## Saint Luke's Brain and Stroke Institute

Physician Referral Guide



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## Your Partner in Neurological Care

Interdisciplinary, aggressive world-class care gives patients the best possible chance to resume normal lives

T ime often is of the essence when it comes to treating neurological diseases. The cases are complex, and the margin for error can be slim to nonexistent. So when you're referring patients with strokes, brain tumors, seizure disorders and other serious neurological conditions, you want to be absolutely certain they'll receive the best care possible.

But what, exactly, does that mean? What does ideal neurological care look like in the 21st century? At Saint Luke's Brain and Stroke Institute, we think it looks something like this:

- An interdisciplinary team of highly trained clinicians aggressively pursuing the most advanced technologies, newest treatment techniques and latest medications to produce breakthrough results
- A team trained to act quickly and decisively with critical interventions; one that will explore every option to preserve not only life but also quality of life; one that will ensure your patient receives a truly integrated, patient-focused continuum of care
- A team that will keep you, the patient and the patient's family continuously informed about treatment and prognosis

# A Global Leader

A stroke-reversal treatment pioneer, Saint Luke's is shaping brain and stroke care worldwide

Over the past 15 years, Saint Luke's has embraced the revolutionary advances taking place in neurology and neurosurgery to quietly construct one of the most comprehensive and effective neuroscience programs in the country. We haven't spent a lot of time talking about it. But in an era when many people assume that superior neurological and neurosurgical care exists only in distant cities, we think it's time to set the record straight. We've extended the reach of our life-saving stroke reversal capabilities via a network of more than 80 hospitals in Kansas and Missouri. By coordinating with these hospitals, we're able to assist in the initial diagnosis and treatment of stroke victims and provide a pathway for rapid transfer to Kansas City. In fact, our outreach efforts have been so successful that the state of Missouri has enlisted our leadership in developing protocols for a statewide stroke referral network.

### Consider the facts:

Saint Luke's is an acknowledged world leader in utilizing both drug and mechanical interventions to block and reverse the debilitating effects of acute strokes. Thousands of people — who in years past would have died or faced catastrophic, long-term disabilities due to strokes — are today living normal, productive and symptom-free lives thanks to techniques pioneered by Saint Luke's clinicians.

Stroke patients presenting at Saint Luke's Hospital are nearly 10 times more likely to receive a critical stroke intervention than patients at other hospitals nationwide.



**Regional Cooperation** At Saint Luke's, we're committed to ensuring that our neurological care remains unsurpassed and that we extend our capabilities to the greatest number of people possible. Our goal in partnership with referring physicians, outlying hospitals and first responders—is to save lives while reducing or eliminating the often-devastating, long-term disabilities that can accompany neurological disease. Working together, we can embrace the ground-breaking advances now occurring in neuroscience to usher in a new era of neuro-critical care for residents of the region. Stroke patients chance of returning home to resume normal, productive lives

Saint Luke's Brain and Stroke Institute - 80% 🛉 🛉 🛉 🛉 🛉 🛉

Stroke patients who've received care from
Saint Luke's Neurorehabilitation and
Physical Medicine Team have an 80 percent
chance of returning home to resume normal,
productive lives. This rate is 14 percentage points
higher than the national average.

Saint Luke's operates the region's only adult Level 4 Comprehensive Epilepsy Center, the highest designation established by the National Association of Epilepsy Centers. The designation reflects the hospital's depth of services, including advanced, continuous EEG monitoring and surgical treatment of epilepsy, as well as the clinical expertise that helps patients live normal, seizure-free lives. Our two Harvard-trained epileptologists are committed to "no seizures, no side effects."

Saint Luke's is the only provider in the region using an updated 3-Tesla MRI to produce the highest-quality imaging of a tumor. These images can then be uploaded to the neurosurgical operating room or to the Novalis shaped beam system. The Novalis technology allows physicians to continuously sculpt a beam of radiation around every contour of the patient's tumor. This targeted approach maximizes the delivery of cancer-killing X-rays while minimizing the risk of damage to healthy tissue.

When it comes to brain tumor treatment, Saint Luke's is the region's only hospital with a fellowship-trained neuro-oncologist on staff. That means you can be confident your patient's care will be overseen by a subspecialist conversant in all aspects of brain tumor epidemiology and treatment, including the latest investigational treatment options.



Saint Luke's Brain Fitness Center is one of the first programs in the country to combine the latest in neuro-targeted brain fitness technology with key wellness guidelines involving healthy aging, stress reduction, physical fitness and diet. The result is a program that can help across the full range of cognitive dysfunction, from slight declines in mental acuity in healthy seniors to more severe limitations stemming from Alzheimer's disease, stroke, head trauma, brain tumor or other brain disease.

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### Saint Luke's Hospital of Kansas City Stroke Center

Often first to test new therapies, our experts pave the way for treatment advances

trokes are the third leading cause of death behind heart disease and cancer, according to the Centers for Disease Control. Strokes occur every 40 seconds nationwide and are the leading cause of both adult disability and admission to nursing homes. Of the approximately 795,000 Americans who experience a stroke annually, about 75 percent will have long-term impairment of movement, sensation, memory or reasoning. Aggregate treatment costs currently are \$74 billion annually and are expected to top \$2 trillion by 2050.

In 1993, Saint Luke's consolidated its stroke response capabilities into a comprehensive continuum of care that brings together multiple specialties across four areas: acute stroke treatment and management; prevention of complications; secondary prevention; and rehabilitation.



#### Patient-Centric Care



We are dedicated to:

- Evidence-based clinical guidelines
- Open communication between all clinicians
- A flat organizational structure
- Appropriate, timely coordinated care

As part of our commitment to clinical integration, Saint Luke's produces a follow-up report for physicians and first responders who've referred or transported patients to the Brain and Stroke Institute. The electronic document, which is usually generated within 72 hours of admission, describes the patient's case history, treatment, clinical outcome and next steps. Nurse coordinators are the key to care and communication in many elements of the patient's treatment regime. Nurses are the single point of contact for the patient and family and further strengthen

communication and coordination between caregivers. The objective is a seamless patient and referring physician experience which leads to optimal clinical outcomes.

#### A legacy of innovation

Our Stroke Center achieved the first of many breakthroughs in its 1993 inaugural year when doctors performed one of the world's first intraarterial stroke reversal procedures. Since then, Saint Luke's specialists have continued to pioneer new stroke therapies and reverse stroke's debilitating effects for thousands of patients.

Saint Luke's was, and continues to be, a leader in the use of tPA, an acute clot-busting medication first approved by the Food and Drug Administration in 1996 for treatment of ischemic stroke. Today, we're one of the country's most experienced and prolific users of tPA for stroke reversal, utilizing both intravenous and intra-arterial infusion to improve the odds of successful intervention.

In 2002, Saint Luke's neurologists and neurointerventionalists were among the first in the world to test the MERCI Retrieval System, which can result in stroke reversal up to eight hours after onset. Using a catheter, physicians meticulously snake this corkscrew-like device through the patient's brain to pierce the clot and twist it out. Today, Saint Luke's has more experience with the MERCI Retrieval System than any stroke center in the world.

Similarly in 2006, Saint Luke's pioneered the use of the Penumbra Stroke System, a device which allows doctors to thread a micro-catheter through the patient's brain to vacuum the blockage out.

Saint Luke's more recently became the only Midwest trial site for the NeuroThera laser. This technology, which is still in the testing phase, allows doctors to treat patients up to 24 hours after suffering a stroke by administering a laser beam of energy to multiple locations on the skull. The noninvasive therapy penetrates the brain to activate copper present in the brain cells. The copper causes chemical changes that allow the dying cells to regenerate and thus reduces the likelihood of permanent brain damage.

#### Code NEURO

One of the cornerstones of the Stroke Center is the Code NEURO team, a group of nurses trained

in neuro-critical care and acute stroke intervention. This group is on call 24 hours a day, 7 days a week to respond immediately to patients presenting with acute stroke. Our SWAT (Stroke Watch Action Team) nurses are also trained to quickly recognize stroke symptoms among hospitalized patients and to bypass the traditional referral protocol to begin intervention as rapidly as possible.

#### Outreach

From the start, the Brain and Stroke Institute has focused on expanding the reach of our life-saving capabilities. Today, dozens of hospitals across Western Missouri and Eastern Kansas refer stroke patients to Saint Luke's. We've worked closely with these organizations to help them provide optimal initial treatment for stroke victims, including the development of "drip and ship" protocols for administering tPA before transporting the patient to Kansas City. We've also harnessed telemedicine to provide realtime communication with physicians in outlying areas during the administration of tPA. Our message — to stroke victims, first responders, referring physicians and, indeed, the public at large – is simple: When it comes to stroke, "Just Get Here!"

#### Leading the way

The world-class capabilities and depth of experience developed at Saint Luke's Stroke Center have not gone unnoticed by policymakers and those responsible for establishing clinical quality guidelines. Recently, our Stroke Team coordinator was asked by the American Heart Association to create national nursing guidelines for treating acute ischemic strokes. Separately, leaders of the Stroke Center have worked closely with the state of Missouri to develop a statewide stroke referral network that incorporates public education, emergency medical services, and response protocols for hospitals and population centers throughout Missouri.

Stroke Center leaders have worked closely with the state of Missouri to develop a statewide stroke referral network. Marilyn Rymer, M.D. Medical Director



For assistance with patient transfers or for more information, call Doctors' One Call:

816-932-6200

Learn more about Saint Luke's Brain and Stroke Institute at saintlukeshealthsystem.org/brain-and-stroke

### Saint Luke's Hospital of Kansas City Neurosurgery

Our highly acclaimed neurosurgeons provide the highest level of care

**S** aint Luke's Brain and Stroke Institute is the premier neurosurgical vascular center in the region. Our team of neurosurgeons provides the most advanced neurological treatment available, including: prevention, diagnosis, treatment and rehabilitation.

Saint Luke's offers the full spectrum of elective and emergency neurosurgical procedures around the clock. The skilled neurosurgery group has extensive experience utilizing the latest surgical interventions for stroke, trauma, tumors and other brain disorders. Saint Luke's neurosurgical "operating room of the future" provides a setting in which all aspects of neurosurgery—from planning and diagnostic imaging to treatment—are integrated within one room. This provides neurosurgeons state-of-the-art technology in a streamlined environment, enabling more precise, efficient surgeries. Inpatient facilities include a dedicated, state-of-the-art neuroscience unit with the eICU, an advanced medical surveillance technology system for Saint Luke's intensive care patients. The unit is equipped with a portable CT scanner (Ceretom), minimizing the need for patient transfers within the facility during the course of stay.

#### Special areas of interest of our neurosurgeons include:

- Baclofen pump surgery for spasticity
- Brain tumor surgery
- Carotid endarterectomy
- Cerebral aneurysm surgery
- Cerebrovascular surgery
- Neurovascular surgery
- Skull base surgery
- Spine surgery
- Stereotactic radiosurgery
- y Tarlov cyst
- Trigeminal neuralgia



### Saint Luke's Hospital of Kansas City Neurology

Our well-established team of neurologists has a national reputation for outstanding care

**F** rom its beginning in the 1990s, with three of Kansas City's top neurologists, Saint Luke's neurology team has grown by more than 400 percent and includes the region's most respected physicians in their field. These physicians cover the calls for stroke care from across the region 24 hours a day, seven days a week, and they are among the nation's most experienced experts in acute stroke treatment. They are the true backbone of the stroke team.

Although they clearly have a passion for taking care of stroke victims, each neurologist is trained to diagnose and treat the full spectrum of neurological conditions, including:

- Migraine headaches
- Parkinson's disease

Irene Bettinger, M.D. neurologist

Our physicians cover the calls for stroke care from across the region 24 hours a day, seven days a week



- Multiple sclerosis
- Myasthenia gravis
- Peripheral neuropathy
- Epilepsy

Saint Luke's neurologists are actively engaged in clinical research trials to test new treatments for stroke, Alzheimer's disease and multiple sclerosis. They have outpatient offices at each of the Saint Luke's Health System metro campuses and provide outreach and telemedicine services to several other sites in the region.



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### Saint Luke's Hospital of Kansas City Neurointerventional Medicine

Our neurointerventionalists are pioneers in using the latest technology and techniques to treat neurological conditions

N eurointerventional medicine is a hybrid subspecialty drawing from advancements in interventional radiology, cardiology, vascular surgery, orthopaedics and neurosurgery. At Saint Luke's Brain and Stroke Institute, a team of three neurointerventionalists is available around the clock and work with neurologists and neurosurgeons to determine the best treatment for each patient.

Saint Luke's neurointerventional team pioneered intra-arterial treatment for acute stroke in the early 1990s and continues to be involved in the development and testing of mechanical embolectomy devices. Saint Luke's neurointerventionalists have the most experience in the world with the Merci Retriever device, which is used for treatment of acute ischemic stroke. Our neurointerventionalists use minimally invasive techniques to treat:

- Ruptured and unruptured aneurysms
- Acute ischemic stroke
- Carotid artery stenosis
- Arteriovenous malformations
- Tumors of the brain and spinal cord
- Vertebral compression fractures

Working with the brain tumor team, Saint Luke's neurointerventionalists are delivering chemotherapy intra-arterially directly to the tumor using blood brain barrier disruption techniques, a procedure only available at a few sites in the United States.



Naveed Akhtar, M.D. neurointerventionalist

Our neurointerventionalists have the most experience in the world with the Merci Retriever device



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### Saint Luke's Hospital of Kansas City Brain Tumor Center

Some of the area's most advanced technology and treatments available

**S** aint Luke's Brain Tumor Center is dedicated to providing optimal, integrated care for the treatment of patients with primary or metastatic tumors of the brain and spinal cord. We offer cutting-edge treatment modalities, state-of-the-art technology, clinical research trials not available anywhere else in the region, and a multidisciplinary care team as part of the only full-service patient and family-centered brain tumor center in the greater Kansas City area. Patients do not have to leave Kansas City to access world-class care and research protocols.

Developing an individualized plan is the key focus of our center, whether patients are referred for an educational visit, second opinion, surgery, radiation treatments, chemotherapy, molecularly targeted therapy or one of our other specialized services.

Led by the region's only fellowship-trained, board certified neuro-oncologist, the Brain Tumor Center is supported by a team that includes specialists in medical oncology, neurosurgery, radiation medicine, neuroradiology, neurology, neuropathology, rehabilitation medicine and palliative care.

Our nurse coordinator facilitates communication between the various specialists and also helps the patient navigate the program while providing support and education at each step in the process.

Along with our highly trained personnel, Saint Luke's Brain Tumor Center has some of the most advanced technology in the region, including the most advanced 3-Tesla MRI in Kansas City producing the highest-quality imaging of a tumor and the Novalis shaped beam system. The Novalis system provides a minimally invasive or noninvasive radiation treatment option for those who cannot undergo traditional surgery because of other serious illness or because the tumor is located in inoperable

> Mike Salacz, M.D. neuro-oncologist

Patients don't have to leave Kansas City to access world-class care and research protocols.



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areas. The procedure is virtually painless and performed on an outpatient basis.

Because we understand that brain tumors can be emotionally devastating — not only for the patient but also for their immediate family — we've developed a comprehensive support system designed to ease the psychological burden of the disease while pursuing a positive clinical outcome. This approach includes on-staff psychiatrists specifically trained in dealing with life-threatening illnesses, as well as home health services and 24/7 spiritual support services. Our specialists can provide clear-eyed guidance in assessing when, and if, the burdens of further cancerdirected treatments outweigh potential benefits.

> Learn more about Saint Luke's Brain and Stroke Institute at saintlukeshealthsystem.org/brain-and-stroke

# Saint Luke's Hospital of Kansas City Comprehensive Epilepsy Center

The area's only adult Level 4 Comprehensive Epilepsy Center relieves patients of life-limiting seizures

A lthough many clinicians continue to view epilepsy as a chronic condition that can be, at best, managed, but never entirely mitigated, we take a different approach: **no seizures and no side effects.** To meet this goal, we've created the region's most advanced diagnostic and treatment services for patients with epilepsy.

Many suffering from epilepsy can be treated successfully with antiepileptic medications. But for the more than 30 percent whose seizures are not controlled with medication, the team at Saint Luke's Comprehensive Epilepsy Center offers the full range of diagnostic and treatment options, including seizure surgery.

The center's options include:

- Vagal nerve stimulator implantation and management
- Neurosurgical evaluation and treatment

- Antiepileptic medications
- Investigational drug treatments
- · Behavioral and dietary counseling

As is the case with all Brain and Stroke Institute centers of excellence, a nurse coordinator is the single point of contact for epilepsy patients and their families and also facilitates communication between the epilepsy medical team and the referring physician.

The nurse coordinator will organize appointments, ensure that appropriate records and films are obtained, guide the patient through services, and provide support and education throughout diagnosis, treatment and recovery.

Because epileptic seizures can be associated with severe depression, all patients being evaluated for surgery receive thorough psychiatric assessments. In addition, licensed social workers provide individual and group counseling for patients and their families. This capability helps everyone affected by epilepsy adjust to living with or without seizures and identify community resources available to provide further assistance.

Many new medications for epilepsy have become available over the past two decades, and Saint Luke's epileptologists continue to test new compounds as they're developed. Our epilepsy experts also have partnered with basic science researchers to identify seizure- causing genes. Doctors hope this genetic analysis will shed light on causes of epilepsy and help identify ways to predict responses to medications.

John Croom, M.D., Ph.D. epileptologist





Ron Fields, M.D. epileptologist



### Saint Luke's Hospital of Kansas City Neurorehabilitation and Physical Medicine

Our patients have an 80 percent chance of returning home to their normal lives

he Rehabilitation and Physical Medicine Team provides comprehensive care aimed at helping patients make the transition from the hospital's acute care unit to inpatient and outpatient rehabilitation and finally back home.

The program addresses the full spectrum of debilitating neurological conditions, including stroke, tumor, traumatic brain or spine injury, multiple sclerosis, Parkinson's disease and other disease states. Our interdisciplinary team includes board-certified physical medicine and rehabilitation physicians, certified rehabilitation nurses, neuropsychologists, speech pathologists, physical therapists and occupational therapists.

Although many hospitals focus on either inpatient or outpatient rehabilitation, Saint Luke's excels at

both. And because the majority of our physical and occupational therapists concentrate exclusively on neurorehabilitation, we've developed a level of clinical expertise unmatched in the region.

Saint Luke's deploys a wide range of advanced rehabilitation technology to assist patients. These tools include devices designed to help patients who've suffered from paralysis in their arms and legs regain the motor skills needed for grasping and walking; a computer-based training system that helps patients who've lost their ability to maintain balance; and a hand-eye coordination training tool designed to improve reaction time, memory and vision.

Research has repeatedly shown that the earlier patients receive therapy, the better their chances for recovery. That's why our patients are assessed

Brad Steinle, M.D.

Our therapists offer a level of clinical expertise

unmatched in the region.

physiatrist

at the time of admission and typically begin therapy 24 to 36 hours after the onset of their symptoms, often in the intensive care unit.

This "early and often" rehab philosophy, the technology we've harnessed to assist patients on their journey, and the integrated, interdisciplinary nature of both our treatment plans and specialists collectively produce outcomes that are significantly above national averages. Stroke victims who've received comprehensive neurology services and neurorehabilitation and functional physical therapy at Saint Luke's have an 80 percent chance of returning home. That compares to a national average of 66.2 percent and 62.1 percent for the region.



Saint Luke's



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816-932-6200

Learn more <u>about Saint Luke's</u> Brain and Stroke Institute at saintlukeshealthsystem.org/brain-and-stroke

### Saint Luke's Hospital of Kansas City Brain Fitness Center

A dedicated 'gym' to keep patients mentally fit and healthy

**R** ecent insights into the brain's ability to form new neural connections — given the appropriate stimulus — were central to the creation of the Brain Fitness Center. Formed in 2008, the center is one of the few in the country that marries the latest brain fitness technology with emerging science regarding brain structure, aging, fitness, diet and stress. The result is a comprehensive program designed to help participants enhance and maintain their cognitive abilities through specifically designed activities.

The approach produces results across a range of acuity levels, from the "worried well" who've detected a slight diminution in memory and thinking to those individuals with advancing dementia, head trauma or brain injury due to stroke or tumor.

Working with speech language pathologists, physical therapists, fitness specialists and registered dietitians, center participants sign up for an 12- to 14-week program consisting of two hours of activities, two to four days a week. The program includes both individual and group activities designed to develop and enhance brain fitness.

#### It is structured around four modules:

- 1 Fitness screening and health planning consultations – Participants receive an initial fitness assessment from physical therapists and fitness specialists. This helps determine an individual's baseline strength and movement capabilities. Based on the results, participants receive an individualized fitness plan, guidance on improving motor skills and ongoing consultation.
- 2 Mindfulness-based stress management training and practice – This group activity includes daily training and practice in mindfulness-based stress management techniques to help participants improve their responses to stress, pain and illness.
- **3 Diet and nutrition education and consultation** A diet and nutrition assessment is conducted for each participant with a customized diet plan to improve brainhealthy eating.
- We offer one of the few centers in the country that marries the latest brain fitness technology with emerging science regarding **brain structure**, **aging, fitness, diet and stress.**



For more information about Saint Luke's Brain Fitness Center call:

816-932-2550

Learn more about Saint Luke's Brain and Stroke Institute at saintlukeshealthsystem.org/brain-and-stroke

4 Cognitive training – Following an initial assessment, each participant undergoes individual computer-based training to enhance and maintain pre-frontal and frontal cortical brain functioning.

The program's cognitive training concentrates on exercises that promote brain plasticity to help improve attention skills, memory and recall, visual/spatial processing, auditory and language processing, motor coordination and problem solving. And when appropriate, some Brain Fitness Center participants will have access to clinical trials testing the latest pharmaceuticals used in treating Alzheimer's and other types of dementia.

In July 2010, Saint Luke's expanded the popular program to a second location, the Jewish Community Center in Overland Park, Kan.



## A Team Approach

Saint Luke's Brain and Stroke Institute works in tandem with referring physicians to provide integrated neurological care

Few hospitals have created this kind of integrated environment, wherein physicians and nurses are connected within multiple centers of excellence. Disorders of the brain are among the most difficult conditions to treat. For patients, the expertise available within a hospital can spell the difference between returning to a normal life or facing catastrophic disability.

At Saint Luke's Brain and Stroke Institute, every aspect of what we do centers on helping patients return to the life they knew before the onset of neurological problems. We strive to connect every patient to expert and compassionate clinicians as well as the most current and evolving technologies and research.

Many hospitals have different specialists to treat patients who suffer strokes, brain tumors and other

neurological conditions. But few have created the kind of integrated environment available at the Saint Luke's Brain and Stroke Institute wherein physicians and nurses are connected within multiple centers of excellence.

Because these centers can deliver treatments often not available elsewhere, Saint Luke's Brain and Stroke Institute is the premier provider of neurological care in the Kansas City region. What's more, Saint Luke's innovative care and research have helped shape brain and stroke care across the nation and around the world.

**Our commitment to you, the referring physician, is this:** We will provide the highest level of care for your patients, and we will work with you to achieve the best possible outcomes. We will be accessible for phone consultations, timely patient appointments and emergent transfers. Our communications with you will be consistent and ongoing. Working together, we'll provide the greatest opportunity for your patient's full recovery. **+** 







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Outside Kansas City: 800-932-6200

Saint Luke's Brain and Stroke Institute

Saint Luke's Hospital of Kansas City

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