

Thrombectomy • Tele-EEG • Holistic Care

# microscope

August 2019

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About CHI Health

CHI Health is a regional health network with a unified mission: nurturing the healing ministry of the Church while creating healthier communities. Headquartered in Omaha, the combined organization consists of 14 hospitals, two stand-alone behavioral health facilities, more than 150 employed physician practice locations and more than 12,000 employees in Nebraska and southwestern Iowa.

In fiscal 2018, CHI Health invested more than \$179.3 million back into our communities. The majority of those dollars went to caring for the poor and underserved.

CHI Health is part of CommonSpirit Health, a nonprofit, Catholic health system dedicated to advancing health for all people. It was created in February 2019 through the alignment of Catholic Health Initiatives and Dignity Health. CommonSpirit Health is committed to creating healthier communities, delivering exceptional patient care, and ensuring every person has access to quality health care. With its national office in Chicago and a team of approximately 150,000 employees and 25,000 physicians and advanced practice clinicians, CommonSpirit Health operates 142 hospitals and more than 700 care sites across 21 states. In FY 2018, Catholic Health Initiatives and Dignity Health had combined revenues of \$29.2 billion and provided \$4.2 billion in charity care, community benefit, and unreimbursed government programs. For more information, please visit [CHIhealth.com](http://CHIhealth.com).

## Under the Microscope



Dear Colleagues,

It's no secret the health care system can be complicated for patients to navigate. So when we make it simple, we should celebrate.

Some might call the CHI Health Neurological Institute a “one-stop shop.” Patients from five states certainly do. Here at our level 4 Epilepsy Center, patients receive all the testing and evaluation needed in one day – at one place – and walk out with a treatment plan, reassuring confidence and a sense of relief. Amazing, but that’s not all.

The Neurological Institute is the fourth program in the country to receive advanced stroke certification for a Thrombectomy Capable Stroke Center – a procedure that has a 90 to 92 percent success rate compared to 3 to 6 percent for tPA in large artery clots.

These centers of excellence are complimented by leading programs in Parkinson’s disease, dementia, multiple sclerosis and complex headaches – plus the comprehensive Immanuel Rehabilitation Institute is right next door.

Never satisfied with good enough, our specialists and subspecialists are using technology to stretch our expertise and serve rural Nebraska and southwest Iowa locations which wouldn’t otherwise receive this level of care.

Take what’s happening in Nebraska City. Here, our physicians are performing a breakthrough procedure – MR guided focused ultrasound (MRgFUS) – to treat essential tremors. People are coming from all over the country for this treatment.

Read on to learn more about how patients are finding truly excellent care they can’t get anywhere else. More than that, they’re finding hope.

Sincerely,

Cliff Robertson, MD  
Chief Executive Officer  
CHI Health

## Letter from Department of Neurology

Dear Colleagues,

On the edge and within reach. Scientific advances have placed the field of neurology in a truly unique phase – we’re moving forward not in leaps and bounds, but in lightyears and without boundaries.

Take the advent of artificial intelligence. Its given rise to an app that will alert our neurologists when a patient is having a major stroke. No waiting for a specialist to arrive in the ER – assessment and even treatment can begin in seconds.

When we built the Neurological Institute at CHI Health Immanuel, we envisioned a destination for exceptional care. We also planned to extend our reach far beyond these walls in four ways: through clinical care, research, education and service.

Of course our subspecialists provide care on site and with telemedicine technology. But they also give TED talks and train residents. Many conduct research – a current study is on a nutritional substance which can prevent cells from dying. Others provide free care to hundreds of patients at international epilepsy camps.

As a result, the energy within our team is palpable and it draws the best of the best in our field. Coming soon: a Heart and Brain clinic. Here, neurologists and cardiologists will work with patients to identify conditions which put them at risk for stroke.

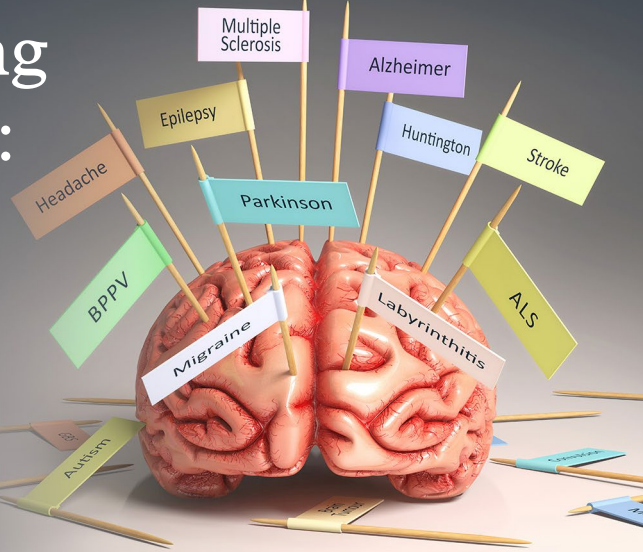
This edition of *microscope* tells you where we are, and how we’re advancing the field of neurology – for the betterment of the region and beyond.

Sincerely,

Sanjay Singh, MBBS, FAAN  
Neurological Institute Director



## Completing the Puzzle: Institute Stands at the Edge of Science



Demystifying neurological conditions can be like meticulously putting together an intricate puzzle. All the pieces are in place at the CHI Health Neurological Institute.

Its nationally-recognized Centers of Excellence include the nation's fourth certified Thrombectomy Capable Stroke Center, a Level 4 Epilepsy Center, and leading programs for Parkinson's disease, dementia, multiple sclerosis and complex headaches.

"We have many types of neuro subspecialists a patient would need. They are some of the best trained in the country," said Director Sanjay Singh, MBBS, FAAN.

### Patient Focus

For patients, neurological diagnosis and treatment can be life-changing.

"We built the Neurological Institute from the ground up with this in mind," said Dr. Singh.

Before construction began, a life-size model of the Institute was made out of cardboard, so the team could walk through and make suggestions. "It was a very unique and exciting way to build," Dr. Singh said.

The 13,000-square foot Institute keeps patients at the center of care. "It's the specialists who move around the patient," Dr. Singh said. "For example, in our Stroke Center, we have a built-in CT scanner in the Cath Lab, so the patient never has to leave the room."

One wall in every clinic room can be written on so care providers can sketch out diagrams as they discuss results.

"Our team works together to create the most complete clinical picture so that treatment plans can be made," said Dr. Singh.

### System Strength

The Institute is headquartered on the Immanuel campus at CHI Health, but it's designed to reach out to rural Nebraska and western Iowa – which is critical given the nationwide shortage of neurologists.

Teleneurology and Tele-EEG programs allow fellowship-trained neurologists to read EEGs remotely. "The reports are made instantly available to those regions," Dr. Singh said.

Being part of a large academic health system helps the Institute bring the latest treatments to patients – such as incisionless surgery for essential tremors (*see page 11*). This technique requires hours of MRI time – impossible to accommodate in metro hospitals – but feasible at CHI Health St. Mary's in Nebraska City. "Only in a system like ours is that possible," Dr. Singh said.

With a four-part mission – clinical, research, education, service – the Institute is united around moving care forward. "For this field, most of the major discoveries are happening now," Dr. Singh said. "We're standing at the edge of science." 🌟

## Singh's Mission Highlights

### Clinical

Opening the region's only dedicated Multiple Sclerosis Infusion Center.

*"Our goal is to ensure the most optimal functioning and the best quality of life for our patients."*

### Research

Artificial intelligence system for detecting large strokes in our hospitals. The AI system we are installing will monitor CT scanners around the clock and will alert us when it detects a large stroke.

*"We are particularly committed to expeditiously bringing basic research from the labs to the patient's bedside in the most efficient and safe manner."*

### Education

Residencies, rotations, conferences, grand rounds and yearly Neurology Update, plus lectures for the lay public.

*"We train the physicians of tomorrow, with a conscience. It's also important to share information with the public at large."*

### Service

Observership program trains international physicians and free Epilepsy Camp provides care at international locations.

*"At our last camp in India, we saw more than 600 patients in two days."*

## Epilepsy Destination Draws Patients from Five States

Patients with complex epilepsy can go from one specialist to another, trying to find answers.

Those traveling to the Destination Clinic at the CHI Health Epilepsy Center find they've arrived.

"We have been designated a Level 4 Epilepsy Center by the National Association of Epilepsy Centers," said Director Sanjay Singh, MBBS, FAAN. "This is the highest possible designation."

That means the care is the best they can receive, with an approach that is truly unique.

Here, patients see a neurologist specializing in epilepsy (epileptologist) in the morning and immediately have all needed diagnostic tests. They can also receive care from a physical therapist or other specialists, and can consult with a neurosurgeon if necessary. Then they review all their results with their epileptologist.

It all happens in one place. At the end of the day, the patient and family

walk out with a comprehensive care plan. Treatment ranges from medical management (60-70% of patients) to surgical interventions (30-35% of patients).

The Epilepsy Center attracts patients from Nebraska, Iowa, South Dakota, Kansas and Montana.

"We see our role as moving patient from disease and disorder to a healthier life," Dr. Singh said.

Responsiveness is core to the team's philosophy.

"We keep a number of urgent clinic slots open so if someone needs to be seen we will get them in," Dr. Singh said.

The Institute also offers ICU EEG monitoring for transfer patients. "This is intense monitoring with a physician on the case every hour," Dr. Singh said.

Tele-EEG monitoring allows the program to extend its expertise to distant communities. "With this technology, they can get the highest level of care," Dr. Singh said. 🌟

## Epilepsy Center Protocol



### Phase 1 (Diagnosis and treatment)

- » Video-EEG monitoring
- » MRI with a seizure protocol
- » PET scan
- » SPECT scan
- » Neuropsychological testing



### Phase 2 (For surgical candidates)

- » WADA Test -Shutting down half the brain to test memory and language



### Phase 3 (Localizing language/memory functions)

- » Intracranial Video
- » EEG Monitoring



### Phase 4 (Surgery)

- » Epilepsy surgery
- » Vagal nerve stimulation
- » DBS & RNS

## Surgery Solves 30-Plus Years of Seizures

Nate Beber endured three, five, sometimes even 10 petite mal seizures each month for more than 30 years. One caused a car crash. Another ended with a severely broken leg.

"A lot can happen in a minute," said Kathy Beber, his wife of 35 years. "If he was standing I would have to hang onto him."

It all started with a mosquito bite in 1971 which caused viral encephalitis. Nate was 16 and lucky to recover, despite memory loss and seizures. Medication has helped, but surgery was always in the back of his mind.

"It's a scary decision. There's so much to lose. I didn't want to end up a vegetable," he said. "Now the technology has advanced so much, it's like walking on the moon."

In 2016, Nate underwent WADA testing and a lobectomy. The five-hour surgery ended with the excision of a golf ball-sized section of brain.

The seizures have ceased and Nate is able to drive and continue working at his fraud detection job at First Data. The Bebers want others to know the surgery and care at the CHI Health Epilepsy Center has been life changing. "I would recommend it to anyone," Nate said.



## Revolutionizing Stroke Care: ‘Good is not good enough’

When the FDA approved tissue plasminogen activator (tPA) in 1996 for the treatment of stroke patients, those who received tPA within a short window of time often suffered no permanent damage or deficits.

But now CHI Health Interventional Neurologist Vishal Jani, MBBS, is offering an even bigger game changer.

A procedure called a mechanical thrombectomy is now proving even more successful (90 to 92 percent success rate compared to 3 to 6 percent for tPA in large artery clots) in minimizing deficits in the stroke patient.

Another big advantage to thrombectomies: doctors have a bigger window for using the new tool. TPA may be considered the “gold standard” but it must be given within four-and-a-half hours of symptoms appearing.

Dr. Jani not only is improving quality of life – he’s also saving lives – by performing thrombectomies.

He threads a catheter through an artery in the patient’s groin to the blocked artery in the brain. A specialized device called a stent retriever is placed through the catheter through the clot and in a few minutes, engulfs the clot. At that point, Dr. Jani removes the trapped clot. When he does, blood flow to the brain resumes immediately and brain cells are no longer deprived of oxygen.

Dr. Jani saves the patient from a “brain attack.”

With this technique and with the use of advanced imaging devices, he can treat stroke patients up to 24 hours after the first symptoms.

“We are using artificial intelligence software to help detect large strokes outside the time window,” Dr. Jani said. He is the only vascular neurologist in the state to perform the important emergency procedure.

“Good is not good enough when better is possible,” Dr. Jani said.

CHI Health Immanuel has earned a top national stroke certification for its work. They were the fourth in the country to receive Advanced Certification as a Thrombectomy Capable Stroke Center by the Joint Commission.



Overall outcomes for stroke cases at the Neurological Institute at CHI Health Immanuel are “extremely impressive,” Dr. Jani said. “If left untreated, stroke has a mortality rate of 80 to 90 percent, but now with the advent of sophisticated technology, more than 60 to 70 percent of the patients are independent and resume their lives just the way they deserve.”

And while the American Stroke Association recommends patients receive clot-busting therapy in an hour or less, the Institute’s goal is a door-to-needle time is 30 minutes or less.

Time and brain are being saved with the new FDA-approved thrombectomy device, Tele-Stroke technology and artificial intelligence which detects larger clots in less than a few minutes of a patient’s arrival at the ER. With these advances, Dr. Jani revolutionizing stroke care and giving patients more hope than ever before.

He currently serves as CHI Health System Stroke Medical Director for all 14 hospitals in Nebraska and southwest Iowa. 🌟

*Stroke is feared because it can be so debilitating. It’s the fifth leading cause of death in the United States and the leading cause of disability. People who have strokes can be permanently paralyzed on one side of the body or lose their ability to speak and comprehend. It’s estimated more than two-thirds of survivors have some type of disability.*



**Vishal Jani, MBBS**  
Interventional Neurologist  
CHI Health Neurological Institute

## Near or Far: Thrombectomies Prevent Stroke Deaths, Disabilities

When Mike Niemants arrived at the CHI Health Neurological Institute, he couldn’t talk, see or move his left side due to a clot blocking a large artery in his brain.

Worse, he’d been unconscious too long for Interventional Neurologist Vishal Jani, MBBS, to use the lifesaving tPA on him.

Fortunately, Dr. Jani had another lifesaving tool. He threaded a stent retriever through Mike’s blood vessels and used the device to trap and break apart the clot.

When he woke up in the hospital hours later, Mike was able to talk, see and move his left side.

Mike did need some occupational therapy right after his stroke, but knew he was lucky. Looking at people around him in therapy, he could see the contrast in outcomes. “It could have been a lot different,” he said.

Thrombectomy has been such a game changer in stroke care, the American Heart Association and American Stroke Association rewrote their treatment guidelines. A number of

states – including Nebraska – created statewide systems to designate where emergency responders should take stroke patients; if a hospital can’t perform a needed thrombectomy, that patient is transferred to a hospital with the capabilities.

One of the few is CHI Health Immanuel.

### Thrombectomy has been such a game changer in stroke care.

CHI Health also rewrote protocols to get stroke patients help faster. All CHI Health emergency departments take CT scans immediately and transport patients to Immanuel if a large clot is detected.

This protocol to identify and transport patients in need extends far beyond the Omaha metro area.

Take the case of Bob Harrie. His stroke happened last year, after dinner at a son’s house. The 70-year-old had fallen and was unable to get up. A rescue squad rushed Bob to CHI Health St. Francis in Grand Island, where he underwent a CT scan and received clot-busting tPA.

A teleneurologist in Omaha reviewed Bob’s CT scan and detected a large clot which would likely cause severe paralysis, and spoke to the family via computer monitor.

“He said you can’t stay in Grand Island. You need to go to the Neurological Institute at Immanuel,” said Carol Harrie, Bob’s wife.

Lifeflight transported Bob to Immanuel by 11 pm, where Dr. Jani performed the mechanical thrombectomy.

Today, Bob is back to hunting and fishing and called the entire team amazing. “They will take care of you,” he said. Carol agreed. “They enabled us to get the excellent care we received at Immanuel.” 🌟

## Holistic Approach to Healthy Brains



**When it comes to stroke prevention, Prasanna Tadi, MBBS, spells out tips for his patients – quite literally.**

“I keep it simple. ‘ABCDEF’ is my mantra for prevention,” said Dr. Tadi, a stroke certified neurologist at the CHI Health Neurological Institute.

The “ABCDEF” acronym breaks down key ways to promote a healthy brain and lifestyle:

### Stroke Prevention Easy as ABC...DEF

**A: Aspirin**

**B: Blood pressure control;  
Blood sugar control**

**C: Cholesterol control;  
No cigarette use**

**D: Diet of fruit, vegetables, healthy  
and organic; No drinking; No drugs**

**E: Exercise and weight loss**

**F: Friends, family and faith**

Dr. Tadi has been researching strokes and working with patients for six years. His approach to stroke prevention is holistic, with the belief that brain health goes beyond diet and blood pressure. Dr. Tadi suggests a patient’s attitude also comes into play.

“Negativity will affect our brain,” Dr. Tadi said. “There is no data correlation for stroke, but there is a correlation that a negative attitude

increases our anxiety and stress level. If you are negative, you release hormones like cortisol. This will affect our brain in multiple ways. It increases blood pressure, blood sugar and chronic stress, which, in turn, can affect our memory, creativity and attention.”

Dr. Tadi, who’s worked with the CHI Health Neurological Institute for two years, said patients can improve a negative attitude by practicing mindfulness, meditation and gratitude.

“In this, an individual will become more positive and satisfied in life,” Dr. Tadi said.

Paired with a positive attitude, he believes education is also a key component of stroke prevention. As an assistant professor in neurology at Creighton University School of Medicine, Dr. Tadi shares his knowledge with students. He also thinks patients should have access to information and exceptional care, which is why he launched a Teleclinic.

“Stroke is the leading cause of morbidity in this country. It is very difficult to find a stroke neurologist,” Dr. Tadi said. “Teleclinic will help us to connect with more patients who do not have access – especially in the rural areas.”

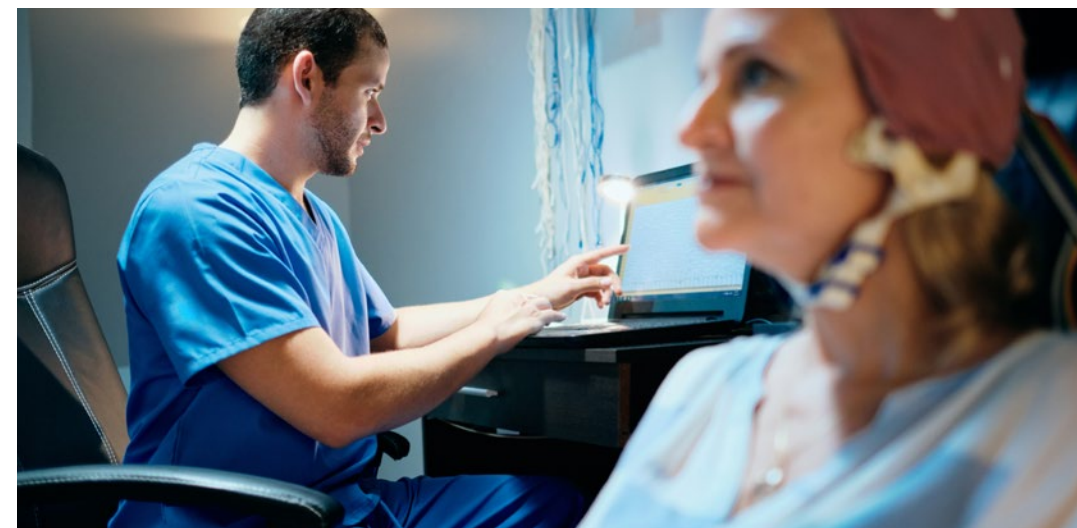
Dr. Tadi’s Teleclinic serves stroke patients in Kearney, allowing him to assess patient needs virtually.

“We order the right tests and give the treatment needed to complete their stroke care,” he said. “If procedures or surgeries are needed, we coordinate seamless care for the patient.”



**Prasanna Tadi, MBBS**  
Neurologist  
CHI Health  
Neurological Institute

## New Spin on an Old Procedure Helps Combat Neurology Shortage



**The principals of EEG, measuring electrical activity in the brain, haven’t changed in decades.** However, EEG interpretation using cutting-edge technology is one way CHI Health is blazing a trail to the future.

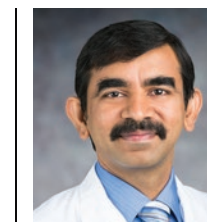
“Many facilities have EEG capabilities, but due to a national shortage particularly effecting rural medicine, few have in-house specialists for interpretation. Even fewer, with the skills required for reading neonatal EEGs,” said neurologist Ram Mohan Sankaraneni, MBBS, epileptologist.

That’s where CHI Health’s new Tele-EEG service steps in.

“We provide access to our board certified physicians specializing in the interpretation of adult, pediatric and neonatal EEG studies,” said Dr. Sankaraneni.

He added “studies are accessed remotely via a secure network and interpretation results are communicated quickly. Tele-EEG can eliminate travel for patients and helps ensure physicians have reliable information in a timely manner so they can offer their patients the best treatment possible.”

The service is on the cusp of expansion. Currently Dr. Sankaraneni and Dr. Sanjay Singh interpret for CHI Health facilities in Council Bluffs, Omaha, Lincoln, Grand Island and Kearney.



**Ram Mohan Sankaraneni, MBBS**  
Epileptologist  
CHI Health Neurological Institute

When Jason Mallin, MD, the only CHI Health neurologist in Kearney is out of town, Pam Palmer, APRN, seamlessly connects with Drs. Sankaraneni and Singh as if they were in the next office rather than than 187 miles away.

“Tele-EEG is vital to provide great care to patients without transferring them and therefore their family and support system hundreds of miles from home. The service not only helps us treat seizures, but to identify systemic complications, to assess prognosis, and to monitor therapy.”

According to Palmer, CHI Health Good Samaritan also uses Tele-EEG for comatose patients to identify treatment options for their recovery. “Many ICU patients have subclinical seizures, which are only identified by EEG, but are detrimental, as are convulsive seizures. The monitoring helps us provide the best possible outcomes.”

Benefits of CHI Health Tele-EEG Interpretation Service:

- Rapid access to specialists
- Fewer transfers, keep more care local
- Improved patient outcomes
- Improved cost savings
- Greater staff satisfaction

If you’d like to explore Tele-EEG for your hospital or practice, please call Dr. Sankaraneni at (402)717-0070.



**Joshua Anderson, MD**  
Neurosurgeon  
CHI Health  
Neurological Institute

## Life-threatening Tumor Removed, Sense of Humor Left Intact

**Terry Kucera, 70, retired purchasing agent at Chief Fabrication, said there is only one thing he can't do after brain surgery.**

"My wife's grounded me from going on the roof."

Recently, Kucera had a little mishap while sealing the skylight of his house on Kuester Lake in

Grand Island, Nebraska. Luckily it was only his shoe that fell to the ground outside his front door.

"I pounded on the roof," he said. "My wife rushed out the door, saw my right moccasin laying there and yelled, 'Where the heck are you?'"

The incident wasn't due to Kucera's brain surgery performed by Joshua Anderson, MD, neurosurgeon based at CHI Health St. Francis, but his right knee which needs replaced. "I had the left one replaced in 2017 before my brain surgery," Kucera said. "I'm not quite ready for another surgery, just yet."

Eleven years ago Kucera started having headaches. He thought stress was the culprit, but an MRI found a meningioma growing around three main arteries that feed his brain. Doctors kept a close eye on the tumor. Any growth could disrupt blood flow.

"A year and a half ago, I started getting headaches again only these were completely debilitating. So bad I couldn't function," he said. The tumor had quadrupled in size and was threatening his life. It had to be removed.

"How the tumor was laying, we knew it was a really dangerous surgery," Kucera said. "We asked around, everyone I talked to said Dr. Anderson was one of the best. If he couldn't remove it, no one could."

Kucera found Dr. Anderson's confidence comforting and appreciated his candor. "He told me he was going to get it out. He's

a great guy. Real professional, but he lays it all out on the table. What to expect. What could go wrong."

On July 18th of last year, Dr. Anderson along with neurosurgeon Chinyere Obasi, MD, from Good Samaritan in Kearney, who he called in to assist, undertook the nine-and-a-half-hour surgery.

Dr. Anderson removed 85 to 90 percent of the tumor, all but the part attached to Kucera's right eye. Leaving his vision, while not 20/20, intact. Kucera's sense of taste didn't fare as well, which Dr. Anderson warned could happen.

"It's a bummer 'cause my wife is a great cook. Now she tastes my food for me, and tells me if it's something I'd like," Kucera jokes. "It's not all bad. I've lost 60 pounds."

Staples, stitches and a tube to relieve the pressure were all part of the surgical experience. Kucera said he didn't look so good, but he "woke up and the headache wasn't there. I was so, so happy!"

Kucera stayed at St. Francis on the fifth floor for another three weeks and two days. "That staff at our hospital are incredible," he shared. "They were so good checking on me every 40 minutes and Dr. Anderson visited every day."

Kucera and his wife Roberta appreciated being close to home for the surgery and recovery process. "Roberta could drive back home at night. I had lots of family and friends visit. They even let my dog visit. We're inseparable. All the support helped me heal."

According to Kucera, he is doing really well. "I think Dr. Anderson was even surprised at how quickly I've recovered," he said. "I have nothing but good to say about my team of caregivers. And I couldn't have done it with out my wife who handled all my after care at home." 🌟



## Stroke or Tumor? Neurosurgical Expertise Delivers for Local Patients

**It happened to the late Senator John McCain. Surgery to remove a blood clot revealed something completely different – a malignant brain tumor.**

"Often patients come in as a stroke or for stroke evaluation because they have paralysis on one side of their body," said Joshua Anderson, MD, CHI Health neurosurgeon.

But it's not a stroke. Instead it's a brain tumor.

Discriminating between the two is essential to avoid improper treatment or delay of proper treatment.

"Having a neurosurgeon on staff means patients don't have to be transferred out. They don't have to undergo an expensive air ambulance ride and risk worsening their condition," Dr. Anderson said.

Patients can instead receive the highest level of care at CHI Health St. Francis.

"We have the top-of-the-line equipment for everything that might need to be done here. We have the stereotactic 3D surgical suite with a connection to a microscope," Dr. Anderson said.

"We use multiple imaging tools and functional MRI. We use tractography so we can tell where the motor part of the

brain is and where the fibers go around the tumor."

This 3D modeling technique uses data collected by diffusion MRI to visually represent nerve tracts. "It shows the white matter of the brain, it shows where the normal brain travels around the tumor," Dr. Anderson said.

The exhaustive workup serves as the roadmap for the neurosurgical suite. "It's pretty labor intensive, you're looking through the imaging and correlating it to the tumor," he said.

Care is also coordinated with other specialties as needed. "It's a multidisciplinary team with radiation oncologist and oncologists and oftentimes neurologists," Dr. Anderson said.

His role, as a neurosurgeon, reaches into a variety of cases, including lesions in the brain, spine issues, nerve compressions and vascular issues.

"Neurosurgery includes surgery of the brain, spinal cord, peripheral nerves and any of the supporting structures," Dr. Anderson said. "So it includes the blood vessels, the layers in the skull around spine and around the spinal cord and any of the structures around the peripheral nerves." 🌟



# Parkinson's: Meeting High Prevalence with Leading Options



Nebraska is one of the states with the highest per-capita prevalence of Parkinson's disease (PD) in the country. That means one in 100 Nebraskans of all ages suffer from it.

History of exposure to pesticides, herbicides, manganese and copper may be the reason. "But these exposures do not explain the whole story," says CHI Health Neurologist Melinda Burnett, MD, who specializes in treating the disease. "More research is needed."

Dr. Burnett completed a neurology residency at the Mayo Clinic after medical school, where she was introduced to people with Parkinson's. She then did a second fellowship in movement disorders in Australia, where she focused on research and clinical trials in patients with PD.

The bad news regarding the disease? "There are a lot of new medications out now to choose from, but unfortunately, they are mostly new spins on old medications, and they have not made a large impact on the management of the disease," she said. The mainstay of surgical options continues to be deep brain stimulation surgery, which helps those with advanced disease and problems with the medications.

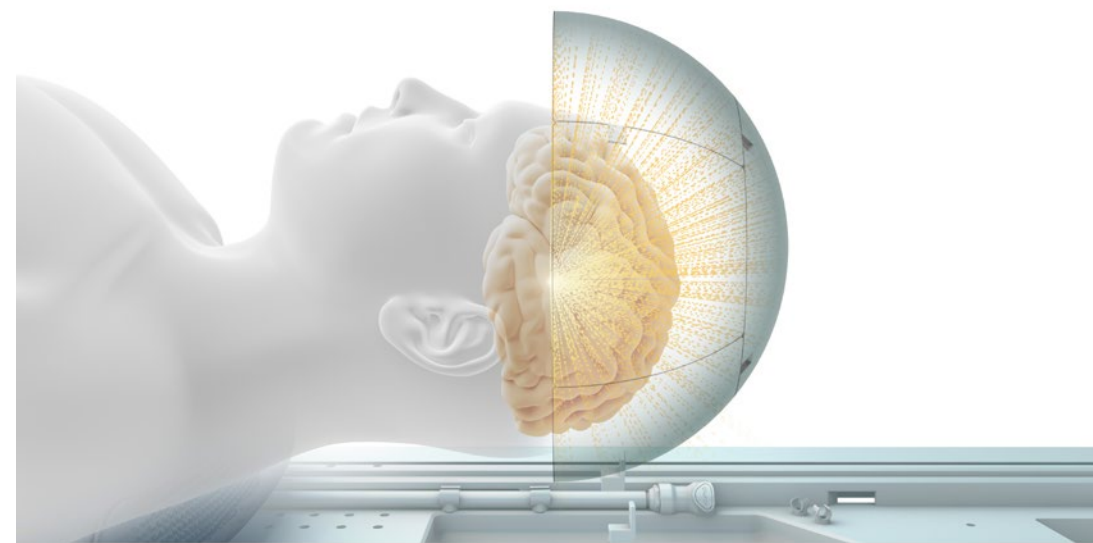
The good news? "A lot of work is being done on solving common problems in PD," Dr. Burnett said. "This includes slowing down disease progression, helping imbalance

and severe gait problems and avoiding the most feared complication: dementia.

"Fortunately, there are a lot of medications being studied right now that are trying to address these problems, so I am hopeful I will be able to offer my patients more hope in the future."

## Specialty offerings at the CHI Health Neurological Institute:

- **Botox treatments**, which can help with things like drooling and painful foot cramping.
- **Functional Gait Recovery Program**, available through a combined effort with the CHI Health Immanuel Rehabilitation Institute, Behavioral Health and the Neurological Institute. CHI Health is one of few programs in the country to offer the special program. "We treat a condition called functional gait disorder which is important to recognize," Dr. Burnett said, "as it responds to physical therapy and counseling, not pills."
- CHI Health will soon have a **movement neurophysiology lab** which will help Dr. Burnett perform a diagnostic test that can help characterize a person's movement disorder.



## 140-Degree Heat Steadies Patient's Shaking Hands

Actress Katharine Hepburn lived with it. So do some 10 million others in the United States. Essential tremors (ET) are the most common of movement disorders.

The tremors can affect a patient's ability to eat, dress, write, work around the house or even hold down a job. Tremors are blamed on the wiring of the brain, which can make parts of the brain overactive; up to now only medications or deep brain stimulation have been options.

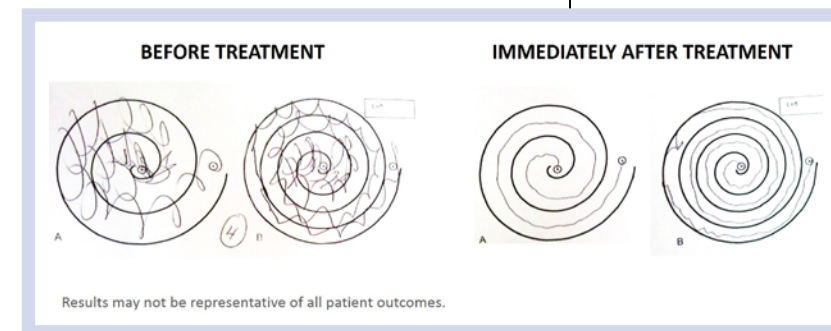
CHI Health's neurological team is at the forefront of using the latest non-invasive techniques to target essential tremors. CHI Health's Neurological Institute now offers focused ultrasound therapy, or MR guided focused ultrasound (MRgFUS). It's the best weapon yet against essential tremors.

The therapy uses both the imaging of an MRI and the heat from an ultrasound. High intensity ultrasonic waves heat tissue and destroy specific brain tissue without any incision. This high energy precisely targets the ventral intermediate nucleus of the thalamus – the area considered responsible for causing tremors. The targeted tissue is heated to 60 degrees Celsius (140°F). MRgFUS usually is performed on only one side

of the brain to improve tremors on the opposite side of the body.

Patients are awake during the entire treatment, which destroys the nerve cells causing the tremors while resulting in an immediate reduction of essential tremors. There are no incisions or holes in the scalp, no anesthesia and the patient is awake during the procedure.

Unlike with deep brain stimulation, there's reduced risk of infection, bleeding, formation of blood clots or damage to nearby areas of the brain.

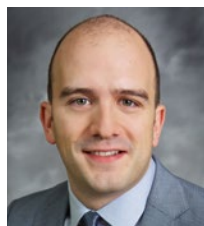


The procedure is being performed at CHI Health St. Mary's – one of the first Centers of Excellence in the country and only location in our region. It is expected to have a big impact on patients' quality of life. Other systems offering the treatment include Stanford University and the Mayo Clinic.

Focused ultrasound treatment for essential tremor was approved by the Food and Drug Administration in July 2016.



Melinda Burnett, MD  
Neurologist  
CHI Health  
Neurological Institute



**Luka Vlahovic, MD**  
Neurologist  
CHI Health  
Neurological Institute



## Big Strides for Multiple Sclerosis Care

March 2019 marked history for multiple sclerosis treatment, as the U.S. Food and Drug Administration approved the first two drugs used to treat secondary-progressive MS.

The FDA signed off on a pill called siponimod on March 26, and three days later, approved another medication called cladribine. While the pills can treat patients with secondary-progressive

phase, patients with relapsing-remitting MS can also take them.

“The drugs were approved in the area in which we didn’t have any medication,” said Luka Vlahovic, MD, a board certified neurologist with the CHI Health Neurological Institute. “It sounds very exciting and some preliminary data looks good, but I think we’ll need more validation to

use them over a long period of time, five to 10 years, to have a better idea of impact on people’s lives.”

Dr. Vlahovic subspecializes in the diagnosis and treatment of neuroimmunological conditions like multiple sclerosis and neuromyelitis optica. He completed a neuroimmunology fellowship at Stanford University Medical Center before joining the CHI Health Neurological Institute. He’s since started an MS clinic, where patients come to him for expert diagnosis, evaluation and treatment options.

Dr. Vlahovic said those options will soon include siponimod and cladribine. Patients at the CHI Health Neurological Institute will have access to the newly-approved drugs. Dr. Vlahovic said trials showed disability progression slowed for people who took siponimod over a three-month period.

Both siponimod and cladribine have side effects. Patients taking cladribine have an increased risk of malignancies. The medication can also cause teratogenicity for both women and men. Because of this, Dr. Vlahovic said cladribine should be used as a second option and for a strictly-selected group who’ve experienced failure with other treatments.

Dr. Vlahovic said siponimod is similar to another MS medication called fingolimod. Side effects include a low heart rate, an increased risk of infections and macular edema. Diabetic patients should not use siponimod.

“None of these medications are considered to be a cure,” Dr. Vlahovic said. “But with appropriate time management, early initiation therapy and appropriate selection for specific patients, we can really change the course significantly or hopefully connect it almost as a cure.”

In the last 26 years, Dr. Vlahovic said the FDA has approved 16 medications for MS and research continues to evolve.

“The landscape has changed significantly,” Dr. Vlahovic said. “People have much more hope and much better chances for good outcomes.”

The Neurological Institute is also starting a new infusion center for its patients. The center will be a part of the CHI Health Henry Lynch Cancer Center at Immanuel.

The Neurological Institute is also applying for its Partners in Care designation through the National MS Society, with the ultimate goal of becoming a comprehensive MS center. Dr. Vlahovic said that could happen as early as 2020.

“I think MS care looks very promising,” Dr. Vlahovic said. “This field was pretty depressing 30 to 40 years ago. Now, we have all these different tools. Beyond big breakthroughs in medications, the focus, and one of the most important things to identify, is biomarkers.”

**“The landscape has changed significantly. People have much more hope and much better chances for good outcomes.”**



## We Value Your Feedback!

Please share your thoughts about this issue of *microscope* and your ideas for future stories at [CHIhealth.com/MicroIdeas](http://CHIhealth.com/MicroIdeas)

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happen in  
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SUCCESSFUL IN OPENING  
CLOGGED ARTERIES UP TO  
90 PERCENT  
OF THE TIME.

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Kearney

*CHI Health Good Samaritan*

Lincoln

*CHI Health St. Elizabeth*

*CHI Health Nebraska Heart*

Nebraska City

*CHI Health St. Mary's*

### Omaha

*CHI Health Creighton University*

*Medical Center - Bergan Mercy*

*CHI Health Immanuel*

*CHI Health Lakeside*

*CHI Health Midlands*

Plainview

*CHI Health Plainview*

Schuyler

*CHI Health Schuyler*

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