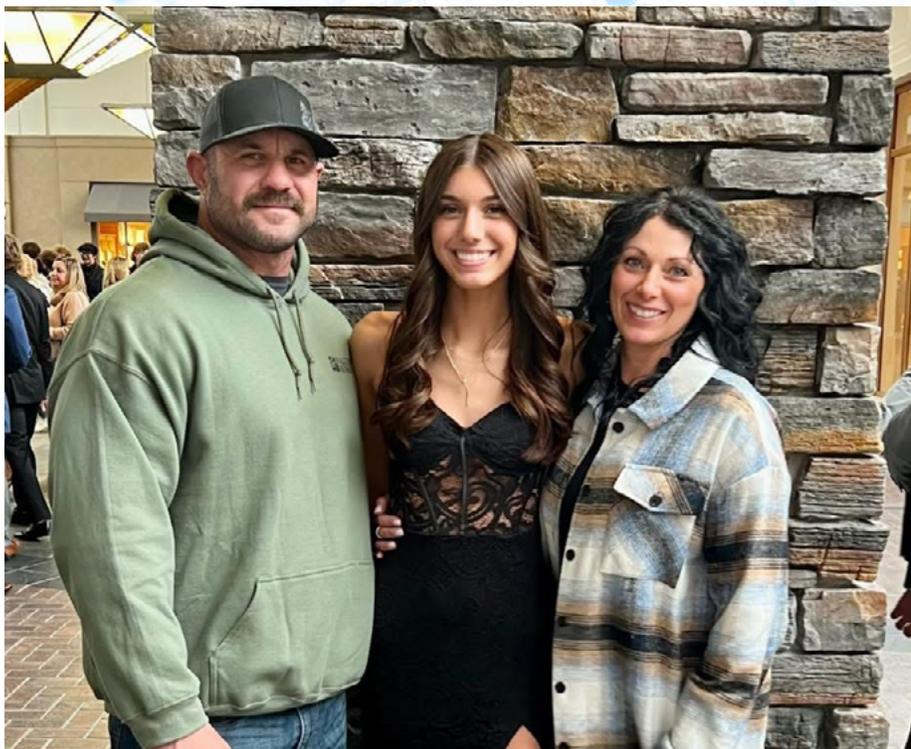
drove to the emergency room at Nebraska Medicine, where the staff suspected something neurological was going on.

After emergency and neurology teams observed his rapid decline and progressing neurological issues (<https://go.unmc.edu/d2cx>) acute inflammatory demyelinating polyneuropathy (AIDP) was suspected. Treatment began based on his symptoms while testing to confirm the diagnosis, including a lumbar puncture to assess cerebrospinal fluid and electrodiagnostic studies to evaluate peripheral nerve function.

Danko was moved to the neuroscience ICU for urgent specialized care. “He was able to walk into the ER on Saturday, and by the time we got admitted into a room, he was no longer able to walk, and other muscle functions were rapidly diminishing,” Corri recalls.

“In a short hour and a half, I went from the emergency room and a thorough exam from the neurology team to being quickly admitted to the Neuro ICU,” adds Danko. “The staff took me seriously from the moment I walked in, and I immediately knew I was in the right place. They saved my life.”

AIDP, or Guillain-Barré Syndrome, is often triggered by an infection or other events. While fighting the infection, the body’s immune system mistakenly attacks the peripheral nerves. This causes inflammation and nerve damage, leading to weakness, numbness, respiratory failure, or paralysis.



Danko Pike and family.



Subin Mathew, MD

"AIDP causes rapid, symmetric weakness and can progress to respiratory failure requiring mechanical ventilation," says neurointensivist Subin Mathew, MBBS (<https://go.unmc.edu/dt7u>). "Mr. Pike initially experienced numbness and tingling, which quickly advanced to severe weakness and the need for ventilator support within days—an unusually rapid course for AIDP. He was intubated and started on plasma exchange therapy (PLEX); a treatment similar to dialysis that helps remove the antibodies attacking his nerves. Our team provided continuous, intensive monitoring—tracking his breathing, vital signs, and neurological status around the clock."

"The care I received was excellent at every step," Danko says. "Every time Dr. Mathew came into the room, he had a team with him, and he was very informative and reassuring. Being on a ventilator was a scary thing, but I remember a resident doctor named Jonathan talking me off the ledge after the ventilation came off for good. He reassured me that I would be okay, and I needed to hear that."

To the amazement of the medical team, Danko was discharged just two weeks and five days later.

"Mr. Pike's case was a miraculous recovery situation," says Dr. Mathew. "Typically, we see people with AIDP on a ventilator for months, not a few weeks. I've never seen anybody recover this quickly! This kind of turnaround – from nearly paralyzed to being strong enough to go home a short time later – makes this kind of work so meaningful for us."

Physical and occupational therapy were a crucial part of Danko's recovery, which began in the hospital and continued in outpatient rehabilitation and at home. He continues working to regain muscle mass after losing 64 pounds during the experience.

Thankfully, Danko feels well these days, and the outlook looks promising.

"I had so many people praying for me, my wife and family by my side the whole time, who were my constant support, mentally and emotionally.

Family and friends came and went daily. I don't remember everything, but I do recall the care of the staff and the people who came in to pray with me, especially Pastor Jeremiah Ndichafah from the hospital. The second I heard his voice; I knew God's hands were on me."

Corri agrees that from the moment they arrived, the care was outstanding, not only for her husband as a patient but also for her and her daughter. "Every single person we came in contact with went above and beyond. The nurse concierge case managers, Dawnelle Martin and Taylor Danley, assisted me with paperwork and gave me daily hugs and encouragement. ICU nurses Taylor Schmitt and Abby Gronau (Danko's guardian angel) were amazing, as was one of the night nurses who sat with me and comforted me during a particularly difficult moment. Dr. Brown and Dr. Mathew were reassuring and answered so many questions. We're so grateful!"

"Many centers lack dedicated neuroscience teams or a specialized Neuro ICU," says Dr. Mathew. "What sets our program apart is the presence of a true Neurocritical Care Unit staffed by a multidisciplinary team. This includes a highly trained neurointensivist, advanced practice provider, neuro-trained ICU nurses, trainees, dedicated pharmacist and nutritionist, physical and respiratory therapists, who specialize in managing critically ill patients with complex brain and nerve conditions. In AIDP, a person may be walking one day and feel like their body is shutting down just days later. Early recognition and rapid treatment in a Neuro ICU setting can make all the difference in recovery."

William Thorell MD, is New Chair of Neurosurgery

Written by John Keenan, UNMC strategic communications

William Thorell, MD, has been named the new chair of the UNMC Department of Neurosurgery in the College of Medicine.

The appointment is effective July 1.

Dr. Thorell, a neurosurgeon who describes himself as “a teacher,” said he was excited to take on this new role, noting that he has been part of the department since it was a division of the surgery department, when he was a resident.

“That was when I met Dr. Lyal Leibrock (<https://go.unmc.edu/ajpk>) for the first time. I have a great deal of loyalty to and love for this department, so I’m excited but also humbled,” Dr. Thorell said.

Dr. Thorell serves as residency program director for the department, as well as co-director of the Stroke and Neurovascular Center at Nebraska Medicine, which he helped develop. He is a UNMC College of Medicine graduate who also did his internship and residency at UNMC, as well as a fellowship in endovascular neurosurgery at the Cleveland Clinic in Ohio.

His clinical work includes helping patients with trauma, tumors and peripheral disorders, and he is one of the most experienced neurosurgeons in the country specializing in complicated vascular disorders of the central nervous system, such as acute stroke, subarachnoid hemorrhage from cerebral aneurysms, vascular malformations (such as arteriovenous malformations and cerebral cavernous malformations), and occlusive disease of the carotid and vertebral arteries. Dr. Thorell also helps care for children with vascular diseases of the brain and spinal cord.

His long association with the division-turned-department, dating to his internship in 1996, has given him a quiet pride in its strengths, which he

lists as the clinical skills of the faculty, the strong residency program and a significantly improved research arm that continues to grow.

“We’re obviously a young department (the department was created in 2019), but we’re really rounding out,” he said. He credited inaugural chair Aviva Abosch, MD, whom he will be replacing, for elevating the department to new levels during her tenure.

Dr. Thorell said that, as he takes the role of chair, his goal is to have the department provide the highest level of clinical care and education while pushing forward the frontiers of neurosurgery through cutting-edge research.

“First and foremost, we’re going to take excellent care of our patients,” he said. “That is the person who’s in front of you, but it also requires a longer view – training the next generation, pushing the boundaries with innovative treatments backed by research.

“When I look at what was considered state-of-the-art knowledge when I was a resident, there is critical information that has proven to be long lasting, but there’s been quite a bit of progress, and there’s still quite a way to go. We want to be part of that progress.”

Dr. Thorell pointed to the work of J. Jay Keegan, MD (<https://thejns.org/view/journals/j-neurosurg/135/4/article-p1252.xml>) in dermatomes, patterns of sensory nerves in humans, and how the peripheral nerves and the spinal nerves are distributed. Eventually, Dr. Keegan worked with UNMC colleague Frederic Garrett, MD, to produce an influential map of dermatomes.

“At the time, such a map was a fairly revolutionary idea,” Dr. Thorell said. “Now, they’re in every neurosurgery textbook. That’s a long-lasting legacy.”

He also hopes to work with other investigators in forward-looking research, he said, pointing to existing work the department is doing with Tammy Kielian, PhD, of the UNMC Department of Pathology, Microbiology and Immunology.

“When you take the best of the talents of the department and other people at the university, you can get a real synergy,” he said. “Looking ahead, I’m excited by what we can achieve.”



William Thorell, MD

Congratulations to our 2025 Graduates

The Department of Neurological Sciences is proud to announce the 2025 graduates

RESIDENTS



Kanchan Kumari, MD

Dr. Kumari is pursuing General Neurology at Sentara Neurology Specialists in Hampton, Virginia.



Nithin Kurra, MD

Dr. Kurra is pursuing a Vascular Neurology Fellowship at Cleveland Clinic, Ohio.



Yashwanth Pulluru, MD

Dr. Pulluru will pursue an Epilepsy Fellowship at University of Alabama, Birmingham.



Courtney Venegas, MD

Dr. Venegas will be joining the DONS Neurocritical Care Fellowship at UNMC.



Mehar Zahid, MD

Dr. Zahid will be an Assistant Professor in Neurosciences Department at Cooper University, New Jersey.

FELLOWS



Kyle Greenman, PhD

Dr. Greenman will be joining the Omaha VA as a staff Psychologist.



Sarah Kenroud, OD

Dr. Kenroud will be joining Sanford Health in Fargo, North Dakota.



Frank Mezzacappa, MD

Dr. Mezzacappa will be pursuing a Tumor Fellowship at Yale University.



Carlos Alvarez, MD

Dr. Alvarez will be starting practice at Presbyterian Hospital in Albuquerque, New Mexico.



Alan Wang, MD

Dr. Wang will be heading to Ohio State for an Endovascular Fellowship.

Hartman Wins Award & Presents Talk on Migraines

by Shari Griffin

The Department of Neurological Sciences is proud to announce that Elizabeth Hartman, MD, has been selected as one of the recipients of the Association of University Professors of Neurology (AUPN) Faculty Leadership Award. This prestigious award recognizes individual faculty members who have demonstrated exceptional leadership within their department.

“I am honored to receive this kind recognition and nomination from Dr. Rizzo. Our Neurological Sciences Department has a wonderful culture of growth and support, and it is a joy to advance Clinical Neurology care while teaching the next generation to follow in our footsteps. I am very excited to help our department launch a Clinical Neurology rotation for UNMC College of Medicine students to continue to improve the neurological care for our patients and communities near and far,” stated Dr. Hartman.

Dr. Hartman will be awarded this honor on Saturday, September 13, in Baltimore, Maryland at the AUPN Annual Meeting.

Dr. Hartman is an associate professor with the UNMC Department of Neurological Sciences, and the division chief of general neurology and headache medicine. She is also the clinic director of the Nebraska Medicine and UNMC Neuroscience Center.

She presented “Migraine in Women” on May 13, as a part of the Olsen Center for Women’s Health and UNMC College of Nursing webinar series. Dr. Hartman described the impact that migraine has on women as well as common symptoms of treatments. The event had 230 people in attendance. The webinar will be available for one year to receive a nursing credit. Find the webinar here (<https://go.unmc.edu/b5ux>)



Elizabeth Hartman, MD

Sheridan Receives MEG Certification

by Valentina Gumenyuk, PhD, Assistant Professor, Neurophysiology, Department of Neurological Sciences, UNMC



Sheridan Parker, PhD

Sheridan Parker, PhD, received her certification in MEG technology and brings extensive hands-on experience in clinical MEG acquisition, patient preparation, and co-registration procedures. She completed advanced training in MEG operations using the TRIUX™ MEG system and has a strong foundation in EEG and clinical neurophysiology.

While formal MEG certification is not yet standardized across the MEG community, Dr. Parker continues to pursue ongoing professional development in functional neuroimaging and clinical applications of MEG. She is also deeply committed to providing excellent patient care across all age groups.

“Earning the Clinical Magnetoencephalography (CMEG) certification is a meaningful step forward not just as a

personal milestone but also a professional achievement for the MEG Core and Department of Neurological Sciences,” said Dr. Parker. “Thank you so much to everyone who has supported me throughout this journey. This certification reflects my commitment and the MEG Core’s commitment to providing the highest quality of care. I am excited to use this experience to better serve our patients and contribute to our team’s continued excellence. Our MEG center is one of only 25 in the United States providing clinical MEG services for patients with epilepsy and brain tumors. Among those, only 15 centers are staffed by a certified MEG

technologist—and we are proud to be one of them.”

Congratulations to Dr. Sheridan Parker for her dedication, professionalism, and outstanding contributions to the field of MEG.



MEG Technology

South Dakota 5th Graders Explore Science at UNMC

by Karla Lynch

On May 9, the Mind & Brain Health Labs (MBHL) at the University of Nebraska Medical Center's Department of Neurological Sciences proudly hosted students from Wagner Community School in South Dakota as part of the Science Education Partnership Award (SEPA), and on July 8, welcomed students from the Interprofessional Student Program for Advancing Research Knowledge (ISPARK). Both visits were part of our ongoing outreach to engage K-12 students, particularly those from Nebraska and South Dakota's tribal communities, in hands-on neuroscience learning.

This marked the sixth SEPA visit in recent years and the third ISPARK visit, offering a unique opportunity for students to explore how research and technology work together to improve brain health. These visits were collaborative efforts across labs, including the Warren Neuroscience Lab (WNL), the MEG lab, and the Clinical Health, Emotion & Neuroscience Laboratory (CHEN Lab), all of which play a vital role in SEPA and ISPARK programming.

Students engaged with wearable and sensor technologies that support real-world research on cognition, behavior, and physiology, demonstrating how neuroscience research informs early detection and functional health strategies. They also observed advanced neurotechnologies in action, such as non-invasive brain stimulation, cognitive and motor performance simulations, and neuroimaging techniques that map brain activity and support clinical diagnosis. Using cutting-edge tools like virtual reality, EEG/MEG synchrony, and smart devices, students explored how aging affects brain function and emotions, and how these changes



Students from Wagner Community Schools in South Dakota learn new technologies.

influence health behaviors like stress management and social connection.

The hands-on nature of the visits resonated deeply with students, many of whom expressed that the experience broadened their understanding of science and its real-world applications. Several noted that the program sparked interest in pursuing careers in science, health, and neuroscience, while others felt they developed new skills and confidence. Students shared that learning about these innovative technologies made science feel more accessible and relevant to their future success.

This immersive experience remains a highlight of our outreach efforts, helping to inspire the next generation of health science leaders. We were honored to host such bright and curious students and look forward to welcoming many more in the future.

Fear and Anxiety Follow-up

by Josue Avecillas-Chasin, MD, PhD,
Assistant Professor, Neurosurgery

In the fall of 2023, a multi-site NIH-sponsored project "Intracranial Neurophysiological Signatures of Fear and anxiety in Humans" started in the department of Neurosurgery at UNMC. Dr. Josue Avecillas-Chasin is the UNMC principal investigator. Since the start, the project has recruited 12 patients with epilepsy undergoing stereotactic depth electrode placement.

The study aims to identify biomarkers of fear and anxiety in humans with the overarching goal of eventually treating these conditions with neuromodulation. Up to now, only patients from UCLA and UNMC have participated; the study is expanding to Duke University, where the main PI, Nanthia Suthana, PhD, relocated her laboratory.



Patient undergoing Stereotactic Depth Electrode placement.

Nebraska Medicine Joins National Effort to Advance ALS research

by Nathan McKain, Advancing Health, May 2025



Joseph Fernandes, MD

Nebraska Medicine and its education and research partner, UNMC, are joining a nationwide research project to learn more about ALS. The project, called the ALL ALS Clinical Research Consortium, is now looking for participants in two studies: ASSESS and PREVENT.

The ASSESS ALL ALS research study focuses on people diagnosed with ALS and a group of people without the disease for comparison. "The goal of the ASSESS study is to enroll as many ALS patients in the U.S. as possible, forming the largest cohort of ALS patients ever gathered, and collect data from them," says neurologist and principal investigator Joseph Fernandes, MD.

The study includes both in-person and remote participants. IT will collect ongoing clinical data, body fluid, genetic information and digital measurements. These will be shared within an ALS portal for researchers.

The ASSESS study will follow participants for two years and includes:

- Health updates and blood samples every four months
- Monthly speech recordings
- Monthly health questionnaires
- Option to provide spinal fluid samples if participating in person (not required)

The PREVENT ALL ALS research study focuses on people without symptoms who might carry ALS genes. This includes known ALS gene carriers or people who have a parent, child, or sibling who carries an ALS gene. This study combines on-site and off-site visits, with yearly in-person visits and remote check-ins every few months.

"This study includes patients at risk of developing ALS, meaning patients with ALS mutations," Dr. Fernandes said, "We're looking to identify biomarker signs that can show this patient is going from being a carrier of ALS to having ALS."

ALS (amyotrophic lateral sclerosis) is a deadly disease that slowly takes away a person's ability to move, speak, eat and breathe. While treatments can help with symptoms, there is no cure, making research crucial.

Nebraska Medicine and its education and research partner, UNMC, are joining a nationwide research project to learn more about ALS. The project, called the ALL ALS Clinical Research Consortium, is now looking for participants in two studies: ASSESS and PREVENT.

The PREVENT study lasts up to three years and involves:

- One in-person visit each year
- Remote check-ins every four months.

Every four months, participants will:

- Give blood samples
- Share their medical history and have a neurological exam
- Complete health questionnaires
- Record their speech

Both studies add to a central database that researchers studying ALS can use. Dr. Fernandes says the ACCESS and PREVENT studies are just the beginning of the consortium's work.

"More research projects will come up," he said. "Having all this information in one place will make it easier for scientists to study ALS and possibly find better treatments.

The consortium includes many medical centers across the country, both large and small.

"We're excited to be part of this because it's never been done before," said Dr. Fernandes. "We're collecting information that will help scientists study ALS in new ways.

Recliner Project Innovates for Dignity and Respect

UNMC Today, May 15, 2025 by Amiee Grindstaff, Nebraska Medicine

Providing compassionate care means making sure every patient and visitor feels comfortable and respected.

One example of this in action is when Nebraska Medicine recently partnered with a group of University of Nebraska-Lincoln college students on a groundbreaking senior capstone project to develop a hospital recliner specifically for individuals with dwarfism.

The project began when physical and occupational therapists noticed a lack of suitable equipment for patients with dwarfism. Kellie Clapper, manager of Nebraska Medicine Rehabilitation Services, initiated the project to find a solution. Traditional hospital recliners and beds often are too large and don't adjust to functional heights, making transfers and positioning difficult. Pediatric equipment is too narrow and lacks the weight capacity for adult patients with dwarfism.

"In the past, we've tried modifying environments – placing patients in low beds, for example – but this was only a temporary solution," Clapper said. "We wanted to do better."

The prototype recliner took nearly 1,200 combined hours of work.

With the help of the Great Plains IDeA Clinical and Translational Research program, hosted at UNMC, (<https://go.unmc.edu/wotz>) five senior UNL mechanical engineering students took on the challenge. They researched the anatomical and ergonomic needs of this unique population and realized pediatric-sized furniture wouldn't work.

They decided to design a custom hospital recliner chair for people with dwarfism. The students determined the proper measurements, modeled the chair in CAD software and built a prototype using parts from retired hospital recliners and a giant sheet of metal.

"A chair looks pretty straightforward on the surface, but it's actually pretty challenging to create reclining mechanisms," said McCaylee Dempcy, one of the UNL students who worked on the project. "We tweaked things multiple times until we got it to work, and then we built the chair around it with wood and other donated supplies."

After nearly 1,200 hours of work, the students completed the chair in May 2024, showcased it to their fellow senior design students and professors, and delivered it to Nebraska Medicine. They received an A on their project.

"We were proud of our project because it had a real-world impact," Dempcy said. "It feels good knowing our work could impact actual patients."

Once the prototype arrived at Bellevue Medical Center, it was quickly put to the test. Within the first week, three patients with dwarfism tested the recliner during their stay and provided valuable feedback. Only minor adjustments were needed, such as the lever for the footrest.

Moving forward, Nebraska Medicine is planning to refine the chair further and potentially produce more units with the help of Metro

Community College. The operational improvement team will evaluate the chair before it's approved for widespread use.

"This project is a testament to the power of collaboration, not just between different institutions, but across disciplines," Clapper said. "These students who dedicated hours to researching and building the prototype have not only developed a functional product but also created something that will improve the dignity and comfort of patients for years to come."

(continued on pg. 11 'Strengthening community partnerships')



Demonstrating the recliner.



Bethany Lowndes, PhD

Strengthening community partnerships

The recliner project was made possible through the Great Plains IDeA-CTR, which fosters collaboration between health care facilities and universities, community colleges, and businesses across Nebraska and the surrounding region. The program provides resources to address health disparities and enhance research, offering access to funding, expertise, and talent. It fosters innovation and problem-solving by connecting local experts and researchers to real-world challenges.

Bethany Lowndes, PhD, health systems engineering liaison with Great Plains IDeA-CTR and an associate professor in the UNMC Department of Neurological Sciences at UNMC, is the Nebraska Medicine liaison for this program and connected the organization with the UNL students for this project. Dr. Lowndes also serves as the scientific director for the Innovation Design Unit, where innovative projects such as this are carried out and implemented.

Looking to solve a problem or want help with an innovation? Complete this form to propose an idea to the Great Plains IDeA-CTR. (<https://go.unmc.edu/idea-form>)

Dr. Lowndes will guide the project through design and implementation. This opportunity is open to all in the Nebraska Medicine and UNMC community. Ideas are accepted annually and should be submitted by August to be considered for that fiscal year.

Leading the Way in Comprehensive Stroke Care

Advancing Health, Spring 2025

When it comes to stroke care, having a gold standard is essential. At Nebraska Medicine, we proudly stand as Nebraska’s only Joint Commission Certified Comprehensive Stroke Center — a distinction we’ve held while setting the bar for over 20 years. In that time, we’ve saved countless lives and improved outcomes for many more.

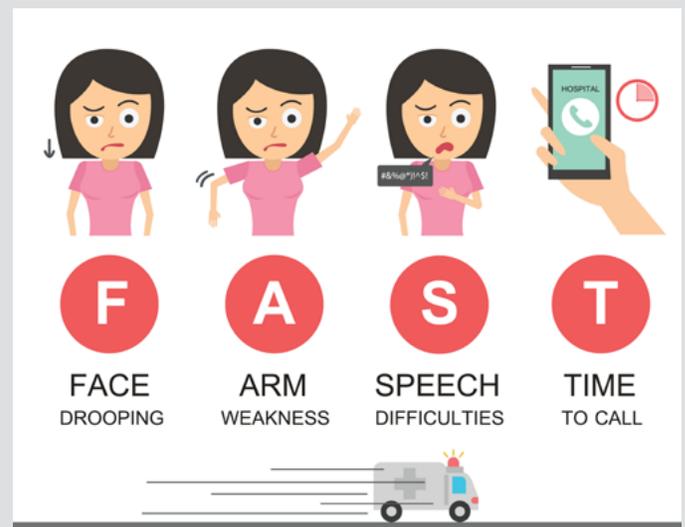
“We’re the only facility in the state with 24/7 access to cerebrovascular neurosurgeons,” says neurosurgeon William Thorell, MD. Our state-of-the-art, 20-bed Neurosciences ICU — the first and only of its kind in Nebraska — is staffed around the clock by board-certified neurointensivists and specialized healthcare professionals dedicated to providing continuous, expert care.

Dr. Thorell emphasizes how this level of expertise benefits patients: “It shortens hospital stays and improves their care because of the accuracy of the diagnoses. Having someone who understands both neurologic illness and critical care is a big advantage.” Our fellowship-trained vascular neurosurgeons deliver both conventional and cutting-edge treatments tailored to each patient. “We make decisions based on what’s truly best for the individual — not just what we’re capable of doing,” he adds.

Access to top-tier stroke care can be life-changing. Trust the team that has been leading the way in stroke care

excellence for over two decades – the Nebraska Medicine Joint Certified Comprehensive Stroke Team.

Dr. Thorell is professor and Chair of the Department of Neurosurgery.



How to detect a stroke.

Symposium Highlights Diagnostic and Treatment Challenges and Unique Needs of Veterans

by Matthew Rizzo, MD, FAAN, FAFA and CeCe Abbey, Educational Projects Coordinator



Jenni Blackford, PhD

The 2025 PTSD Symposium, held June 6th in a hybrid format, brought together leading experts from the University of Nebraska Medical Center (UNMC) and across the nation to examine the clinical and scientific complexities of post-traumatic stress disorder (PTSD). With a focus on both military and civilian populations, the symposium addressed the diverse causes of PTSD – including military conflict, interpersonal violence, accidents, and natural disasters – and the wide spectrum of associated symptoms such as intrusive memories, hyperarousal, emotional numbing, avoidance, and cognitive impairment.

Military conflict remains the most significant and persistent trigger of PTSD, affecting both soldiers and civilians. The symposium emphasized the unique diagnostic and therapeutic needs of veterans while underscoring the importance of trauma-informed care across all populations. Supported by a generous sponsor, the event drew a multidisciplinary audience of physicians, psychologists, advanced practice providers, nurses, researchers, and licensed mental health professionals. National and local experts in psychiatry, psychology, pharmacology, and neuroscience presented the latest advances in diagnosis, psychotherapy, medication management, and emerging treatments, including neuromodulation and precision medicine.

Highlights included opening and closing remarks by Dr. Matthew Rizzo, Frances & Edgar Reynolds Professor and Chair of Neurological Sciences at UNMC. Lauren Edwards, MD (UNMC Psychiatry) addressed diagnostic complexity, followed by Justin Weeks, PhD (Nebraska Medicine) on cognitive behavioral therapies. Frank Weathers, BA, PhD (Auburn University) discussed PTSD in veterans, and Rocky Esterach, MD (UNMC Psychiatry) shared updates from an ongoing research study. Alan L. Peters, PhD (UT Health San Antonio) presented on Prolonged Exposure Therapy for combat-related PTSD, while Christopher Shaffer, PharmD, PhD, MS (UNMC College of Pharmacy) explored emerging pharmacologic treatments. The symposium concluded with Jennifer Urbano Blackford, PhD (UNMC Munroe-Meyer Institute) on the role of neural circuits in PTSD.

This accredited continuing education program was highly rated by participants. Nearly all reported increased knowledge, enhanced confidence, and a strong intent to apply new strategies in clinical practice. One attendee noted, "I plan to review the handouts and share these important PTSD updates with my colleagues."

The symposium reaffirmed the need for interdisciplinary, evidence-based approaches to PTSD care – especially those affected by war and trauma – and demonstrated the value of continued collaboration across research, education, and clinical domains.

RESEARCH NEWS



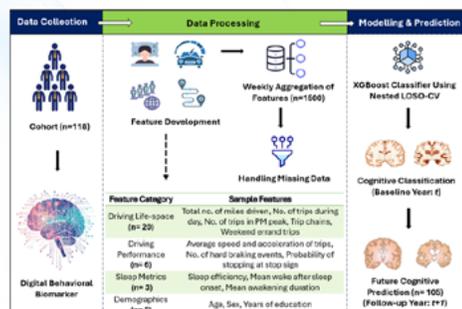
The UNMC College of Medicine recently received grants and awards representing \$4.4 million in new funding. Awards include: Mara Seier, MD, neurological sciences, for a trial of Lu AF82422 in participants with Multiple System Atrophy. Rana Zabad, MD, neurological sciences, funding to evaluate the safety and clinical activity of Azercabtagene Zupreleucel in participants with B-cell mediated autoimmune disorder.

Kelly Stauch, PhD, in neurological sciences, received a \$2 million grant from the US. Army/USAMRAA/CDMRP to study the interrelationship between PINK1-PRKN pathway disruption and tauopathy in the pathophysiology of cognitive impairment in Parkinson's disease. Howard Fox, MD, PhD, neurological sciences, was awarded \$79,496 from the San Diego Biomedical Research Institute to study methamphetamine, HIV integration, and latency in the brain.

Josue Avecillas-Chasin, MD, PhD, neurosurgery, received a grant of \$50,000 from the Neurosurgery Research and Education Foundation as the American Society for Stereotactic and Functional Neurosurgery (ASSFN) Award for thalamic seizure network mapping in patients with medication-refractory epilepsy treated with responsive neurostimulation targeting the thalamus.

Can Your Driving and Sleep Patterns Predict Cognitive Decline? NIH-Funded Study from UNMC and Iowa State Says Yes

by Matthew Rizzo, MD, FAAN, FANA, Frances and Edgar Reynolds Chair, UNMC Department of Neurological Sciences



Methodology Pipeline for Developing Digital Biomarkers

Results from an NIH-funded study suggests that subtle changes in how we drive and sleep could help identify early signs of cognitive decline—offering a glimpse into the future of brain health monitoring using everyday behavior in the study titled “Predicting Cognitive Decline Using Naturalistic Driving and Sleep Data: A Machine Learning Approach,” researchers from UNMC and Iowa State University tracked 118 older adults, including individuals with mild cognitive impairment (MCI), early Alzheimer’s disease, and healthy aging adults.

The research team—Aparna Joshi, Jun Ha Chang, Guillermo Basulto-Elias, Shauna Hallmark, Matthew Rizzo, and Anuj Sharma—used in-vehicle “black box” sensors to capture three months of naturalistic driving data, such as speed, acceleration, and trip distance. Participants also wore wrist-based actigraphy devices that monitored sleep patterns like nighttime awakenings and overall sleep efficiency.

Using a machine learning model (XGBoost), the team combined these data with demographic information to identify which participants had cognitive impairment—and predicted with nearly 75% accuracy who would experience cognitive decline a year later. The most predictive features were age, sex, sleep efficiency, mean awakening duration, and average vehicle acceleration.

Why is this important? Traditional diagnostic tools like brain imaging and spinal taps are invasive, expensive, and often hard to access—especially in rural or underserved areas. This new approach offers a non-invasive, low-cost way to passively monitor brain health using behaviors people already engage in daily. For primary care providers and neurologists, this could mean earlier triage, targeted follow-up, and improved access to care.

Funded by the National Institute on Aging (NIA), part of the NIH, under NIH grant R01AG017177, the study offers a powerful proof of concept: digital biomarkers collected from real-world activity can support early detection, personalized care, and longitudinal monitoring of cognitive health. And while the sample size was modest, the findings open the door to larger, more diverse studies in the future.

In short, your next trip to the grocery store and a good night’s sleep might tell your doctor more than you think—ushering in a new era of proactive, data-driven brain health care.

Making Music with UNMC and UNO

By Matthew J. Brooks, DMA, Associate Professor, Director of Orchestral Activities in Music & Medicine



Nebraska Medical Orchestra & Choir

Wrapping up its 7th season, the Nebraska Medical Orchestra (NMO) & Choir (NMC)—a partnership between UNMC and the UNO School of Music—held their spring concert on May 6 at the Jan & John Christensen Concert Hall in the UNO Strauss Performing Arts Center. The two ensembles

feature novice musicians from UNMC, Nebraska Medicine, Children’s Nebraska, Boys Town National Research Hospital, UNO, Creighton University, Clarkson College, as well as other healthcare-related organizations across Omaha. The orchestra, under the direction of Dr. Matthew Brooks, featured violinist Jake Son, an MD/PhD student at UNMC,

performing Introduction and Rondo Capriccioso Op. 28 by Camille Saint-Saens. The choir, conducted by Katrina Cox, PhD, Assistant Professor, Music Education, UNO, included music featuring American Sign Language translation and audience participation.

The NMO had a brief summer session for 5-weeks in June and July. Both the NMO & NMC will start their regular fall/winter season after Labor Day.

Prospective new members for either the choir or the orchestra can reach out to Dr. Matthew Brooks at matthew.brooks@unmc.edu for more information!

New Faculty & Staff



Jennifer Riddell, APRN-NP

Jennifer Riddell, APRN-NP recently joined the department of neurosurgery's clinical team. She earned a BSN in 1995 from UNMC-Lincoln and MSN in Nursing in

2006 from UNMC-Omaha. Her nurse practitioner certifications are in adult health as well as advanced oncology (AOCNP-C). Jennifer credits her initial nursing position in a rural hospital in Schuyler for equipping her to be a good generalist committed to lifelong learning who loves hands-on patient care. She enjoys spending time with her husband Steven and children, Sarah and Scott. She enjoys learning patients' stories and looks forward to working with the neurosurgery team.



Joshua Dian, MD

Joshua Dian, MD, will join the department of neurosurgery's faculty in July 2025 as an assistant professor. Dr. Dian's training consists of a B.A.Sc, M.A.Sc,

and PhD candidate (no dissertation) from the University of Toronto. He completed medical school at the University of Calgary, neurosurgery residency at the University of Manitoba, and a Spinal Disorder Fellowship at Thomas Jefferson University Hospital.

PROVIDER OF THE QUARTER



Mitchell Floura, MD

Mitchell Floura, MD (PGY-2) has been chosen as the Nebraska Medicine 6 Neurosciences Unit Provider of the Quarter. Recipients of this award

are chosen by the nurses, techs, and staff of 6 Neuro. They specifically acknowledged Dr. Floura's timely and clear communication, professionalism, and friendliness. Many of the staff also spoke about how much they appreciated Dr. Floura's frequent physical presence on the unit and willingness to help. Congratulations!

DONS CELEBRATES 2025 GRADUATES



Kanchan Kumari, MD, Courtney Venegas, MD, Yashwanth Pulluru, MD, Mithin Kurra, MD, Mehar Zahid, MD

The Department of Neurological Sciences celebrated its graduation ceremony on June 13 at A View on State in Omaha, Nebraska. The evening was a joyful occasion filled with heartfelt stories, meaningful awards, and delicious food. We proudly congratulate our graduates—Kanchan Kumari, MD, Nithin Kurra, MD, Yashwanth Pulluru, MD, Courtney Venegas, MD, Mehar Zahid, MD, Sara Kenroud, DO and Kyle Greenman, PhD—as they embark on the next chapter of their careers.

A highlight of the night was a memorable and inspiring speech from Department Chair Matthew Rizzo, MD. We wish our graduates continued success as they begin their fellowship journeys and make their mark in the field of neurology.

As We Close, We Carry Friendship, Cherish Family, Celebrate Together and Look Ahead with Inspiration



On the left, Nell—Julie's lifelong neighbor—age 98. In the center, Aunt "Dodo"—also 98. On the right, "Dolly," Dodo's sister-in-law—104 and still going strong at her birthday party!

by Matthew Rizzo, MD, FAAN, FAHA

We end this newsletter with a celebration of friendship, family and endurance at this July gathering of the clan of Julie Ditter, Neurological Sciences Administrator:

Over 300 years of life, love, resilience, and wisdom. Three remarkable women, one unforgettable photo, and a family legacy that inspires us all to endure.

Here's to strong roots, lasting friendships, and generations of strength, come what may.

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Research Update from the National NeuroHIV Tissue Consortium

by Rajnish S. Dave, PhD & Howard S. Fox, MD, PhD

In the April 2022 NeuroNExT newsletter, Rajnish S. Dave, PhD, and Howard Fox, MD, PhD, contributed an article highlighting collaborative NeuroHIV research at UNMC. Today, Dr. Dave returns with an update on the progress and continued collaboration in this important area of research.

The National NeuroHIV Tissue Consortium (NNTC) | NNTC Data Coordinating Center (DCC), an ongoing multisite longitudinal clinical research study initiated in 1998, has made significant advances in the neuroHIV field. NNTC is a rich resource, spanning 25 years into the modern antiretroviral therapy (ART) era. While efficacious ART (cART, HAART) was introduced in the late 1990s, the early years of the NNTC saw frequent AIDS-related pathology in the brains of People with HIV (PWH).

Fortunately, PWH are now living near-normal lifespans; unfortunately, they are now susceptible to diseases associated with aging, and the interactions of aging with HIV infection and its treatment are unknown. Dr. Fox co-runs the Data Coordinating Center (DCC), and Dr. Dave is responsible for the curation, organization, and for specific studies, interpretation of the data. Other investigators at UNMC supply their expertise for the consortium, including DONS faculty Pam May-Weeks, PhD, ABPP (American Board of Clinical Neuropsychology), and Dr. Daniel Murman (Director of the Memory Disorders clinic).

The consortium provides access to ante-mortem and post-mortem data, tissues, and biofluids for the neuroHIV research community. Information about cohort status and defining

characteristics is shared in the annual public report. To date, over 3,700 participants have been enrolled in the study, with nearly 3,000 individuals in the PWH Arm. Extensive longitudinal medical, neurological, psychiatric, and neuropsychological data are collected from participants, with over 1,100 brains (and other vital organs) donated to date, with many thousands of longitudinal plasma and cerebrospinal fluid (CSF) samples in the biobank.

Multi-method approaches are disentangling phenotypes and etiologies of neurocognitive impairment (NCI) among PWH. In the last five years, 110 publications utilizing consortium specimens and datasets have emerged, highlighting a considerable focus on neurocognitive impairment, substance use disorders, and viral/host interactions. Front-line methods have been employed to characterize the central nervous system (CNS) viral reservoir. Additionally, many investigators have explored the synergy between Alzheimer's Disease and Related Dementia (ADRD) and HIV, particularly with the increasing age of PWH.

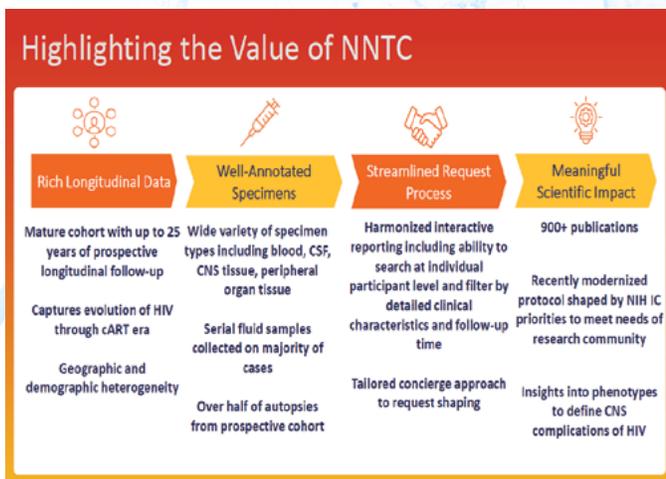
With most of the NNTC participants being on suppressive treatment, the neuropathology has shifted to vascular/aging/neurodegenerative-related findings. Most of the active NNTC cohort of PWH are virally

suppressed. In our biobank/brain bank, NNTC has 80 subjects who were virally suppressed, plus NNTC has 40 brains from another study that links characterization with tissue donation, the Last Gift suppressed cohort.

The NNTC launched its Biomarkers initiative to enhance the value of clinical and autopsy cohorts through molecular assessments. This initiative seeks to identify informative, scalable, and long-term viable measures relevant to neuroHIV, neurodegeneration, and comorbidity research. Some examples of biomarkers being studied include a) Brain HIV DNA/RNA viral load, b) the Intact Proviral DNA Assay (IPDA), c) Brain substances of abuse measurement, and d) Genotyping with Illumina Infinium Global Screening Array-24, which includes 654,000 markers, suitable for allele-based analyses.

The consortium has also taken the lead to investigate specific plasma biomarkers for neurodegenerative disease, as these molecular entities are sensitive to damage within the CNS and may facilitate early detection and diagnosis of neurodegenerative disorders such as ADRD. Some preliminary findings provide interesting insights with increased levels of such markers, perhaps a precursor to developing neuropathology. While findings are preliminary, they align with known pathophysiological models and are being further explored using statistics, supervised machine learning, and causal inference modeling.

The NNTC also supports a large-scale NIDA-funded initiative leveraging NNTC tissues, known as the Single Cell Opioid Responses in the Context of HIV (SCORCH) Consortium. To date, data-generating sites have received 1,203 frozen brain specimens from 23 regions of the brain, and 99 sets of FFPE (Formalin-Fixed Paraffin-Embedded) sections from four different regions of the brain from the NNTC. Based on the metrics of the resulting scRNA-seq data, the NNTC specimens are of high quality. This project requires extensive collaboration with NNTC DCC in supplying, annotating, and explaining the metadata to SCORCH DCC and investigators.



Value of NNTC.



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Ways to Support Neurosciences



Emily Tiensvold

We are committed to providing the best treatment available today, as well as pioneering new therapies for the future. Our team of internationally recognized physicians and researchers is dedicated to saving lives, relieving suffering, and reducing the terrible impact of neurological disease on our patients, families, and community.

Private donations play a critical role in advancing our state-of-the-art research, treatment, education, and patient care programs. Whether you would like to support patient care, research in a particular disease area, or the education of our next generation of doctors and scientists, your charitable gift can be directed to a project or topic that is most meaningful to you.

Gifts can be directed to any fund of your choice, or you can talk to Emily Tiensvold with the University of Nebraska Foundation about a donation to your area of special interest: emily.tiensvold@unmc.edu

SAVE THE DATES

Parkinson's Disease Symposium

Wednesday, October 1, 2025
Embassy Suites & Conference Center
La Vista, Nebraska
<https://go.unmc.edu/yfve>

MS Strong 5K Race

Sunday, October 5, 2025
Heartland of America Park
Omaha, Nebraska
<https://go.unmc.edu/nbs8>

Lewy Body Disease Conference

Monday, October 13, 2025
Scott Conference Center
Omaha, Nebraska
<https://go.unmc.edu/epva>

Michael S. Heller Memorial Young-Onset Alzheimer's Conference

Saturday, November 15, 2025
Thompson Alumni Center
Omaha, Nebraska
<https://go.unmc.edu/geh2>

If you have any news or upcoming events that you would like featured in the next edition of the *NeuroNEXT UNMC* newsletter, please send the information to shgriffin@unmc.edu

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