

FALL 2025

NeuroNEXT

from the Departments of Neurological Sciences and Neurosurgery

Fall 2025: *A Season of Growth and Discovery*

As fall arrives and the holidays draw us closer to family and friends, we are also energized by the new ideas and research shaping the Department of Neurological Sciences and the Department of Neurosurgery.

Nebraska Medicine, our clinical partner, recently reached a historic milestone as one of our patients became the first in the world to receive a groundbreaking new therapy for multiple sclerosis. Jan Janisch-Hanzlik was referred to Rana Zabad, MD, neurologist and MS specialist at Nebraska Medicine, and Matt Lunning, DO, a hematologist/oncologist with expertise in CAR T-cell therapy. Nebraska Medicine, again shows we are ~ serious medicine, extraordinary care.

This fall, UNMC Neurosurgery and ENT received national recognition for excellence in Skull Base Surgery, earning the Multidisciplinary Team of Distinction Award from the American Skull Base Surgery Society (ASBSS). Congratulations to all!

We are also excited to welcome new faculty members Brianna Auman, PsyD, ABPP, Thapat Wannarong, MD and Carlos Peña, MD, along with new fellow Corbin McCown, MD, who joins us. Our annual Meet & Greet Picnic was held at Elmwood Park on August 23, where beautiful weather, great food, and wonderful camaraderie made the day a success.

In this issue, T. Scott Diesing, MD, shares an update from the Neurohospitalists, accompanied by a striking photo taken high above UNMC from the helipad. Kelly-Ann Patrice, MD, MBBS, provides an update on the

telestroke network, highlighting how it saves lives and improves outcomes.

We've also been exploring Neuroinformatics and Network Science with insights from Laura Lienemann and Carrie Bailey, PhD. In addition, we hosted the Activate EMS Emergency Medical Services Symposium Escape Room, where local EMS teams competed to figure out the diagnosis and we had students visit us from University of Anáhuac Veracruz as part of their Family Medicine rotation.

Great things are happening in our departments. We hope you enjoy the fall newsletter.

Happy reading!



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Nebraska Medicine Patient is First to Receive New MS Therapy

adapted from the article by Taylor Wilson, Nebraska Medicine



Matt Lunning, DO, Jan Janisch-Hanzlik (Patient) and Rana Zabad, MD

Jan Janisch-Hanzlik had been experiencing unusual neurological symptoms for several years. But when a strange sensation began in her toe and crept up her right side, she knew something was wrong.

"By the end of the week, I had a spinal tap, an MRI of the brain and spine, and was diagnosed with multiple sclerosis (MS)," Jan recalls. "I thought I would get on medication, and within a month or two, I'd be back to my normal self."

Instead, her condition advanced rapidly. Within three months, the 49-year-old could no longer drive and had to move into a new home after several serious falls.

She was referred to Rana Zabad, MD, neurologist and MS specialist at Nebraska Medicine and director of the Multiple Sclerosis Program at UNMC. Dr. Zabad introduced her to a first-of-its-kind clinical trial: allogeneic CAR T-cell therapy.

This approach, previously used by Nebraska Medicine hematologists to treat blood cancers, harnesses immune cells from a healthy donor. These donor T-cells are genetically engineered to target and eliminate the immune cells that drive inflammation and damage in MS.

"This is a completely novel concept in MS therapy," said Dr. Zabad. "We've never applied allogeneic CAR T-cell therapy to target the immune system in this way. This trial is about carefully and thoughtfully testing what might be possible for people living with MS."

Jan received her treatment on June 9 at the Fred & Pamela Buffett Cancer Center under the care of Matt Lunning, DO, a hematologist/oncologist specializing in CAR T-cell therapy. She was discharged on June 16 and has since returned for follow-up care.

"There is growing hope that this therapy can do more than treat patients with blood cancers like leukemia and lymphoma," said Dr. Lunning, professor in the UNMC Division of Oncology and Hematology. "Last year, we treated the first patient with lupus using allogeneic CAR T-cell therapy, and she has done remarkably well. We're hopeful Jan will experience similar benefits."

The process begins with a short course of chemotherapy to prepare the immune system, followed by infusion of the engineered donor T-cells. Unlike autologous CAR T-cell therapy—which uses a patient's own cells—this "off-the-shelf" allogeneic therapy can be delivered more quickly and consistently, since the donor cells are already available.

Jan says she is grateful to be part of something potentially transformative. "I feel blessed that Dr. Zabad chose me for this treatment," she said. "I'm not just excited for myself, I'm excited for the whole MS community—patients and physicians alike—because it could help all of us in the long run."

Dr. Zabad emphasizes both the courage of her patient and the promise of the science. "Jan understands this trial is not only about today's treatment, but about what it could mean for thousands of others living with MS."

Alongside the groundbreaking medical care, Jan highlights the compassion of her care team. "The nurses have been incredible. I appreciate how responsive they are, and I love that they have a mobility assistant who walks with you in the halls. I really have a lot of faith and trust in Dr. Zabad and the team here at Nebraska Medicine."

This first-in-the-world MS trial is part of a much larger clinical and translational research enterprise in the Department of Neurological Sciences at UNMC. Many of these studies are based in the Neuro Clinical Research Center (Neuro CRC), which provides the infrastructure to run innovative trials in both common and rare neurological diseases. Faculty are leading studies not only in multiple sclerosis but also in amyotrophic lateral sclerosis (ALS), post-traumatic stress disorder (PTSD), and Parkinson's disease (PD), among many other neurological and psychiatric conditions. The department's research spans neurodegenerative, neuroimmune, developmental, and neuropsychiatric disorders, supported by a robust infrastructure that allows discoveries in one area to accelerate progress in others. Alongside these efforts, researchers are also building digital twins in MS—patient-specific virtual models designed to track disease progression and guide more adaptive, personalized care. Together, these initiatives illustrate how the MS trial fits into a comprehensive research structure dedicated to advancing innovative therapies and improving outcomes across the full spectrum of brain and nervous system disorders.



Daniel Murman, MD, MS

About the Neuro CRC

The Neuro Clinical Research Center (Neuro CRC) at UNMC is the hub for clinical trials in the Department of Neurological Sciences. It provides the infrastructure, staff, and expertise needed to conduct cutting-edge studies across a wide spectrum of conditions, from multiple sclerosis and Parkinson's disease to ALS, PTSD, and other neurological and psychiatric disorders. In addition to pioneering first-in-human therapies, the Neuro CRC is advancing digital twin technology in MS—developing individualized virtual models that can track a patient's progress over time and help guide more precise, adaptive care. By centralizing trial operations and innovation, the Neuro CRC accelerates the translation of discoveries into real-world therapies.

UNMC Neurosurgery and ENT Earn National Recognition for Skull Base Surgery Excellence

by Department of Neurosurgery

The University of Nebraska Medical Center (UNMC) Departments of Neurosurgery and Otolaryngology–Head and Neck Surgery (ENT) are proud to announce that their collaborative skull base surgery program has received the Multidisciplinary Team of Distinction Award from the American Skull Base Surgery Society (ASBSS).

As the highest-volume and most comprehensive skull base team in the region, the program delivers patient-centered, cutting-edge care for complex skull base diseases with an emphasis on minimally invasive techniques and seamless interdisciplinary collaboration.

This prestigious national recognition underscores years of coordinated effort between neurosurgery and ENT at

UNMC, reflecting a shared commitment to advancing patient outcomes through innovation, teamwork, and academic excellence. Skull base surgery often requires precise, team-based management of tumors, vascular malformations, and cranial nerve disorders—areas where UNMC has become a leader.

“Our unique weekly multidisciplinary clinic offers patients—many traveling from long distances—the opportunity to see their providers in a coordinated, convenient setting, ensuring the very best care for Nebraska and the surrounding region,” said senior skull base neurosurgeon Dan Surdell, MD.

The UNMC skull base program has become both a regional and national referral destination, offering advanced endoscopic and open surgical techniques, state-of-the-art intraoperative technologies, and comprehensive perioperative care. Patients benefit from a seamlessly integrated approach involving neurosurgeons, otolaryngologists, radiologists, oncologists, and specialized nursing teams, ensuring both safety and optimal functional outcomes.

“This award reflects the dedication of our multidisciplinary teams and their shared vision for excellence,” said Dr. William Thorell, Chair of Neurosurgery. “Our partnership with ENT has elevated the level of skull base care available in Nebraska and beyond.”

UNMC remains committed to training the next generation of leaders in skull base surgery while driving forward research and innovation to improve the lives of patients.



New Faculty & Staff

BRIANNA AUMAN



Brianna Auman, PsyD, ABPP, joins the Department of Neurological Sciences as an assistant professor of neuropsychology. She is new to the Midwest, coming all the way from Slatington, Pennsylvania. When she was a child, she always wanted to be a scientist. She was always asking “why” and collecting samples from a local pond to look under her microscope. As she grew

up, she realized human behavior and brain functioning are even more interesting! She loves how neuroscience helps us understand biological explanations for each person's individuality.

Three things people may not know about Dr. Auman:

- I have a 2-year-old chihuahua-cattle dog mix named Pumpkin.
- I enjoy learning about wine, especially unusual growing regions (most recently Mexico).
- I am new to the Midwest. Visiting UNMC was my first time.

CARLOS PEÑA



Carlos Peña, MD, comes from Caracas, Venezuela, and will be joining the Department of Neurological Sciences as an assistant professor. Dr. Peña fell in love with neuroscience shortly after obtaining his biology degree, when he started studying how the brain processes and interprets pain in health and disease. He was quickly captivated by the remarkable complexity of this organ and decided

to dedicate his career to studying it.

Three things people might not know about Dr. Peña:

- I used to play competitive soccer until college, and I still enjoy playing from time to time with friends.
- I used to play electric guitar in college, especially progressive rock.
- I like to do outdoor activities with my family, like hiking, and when time allows to go rock climbing.

THAPAT WANNARONG



Thapat Wannarong, MD, joins our department as an assistant professor, UNMC Department of Neurological Sciences, Neurologist, Nebraska Medicine. He is originally from Thailand and fell in love with neuromuscular medicine because it brings together careful clinical examination, electrodiagnostic skills, and rapidly evolving therapies. His research interests are neuromuscular

medicine, including autoimmune neuropathy, myasthenia gravis, and more.

Three things people might not know about Dr. Wannarong:

- I represented my country in the Biology Olympiad during high school.
- I like hiking and have a goal of visiting all the U.S. national parks.
- I just learned how to ski last year and really enjoyed it.

NEW FELLOW: CORBIN MCCOWN



Corbin McCown, PhD, is from Tyler, Texas and joins the Department of Neurological Sciences as a Neuropsychology Fellow. Dr. McCown completed his BS in Psychology at Abilene Christian University in Abilene, TX. Graduated with a Doctor of Psychology (PsyD) Sciences Center. His research and professional interests include neuropsychology broadly and the

validity of performance in cognitive testing.

Three things people may not know about Dr. McCown:

- I played rugby in undergrad.
- I completed a cycling tour from Vienna to Budapest.
- I was in a rock band during grad school.

UNMC and Nebraska Medicine are leaders in the emerging field of Neurohospital Medicine

by T. Scott Diesing, MD, FHM



Meredith Fredrick, MD, Kiley Cameron, MD, Kaylene Linhart, APRN, T. Scott Diesing, MD, Michael Pichler, MD, Jena Prince, APRN, Jennifer Shaw, MD, Andrew Brown, MD

The University of Nebraska Medical Center is home to the largest and most comprehensive academic neurohospitalist program in the region. In fact, the UNMC Department of Neurological

Sciences was the birthplace of the region's first neurohospitalist program in 2014. Since then, the program has developed into its own division of 9 physicians and APPs leading 24/7/365 neurologic care of hospitalized and emergency room patients through 3 comprehensive inpatient services. Through the inpatient General Neurology Service and Stroke Service, the Neurohospitalists are able to impact thousands of patient's lives within our own hospital. Through the Tele-Neurology Service, they provide specialized neurologic care for patients in smaller hospitals throughout the region.

Neurohospitalist Medicine is one of the newest and fastest-growing subspecialties in neurology. A neurohospitalist is

a neurologist who is hospital based and whose expertise is most needed on the inpatient units and emergency rooms. The subspecialty arose in response to the demand for high-quality neurologic inpatient care, increasing patient complexity, and the hospital's need for rapid evaluation and management of neurologic emergencies. Neurohospitalists specialize in the evaluation and treatment of acute & emergency neurologic conditions such as stroke, meningitis, seizures, confusion & delirium, as well as neurologic complications of systemic diseases. They have additional roles as specialists in patient safety, quality improvement, and often medical education. Like the majority of practicing academic neurohospitalists, most of the UNMC neurohospitalists have additional subspecialty or fellowship training including vascular neurology, epilepsy, neuro-critical care, neuro-immunology, and neurophysiology. The development of this subspecialty has largely mirrored that of medical hospitalists and is similarly demonstrating its value. Currently, there are around 2,000 practicing neurohospitalist in the United States, but the need is estimated to be over 20,000.

The UNMC neurohospitalist Program has distinguished itself both within the institution and the region. As has been predicted in the medical literature, development of the UNMC neurohospitalist Program has been associated with improvements in patient length-of-stay, mortality, and complication rates. Almost all the neurohospitalists have received awards related to education or patient advocacy. Regionally, UNMC and Nebraska Medicine have earned the reputation as the "go-to" hospital for neurological conditions. Among specialty medical services, the inpatient neurology services are one of the largest draws of outside transfers to our hospital. Importantly, all successes have only been achieved through the seamless collaboration with their teammates in Neurocritical Care, Neurovascular Neurology, & Neurosurgery that which makes our hospital extraordinary.

From conflict to collaboration: Transforming difficult relationships into productive partnerships

by Rachel Jackson, Media/Communications Specialist,
Olson Center for Women's Health and Marketing Strategist, Women's Services



Diane Ratigan-Schmidt,
MSOP, HBI, SHRM-SCP

Diane Ratigan-Schmidt, MSOP, HBDI, SHRM-SCP, director of Workforce Strategy and Instructor, UNMC Department of Neurological Sciences, presented a free lecture on September 16th at the Olson Center for Women's Health. This event was open to the community, and it also provided a nursing credit.

Ratigan-Schmidt encouraged attendees to unlock your superpower to transform even your most challenging work and personal relationships. In this practical session, attendees learned how to reframe "difficult people" using the Herrmann Brain Dominance Instrument (HBDI®) Whole Brain® thinking model and uncover how our thinking preferences shape conflict. "We all have brains – we just use them differently," Ratigan-Schmidt added. The session was offered to 160 people with simple, empowering tools to help build healthier, more productive connections.

If you're interested in having Diane speak at your next event, contact her at diratigan@unmc.edu.

Telestroke network: Saving lives and improving outcomes

Published in Moments in Medicine, June 23, 2025



Kelly-Ann Patrice, MBBS

The Nebraska Medicine telestroke network uses electronic audio and video technology to care for stroke patients—both at Nebraska Medicine and at other hospitals

throughout the region that don't have stroke specialists on-site. Telestroke provides real-time expert neurological assessment and recommendation of treatment for patients presenting with stroke-like symptoms.

Kelly-Ann Patrice, MBBS, a vascular neurologist specializing in stroke care, explains how the telestroke network improves outcomes for stroke patients at hospitals throughout the region.

HOW TELESTROKE WORKS

"Telestroke services connect patients with stroke specialists when they arrive at hospitals that may not have a stroke expert on-site," says Dr. Patrice. "This helps ensure that patients receive fast, appropriate treatment, which can reduce the risk of long-term disability after a stroke."

Hospitals in the telestroke network have immediate access to the Nebraska Medicine stroke team at any time. Once the stroke team is contacted, the on-call neurologist will evaluate the patient via video monitors.

Through the telestroke network, the on-call neurologist at Nebraska Medicine can visualize and interpret brain images (CT scans) of stroke patients from other hospitals in the region. The technology has been shown to reduce the amount of time it takes to identify and treat stroke patients with tPA.

"During a video consultation, the patient and family members can see and talk directly with the stroke specialist," explains Dr. Patrice. "As

part of the evaluation, the specialist will ask about the patient's medical history, perform a neurological exam, and review their brain scans in real time. This allows us to quickly identify the best treatment and support the patient, their family and care team in making important, time-sensitive decisions."

Once a diagnosis is made, the telestroke neurologist will recommend the next steps. This may include giving clot-busting medication (tPA) or stabilizing the patient for transport. Nebraska Medicine also offers the largest group of specialty and fellowship-trained providers in the region to assist patient transfers when needed.

REDEFINING STROKE CARE

When it comes to stroke care, every second counts. Nebraska Medicine's telestroke network connects hospitals throughout the Midwest with the region's only Joint Commission Certified Comprehensive Stroke Center. This makes it possible for patients to receive expert care while staying close to home.

- Nebraska Medicine's telestroke network provides:
- 24/7 stroke coverage with an average response time of less than five minutes.
- Inpatient teleneurology coverage.
- A team of stroke specialists, including neurohospitalists, neurointensivists and neuro-vascular specialists.
- Guidance on clinical workflows and education for local care teams.
- Program feedback with outcomes measured and reported.
- Medical director support for certified stroke centers.

"By implementing focused education initiatives, continuously assessing clinical workflows, and systematically reporting outcomes, the telestroke program aims to consistently deliver timely and high-quality care to stroke patients," adds Dr. Patrice.

EXPANDING ACCESS AND IMPROVING CARE

Montgomery County Memorial Hospital in Red Oak, Iowa, is part of the telestroke network. They receive regular stroke training sessions, improved team skills and effectiveness, and improved community access to specialized stroke care.

"The support from Nebraska Medicine has enhanced our ability to manage stroke cases effectively, ultimately improving outcomes and safety for those we serve," says Hailey Runyon, RN, BSN, Acute Stroke Program Coordinator, Montgomery County Memorial Hospital.

THE IMPACT OF TELESTROKE

18% intervention rate for acute ischemic stroke patients.

50% of transferred patients are discharged home with little to no disability.

Nearly 30% of patients treated with thrombolytic therapy can stay in their local hospital.

"Telestroke networks have improved stroke care by expanding access to expert specialists regardless of location, ensuring patients receive timely, life-saving treatment," says Dr. Patrice. "This technology bridges gaps in care, improves outcomes, and offers critical support to healthcare teams, ultimately transforming the quality and reach of stroke treatment."

For more information about Nebraska Medicine telestroke services, contact Denise Gorski, MHA, BSN, RN, neuroscience clinical programs, quality and accreditation manager, at dgorski@nebraskamed.com.



Neuroinformatics Network (NEON): Building a Future of Data-Driven Neurology

by Carrie Bailey, PhD. & Laura Linenemann, BA

Neurological disorders affect more than 3.4 billion people worldwide—43% of the global population—according to the 2021 Global Burden of Disease Study (Feigin et al., 2024, *Lancet Neurology*). This burden generates heterogeneous data at a massive scale, demanding advanced science, thoughtful integration, and strong privacy safeguards.

The Neuroinformatics Network (NEON) addresses this challenge by creating a system to track neurological diagnoses, treatments, and outcomes. Guided by the NIH Office of Data Science Strategy's principle to "Collect Once—Use Numerous Times," NEON links research and care in a continuous cycle where clinical practice generates research data and research refines care—accelerating discovery and improving health.

Led by Dr. Matthew Rizzo, with contributions from Dr. Jerrod Anzalone, Dr. Carrie Bailey, and Laura Linenemann, NEON integrates artificial intelligence, machine learning, and Internet-of-Things (IoT) sensors to uncover new insights into the brain and behavior. Its initial scope spans multiple sclerosis, Alzheimer's disease, Parkinson's disease, and neurocritical care—domains where multidimensional modeling supports personalized diagnosis, prognosis, and therapeutic innovation.

Real-world examples illustrate this approach. "My Car the Doctor" captures naturalistic driving to reveal early behavioral signatures of neurological impairment, forecast

progression, and inform clinical trials. In multiple sclerosis, analytic pipelines offer the ability to track treatment response and disease course. In Alzheimer's, early cognitive and behavioral signals are detected before irreversible decline. In Parkinson's, wearable sensors measure tremor, balance, and mobility with greater precision than clinic-based assessments. In neurocritical care, continuous physiologic and contextual data fuel real-time modeling of recovery, resilience, and risk.

NEON also integrates imaging, biospecimens, electronic health records, and wearable data to power precision medicine. Ethical stewardship is central: the initiative collaborates with IRBs, patient advocates, and trial offices to integrate respect, beneficence, and justice into the design and governance.

Collaborations with the Center for Intelligent Health Care, the Great Plains IDeA-CTR, the Buffett Cancer Center's iCaRe2, the University of Kansas Medical Center, and NIH partners provide infrastructure, regulatory expertise, and data management. NEON seeks to expand these partnerships across campus and beyond, creating a platform for cutting-edge care, discovery, and education.

By combining advanced analytics, ethical governance, and real-world data, NEON is laying the groundwork for predictive and personalized neurology. It aims to accelerate discovery, strengthen health systems, and prepare the next generation of neuroinformatics leaders.

From Dizziness to Decision: An Escape Room for EMS Stroke Education

by Nichole Cooks, BSN, RN Stroke Program Coordinator



Local EMS teams competed in an EMS escape room training scenario at UNMC.

Posterior circulation strokes remain among the most challenging cerebrovascular events to recognize in the field. To address this gap, we developed an EMS escape room training scenario titled

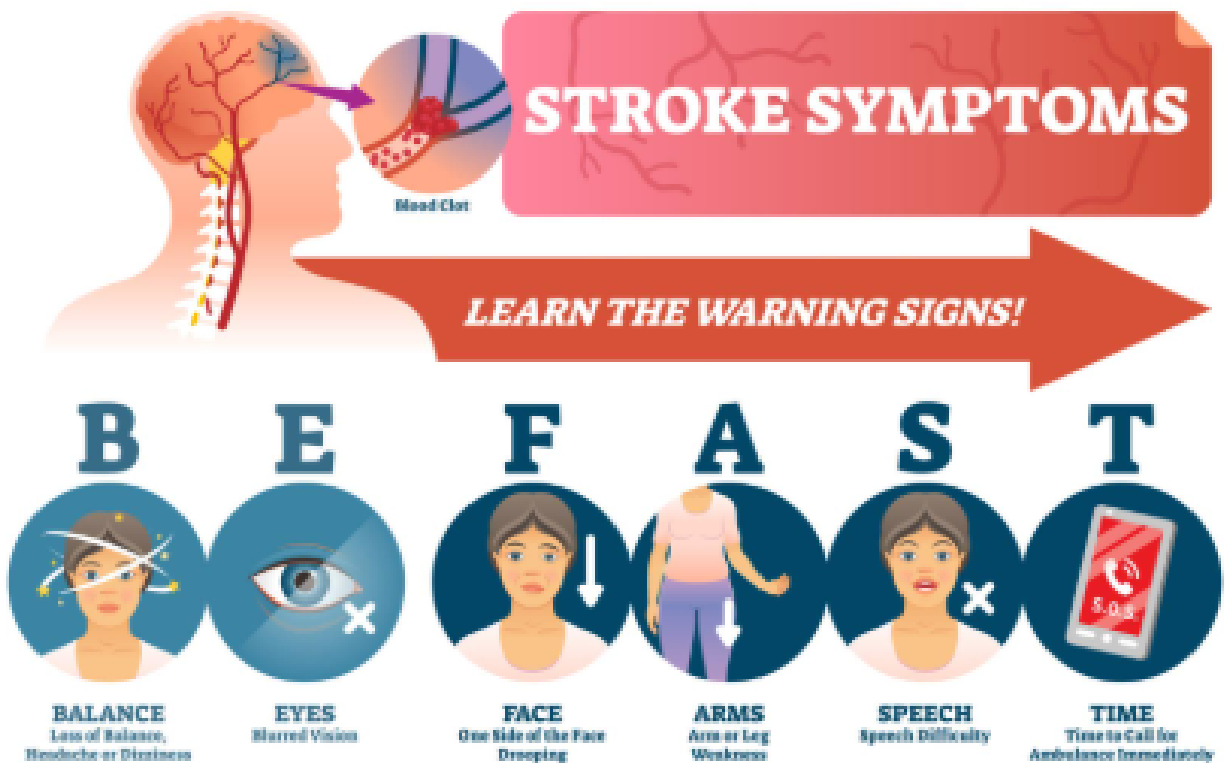
From Dizziness to Decision: You Made the Right Call. This innovative format transforms stroke education into an immersive, case-based learning experience. Set in a simulated apartment, EMS participants respond to a 911 dispatch for a 40-year-old female with nausea, vomiting, and dizziness symptoms that can easily be mistaken for intoxication or vertigo.

Through a series of interactive puzzles, participants uncover subtle posterior stroke clues, including imbalance and visual

field deficits, while navigating distractors such as alcohol bottles and medication history. The escape room integrates core objectives: applying the BE-FAST tool with emphasis on balance and eyes, completing neuro- and vital sign assessments, avoiding anchoring bias, and selecting an appropriate transport destination.

Participants must also complete a structured Situation, Background, Assessment and Recommendation handoff to “unlock” the final door, symbolizing successful delivery to definitive care.

Feedback has been strongly positive, with EMS reporting the format to be engaging, memorable, and directly applicable to real world practice. The game like structure not only improves stroke recognition but also reinforces teamwork, decision-making under pressure, and effective communication. By aligning gamification with high-stakes clinical training, this escape room offers a hands-on approach to enhance EMS proficiency in identifying and managing posterior strokes, ultimately supporting earlier recognition, faster treatment, and better outcomes for patients.



Know the signs of a stroke

University of Anáhuac Veracruz Medical Students Visit DONS During Family Medicine Rotation

by Subin Mathew, MD

We were delighted to welcome a group of medical students from the University of Anáhuac Veracruz as part of their Family Medicine rotation. Their time with us was filled with engaging clinical experiences and collaborative learning. The enthusiasm, curiosity, and professionalism of our staff and residents left a lasting impression on the visiting students.

Beyond the clinical setting, this visit highlighted the importance of global neurology education. By sharing knowledge and approaches across borders, we can foster a deeper understanding of neurological care, advance diagnostic and treatment strategies, and strengthen the global network of medical professionals. Such exchanges not only enrich the students' learning experience but also provide our team with fresh perspectives, creating a genuine two-way flow of ideas.

GROWING GLOBAL HEALTH PARTNERSHIPS

Subsequently, a contingent from the University of Nebraska Medical Center (UNMC) visited the Anáhuac Veracruz Xalapa campus from October 13–17 for the Sixth International Congress of Medicine, part of the Anáhuac University Network.

The delegation was led by Dr. Jane Meza, Vice Chancellor for Academic Affairs, and included Dr. Jeffrey Harrison, Chair of the Department of Family Medicine; Dr. Kenneth Bayles, Vice Chancellor for Research; Dr. Armando de Alba Rosales, Assistant Dean of Student Engagement for the College of Medicine; Dr. Harnoor Dhaliwal, Executive Director of the UNMC Scott Scholars Program; Dr. Matt Rizzo, Chair of Neurological Sciences; and Matthew Mueliner, an M3 student at the UNMC College of Medicine.

Congress sessions focused on a range of timely themes. Dr. Rizzo presented on Designing Patient-Centered Digital Health and AI for the Future of Global Healthcare. Dr. Bayles examined converging pathways in the use of AI and digitalization. Dr. de Alba Rosales highlighted lessons from the COVID-19 pandemic on bridging primary care and digital communication and also led a workshop on the role of primary care in the digital health era. Dr. Dhaliwal and Matthew Mueliner presented on integrating competency-based informatics education into medical student training.

The visit also included time with Anáhuac students, who had previously trained at UNMC in family practice and neurology, as well as with UNMC residents currently completing rotations at the Medical Center in Xalapa. Alongside these academic exchanges, the team met with leaders from across Mexico, strengthening partnerships and laying the groundwork for future collaboration in global health.



Dr. Rizzo and the team from Anáhuac Veracruz Xalapa

Meet, Greet & Celebrate: A Perfect Summer Day

by Shari Griffin



Neurological Sciences Meet & Greet Picnic.

The Department of Neurological Sciences hosted its annual Meet & Greet Summer Picnic this August at Elmwood Park, bringing together faculty, staff, residents, and their families for a day of connection and fun. The weather couldn't have been better, and the delicious food catered by Pleasure Your Palate made the afternoon even more enjoyable. Children laughed and played beneath a colorful parachute while adults showed off their competitive spirit in a lively game of cornhole. A heartfelt thank you to everyone who joined us and helped make the day a success.

UNMC Crosses the State with Interactive Stroke Conference

by John Keenan, UNMC strategic communications



Courtney Venegas, MD

On September 26, the UNMC iEXCEL program hosted a statewide stroke conference with a difference.

The Nebraska Department of Health and Human Services' second conference held at iEXCEL was called "Stroke Transitions Across the Continuum." By using cutting-edge hologram technology, interactive iWalls and virtual reality, the conference was able to be held at four sites, in Omaha, Kearney, Norfolk and Scottsbluff, with the approximately 150 attendees able to interact with the often-holographic presenters and each other, as well. Monica Johnson, MD, T. Scott Diesing, MD, and William Thorell, MD were guest speakers.

"It has long been iEXCEL's ambition to adopt emerging technologies that connect training sites across the state of Nebraska," said Pamela Boyers, PhD, associate vice chancellor of clinical simulation and iEXCEL. "Thanks to terrific teams of technicians, creators, and innovators who worked so closely together, this conference marked another

milestone in ensuring 'real-time' statewide outreach."

The conference was the latest example of how UNMC is leading the way in interactive, accessible education for health professionals and health profession students across Nebraska, said Michael Hollins, assistant vice chancellor for creative production and emerging technology.

"This educational conference for working health professionals showcases how holographic, interactive and VR technology can break geographic barriers, enabling real-time collaboration and learning," Hollins said.

"Although this was a continuing education conference for working professionals, the technology also can be used for UNMC medical and health professions students," he said. "This is especially important now that UNMC is expanding its educational programs in central Nebraska."

Attendees included EMS first responders, physicians, nurses,

rehabilitation specialists, occupational and physical therapists and interprofessional students.

One exciting and interactive aspect of the conference was an "escape room," where teams at all sites competed to diagnose and treat a medical stroke emergency. The "clues" – symptoms, reactions and information provided by the patient – were drawn from a real case.

At the conclusion of the conference, the patient – speaking from a Holobox – revealed himself to the attendees with a pre-recorded holographic message emphasizing the importance of their work and the positive impact that preparedness and training had on his own case.

Nichole Cooks, stroke program coordinator for Nebraska Medicine, said:

"Bringing together professionals from across the state in such an immersive and interactive way allowed us to learn and educate in ways we never have before. The escape rooms, holographic and 3D images, iWall decisions – all gave us a chance to apply best practices and collaborate in real time with colleagues miles away. This conference showed what's possible when innovation and collaboration come together to better stroke care."

Dr. Boyers, Cooks and Hollins are excited to begin thinking about next year's conference.

"This is the future of medical and health training, and the technology continues to evolve," Hollins said. "Who knows what we will be able to offer in terms of simulation experiences next year?"

UNMC's Global Engagement Collecting Toys for Ukraine

by Valia Gumenyuk, PhD

In November 2024, together with Sara Pirtle and the Student Alliance for Global Health at the University of Nebraska Medical Center (UNMC), we launched our toy fundraiser for children in Ukraine who lost a parent due to the Russian war. It's time, once again, to support the children of Ukraine with our 2nd Annual Toys Drive for Ukrainian Children. Over three months, generous people from Nebraska will be donating toys to little boys and girls! These beautiful gifts will be shipped to Ukraine with the invaluable help of humanitarian organizations.

Children from Kherson, Mykolaiv, and Odesa will receive these toys with joy and gratitude, offering a small but meaningful source of comfort during this tragic time. These children continue to live with the trauma of war already in its fourth year, having lost a parent and enduring daily attacks from Russian drones, missiles, and bombs. It is difficult to imagine their everyday reality, and while there is no cure for war-induced trauma, acts of kindness can bring light into their lives.

Bring in your new toy to the following drop off sites:

- Sorrell Center (near C-Store)
- Lozier Center for Pharmacy Sciences and Education (near 2nd floor printers)
- William Science Hall - (2nd floor – near main entrances)
- Center for Healthy Living
- Doctors Building North (Neurology 2nd floor)
- Durham Research Center 1



YOU CAN ALSO GIVE
FINANCIALLY BY USING
THIS QR CODE

As people of a great country with big hearts, we have the power to make a difference. Your support brings hope and warm surprise to these young Ukrainians.

From 2024 to 2025, let's continue together!

Slava Ukraini!

Join Our Toy Drive for Ukrainian Children September 15 - January 3



Children of Ukraine

New Carbon Fiber Implants Provide Better Outcomes for Spine Cancer Patients

From March 11, 2025, Advancing Health

Carbon fiber-reinforced polyetheretherketone (CFR-PEEK) implants are specialized screws used to treat spinal tumors while improving cancer tracking. Carbon fiber is radiolucent, which means it doesn't create as much artifact in imaging as traditional spinal instrumentation. Carbon fiber implants are comparable to titanium implants in terms of stability and functional recovery.

BENEFITS OF CARBON FIBER IMPLANTS

Improved radiation accuracy: If a tumor can't be completely removed during surgery, the surgeon can place carbon fiber screws around the remaining tumor. When radiation therapy is given after the surgery, the beams can reach the tumor more accurately because of these implants. Carbon fiber also causes less deflection of the radiation beam than titanium.

Clearer imaging: Doctors can evaluate the area of the tumor more easily with carbon fiber implants because they create fewer artifacts on an MRI scan than titanium. These artifacts, or shadows, make it harder to see the

area where the tumor was taken from. These shadows can delay detection of regrowing tumors. With carbon fiber implants, doctors can see the area better during a scan, so they can catch tumor recurrences earlier.

"When we look at an MRI, we see the tissues very clearly if we've used carbon fiber implants," explains neurosurgeon Miki Katzir, MD. "If we use titanium, we'll see shadows or black discoloration of the picture because the titanium screw is a metal instrument. The MRI, which is a magnet, tries to go through those metal screws, and the radiation beams get scattered. This creates a big black hole around the screws, where you can't really see anything."

CHALLENGES OF CARBON FIBER IMPLANTS

Carbon fiber is more difficult to handle than the titanium implants that most surgeons are used to. If a hospital has carbon fiber implants and the surgeon has experience with that material, it has a lot of benefit for patients with spinal cancer. Studies have shown that after surgery there is no disadvantage of using carbon fiber compared to titanium.

"For surgeons, using carbon fiber versus titanium is like driving an automatic car versus a manual shift," explains Dr. Katzir. "Both are good, but you must be comfortable with using this type of instrumentation. Carbon fiber feels different in your hand than titanium. If you're not used to it, carbon fiber can break if you mishandle it in surgery."

WHAT PATIENTS SHOULD KNOW

For patients, the difference in the material isn't noticeable. However, those with a carbon fiber implant may benefit from earlier detection of tumor recurrence and reduced side effects from the radiation. For example, if you're radiating very close to a vital organ and the radiation beam gets deflected because of the titanium screws, it can injure healthy tissues as well.

"I found that there's approximately 30 percent more accuracy in radiation therapy with carbon fiber implants compared to titanium, which is quite a lot," says Dr. Katzir. "This means that with a hundred percent of radiation beams, maybe 70 percent reaches the tumor."

CUTTING-EDGE ROBOTIC SURGERY

Dr. Katzir is the only surgeon in the state performing spinal cancer surgeries using the new Mazor X robot to place the carbon fiber screws. The robot helps the surgeon place the screws with sub-millimeter accuracy.

"We create a plan for placing the implants and the robot guides me there and provides accurate positioning," says Dr. Katzir. "This technology ensures that screws aren't being placed where you can injure a blood vessel or a nerve, which is very important."



Dr. Miki Katzir, MD

2025 MS STRONG WALK/RUN

by Shari Griffin

The UNMC and Nebraska Medicine Multiple Sclerosis Clinic proudly hosted the MS Strong Community Race on Sunday, October 5, 2025, at Heartland of America Park in Omaha. The event supported the MAHA Program (Multiple Sclerosis at Home Access), a comprehensive, patient-centered service designed for individuals living with MS and other demyelinating diseases.

From 1:00 to 4:00 p.m., participants of all ages gathered for a day of community and support. Race options included a fun run/walk/roll, as well as 5K and 10K runs. Proceeds from the event went directly toward empowering those living with MS and related conditions in our community. If you'd like to donate to the cause, you still can here: Give Now



Racers at the MS Strong Community Race

Artificial Intelligence (AI) in Neurology

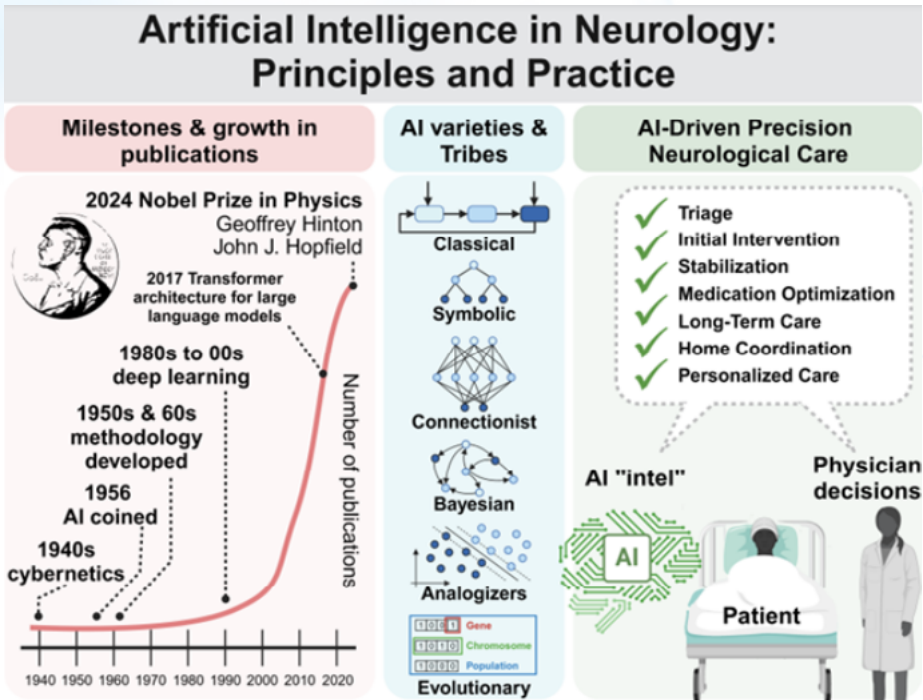
The Annals of Neurology published a three-part series by Matthew Rizzo, “AI in Neurology: Everything, Everywhere, All at Once” (2025), which traces the growing role of artificial intelligence in neurological science and care. Part 1 lays the foundation, explaining core AI concepts and challenges for clinicians and researchers. Part 2 explores applications across major neurological disorders, including Alzheimer’s disease, Parkinson’s disease, multiple sclerosis, epilepsy, and stroke, with emphasis on digital biomarkers and precision neurology. Part 3 looks forward, describing how AI enables patient surveillance, multi-omic data synthesis, disease simulation through digital twins, and adaptive learning health systems.

The series emerged from a 2024 Sacco Neurology Chair Summit talk in Chicago, thanks to Ken Tyler’s outreach and encouragement from Eva Feldman to expand the scope. What began as a single lecture evolved into a wide-ranging exploration—spanning philosophy, mathematics, neural systems, ethics, and cultural touchstones such as I, Robot and Iron Man—ultimately growing to thesis scale. Guidance from colleagues and advisors, including NIH Director Monica Bertagnolli, Susan Gregurick of the NIH Office of Data Science Strategy, and John Ngai of the BRAIN Initiative, as well as the scholarship of many scientists and educators, helped shape this project toward imagining a better future for the neurological sciences.

Rizzo, M. and Dawson, J.D. (2025). AI in Neurology: Everything, Everywhere, All at Once Part 1: Principles and Practice. Annals of Neurology, 98(2):211-230. <https://doi.org/10.1002/ana.26838>. PMID: 40536356. PMCID: PMC12278199

Rizzo, M. (2025). AI in Neurology: Everything, Everywhere, All at Once Part 2: Speech, Sentience, Scruples, and Service. Annals of Neurology, 98(3), 431–447. <https://doi.org/10.1002/ana.27229>. PMID: 40421866. PMCID: PMC12392058

Rizzo, M. (2025). AI in Neurology: Everything, Everywhere, All at Once Part 3: Surveillance, Synthesis, Simulation, and Systems. Annals of Neurology, 97(4), 563–582. <https://doi.org/10.1002/ana.27230>. PMID: 40135538. PMCID: PMC12447850



UNMC's Department of Neurosurgery extends its outreach efforts

by Nicholas Borg, MD



Nicholas Borg, MD

The Department of Neurosurgery cares for the region's most complex neurosurgery patients and aims to provide safe, innovative, and evidence-based care by leveraging the skills of its sub-specialty fellowship-trained faculty. UNMC remains its home base for surgical procedures, where surgeons are surrounded by skilled anesthesiologists, neurologists, and a dedicated neurosciences ICU. At the same time, the department recognizes that access to care is the first step in a patient's journey towards a successful outcome,

Following in the footsteps of Dr. William Thorell - who for years has traveled to South Dakota on a monthly basis - Dr. Borg has now set up a neurosurgery clinic in Grand Island, Nebraska. Together with Sara Wattier APRN, he will be seeing new and follow-up patients at the Nebraska Medicine clinic on the second Tuesday of every month. Having a physical base in central Nebraska allows the team to build partnerships with local providers to best care for their patients, eliminating the barrier of physical distance. Patients who need medical management or surveillance can continue to be cared for closer to home, while those who do need to travel to Omaha for surgery can minimize the number of trips taken for pre- and post-operative care.

Central Nebraska is privileged to have several excellent general and specialist physicians looking after patients across broad swathes of the state. The new neurosurgery outreach clinic in Grand Island aims to bring the cutting-edge skills and knowledge of its Omaha-based faculty to the rest of the state, allowing more Nebraskans to receive the care they deserve closer to home.

For appointments or to discuss a potential referral, call Sara Wattier, APRN at 402-836-9900.

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@nufoundation.org

RESEARCH HIGHLIGHTS



The UNMC College of Medicine recently received grants and awards representing more than \$10 million in new funding. Awards included:

Kuan-Hua Chen, PhD, neurological sciences, received a grant of \$3,240,750 from DHHS/NIH/NIA to study the influence of interpersonal connectedness in spousal care dyads on early progression of AD. Dr. Chen also received a grant of \$200,000 from the Alzheimer's Association to study the influence of family connectedness on early AD progression.

Anna Dunaevsky, PhD, neurological sciences, received a grant of \$2,260,898 from DHHS/NIH/NIGMS for the Cognitive Neuroscience of Development and Aging (CoNDA) Center.

The following industry-sponsored grants and contracts were received.

Kelly Stauch, PhD, neurological sciences, received funding to study new approaches for an assessment to see if creatine HCl is neuroprotective in the context of traumatic brain injury.



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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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