The Spectrum Health Medical Group neurosurgery team specializes in advanced surgical treatments for patients with disorders affecting the central nervous system.

We offer prompt access to a considerable range of general and subspecialized neurosurgical capabilities (see back page). We also are available to community-based neurosurgeons as a resource for clinical consultation.

Our commitment to the highest level of clinically excellent, individualized and well-coordinated patient care extends to the following Spectrum Health multidisciplinary programs:

- Brain & Spine Tumor Center
- Epilepsy Center
- Movement Disorders
- Pituitary Tumor Clinic
- Spine & Pain Management Center
- Stroke Centers
- Trauma Center

We offer outpatient clinics in Fremont, Grand Rapids, Greenville, Holland and Reed City.
Neurosurgery Team

Kaveh Asadi, MD, PhD
Medical Education: Jena—Marburg-University, Wuerzburg, Germany
Residency: Ohio State University, Wexner Medical Center
Fellowship: Pediatric Neurosurgery, Cincinnati Children’s Hospital

Sanjay E. Patra, MD, MSc
Postgraduate Education: University of Toronto
Medical Education: Loma Linda University School of Medicine
Residency: Henry Ford Health System

Hayden M.K. Boyce, MD
Medical Education: New York University School of Medicine
Residency: Henry Ford Health System
Board Certification: Neurosurgery

Justin Singer, MD
Medical Education: Drexel University College of Medicine
Residency: University Hospitals Case Medical Center
Fellowship: Endovascular Neurosurgery, University Hospitals Case Medical Center

Kost Elisevich, MD, PhD
Co-Chair, Department of Clinical Neurosciences; Program Director, Neurosurgery Residency
Medical and Doctoral Education: University of Western Ontario, Canada
Residency: McGill University Health Centre, Montreal Neurological Institute and Hospital, Montreal Children’s Hospital
Board Certification: Neurosurgery

Lawrence T. Fossey, MD, PhD
Medical Education: Saint Louis University
Residency: University of Cincinnati Medical Center
Fellowship: Pediatric Neurosurgery, Cincinnati Children’s Hospital
Board Certification: Neurosurgery

Casey Madura, MD, MPH
Medical Education: University of Michigan Medical School
Residency: University of Wisconsin Hospital and Clinics
Fellowship: Pediatric Neurological Surgery, Children’s of Alabama

Paul Mazanis, MD
Medical Education: Wayne State University School of Medicine
Residency: Henry Ford Health System
Fellowship: Cardiovascular/Endovascular Surgery, Hartford Hospital

Neurocritical Care

Tamer Abdelhak, MD
Medical Education: Ain Shams University School of Medicine, Cairo, Egypt
Residency: Drexel University College of Medicine Fellowship: Neurocritical Care, Johns Hopkins University Hospital
Board Certification: Neurology

Jeff Fletcher, MD
Medical Education: Wayne State University School of Medicine
Residency: University of Texas Health Science Center Fellowship: Vascular Neurology, Neurocritical Care, University of Virginia Health Science Center
Board Certification: Neurology

Elysia James, MD
Medical Education: Wayne State University School of Medicine
Residency: University of Toledo Medical Center Fellowship: Neurocritical Care, Henry Ford Health System

Spine & Pain Management Center

Matthew Kavk, MD
Medical Education: Michigan State University College of Human Medicine
Residency: Detroit Medical Center/Providence Hospital Fellowship: Neurosurgery/Orthopedic Spine Surgery, Cleveland Clinic

Jason Squires, DO
Chief, Division of Neurosurgery
Medical Education: Michigan State University College of Osteopathic Medicine
Residency: Genesys Regional Medical Center, Michigan State University Fellowship: Spinal Surgery, University of Rochester
Board Certification: Orthopedic Surgery

Bassel Raad, MD
Medical Education: American University of Beirut, Lebanon
Residency: Case Western Reserve University, University Hospitals Case Medical Center Fellowship: Neurocritical Care, Case Western Reserve University
Board Certification: Neurology

Joseph Zachariah, DO
Medical Education: Lake Erie College of Osteopathic Medicine
Residency: Case Western Reserve University Fellowship: Neurocritical Care, Mayo Clinic
Board Certification: Neurology
ClearPoint® System provides stereotactic guidance for procedures performed within the MRI suite. This technology enables a range of minimally invasive procedures in the brain, including asleep deep brain stimulation (DBS), brain tissue biopsy and focal laser ablation.

Functional MRI (fMRI) measures blood flow in order to “map” which part of the brain is handling critical functions such as thought, speech, movement and sensation. Surgeons use this to plan brain surgery and assess the effects of stroke, trauma or degenerative diseases on the brain.

Intraoperative MRI (iMRI) enables surgeons to achieve maximum tumor resection with minimal risk of damage to critical areas located near the tumor. Surgeons can quickly and accurately assess trajectory to deep-seated tumors, adequacy of tumor resection or laser-generated tumor destruction, and intraoperative complications before leaving the operating room.

NeuroPace RNS® System is an implanted brain-computer interface trained to detect discharge patterns marking the onset of seizures by strategically placed electrodes in the brain and to deliver a signal designed to abort the event. A microprocessor is placed within the cranial bone.

Novalis Tx™ Stereotactic Radiosurgery System delivers precisely focused, high-dose X-ray beams to a small, targeted area. This method of targeting radiation is used either alone or in conjunction with surgery to eliminate small tumors in the brain, head and spine, while preserving adjacent normal tissues. Radiosurgery is often a necessity for control of intracranial tumors that would otherwise not be accessible with open surgery.

O-arm® Surgical Imaging System provides real-time, intraoperative imaging in both two and three dimensions. By integrating this surgical imaging technology with StealthStation® guidance (see below), surgeons can perform less invasive procedures and confirm the precision of advanced procedures before a patient leaves the operating room.
Neurosurgical Program
- Brain tumor resection including:
  - Awake craniotomy for tumors in eloquent areas
  - Skull-base and minimally invasive/endooscopic procedures
  - Intraoperative MRI
- Deep brain stimulation for functional disorders
- Vascular procedures including:
  - Aneurysms
  - Dural fistulas
- Arteriovenous malformations
- Epilepsy procedures including:
  - Anterior thalamic stimulation
  - Cerebrocortical functional mapping
  - Integrated subdural/depth electrode recording
  - Corpus callosotomy
  - Hemispherotomy
  - Laser-mediated thermocoagulation
  - Responsive stimulus-inhibition of epileptogenicity
  - Temporal and extratemporal resection
  - Vagus nerve stimulation
- Pediatric neurosurgery
- Spinal procedures including:
  - Deformity correction and reconstruction
  - Minimally invasive
  - Multilevel segmental fusion
  - Revisions
  - Tumor resection
- Neuromodulation for pain and headache disorders

Advanced Neurosurgical Technology, Continued

ROSA™ is a robotic stereotactic assist device is used for precision placement of devices in the brain for investigational or therapeutic purposes. It can be employed with intraoperative EEG recording, Visualase technology and the iMRI to conduct a single surgical case.

StealthStation® Treatment Guidance System enables surgeons to navigate through the body using precise 3D images. Surgeons focus on the exact location they need to reach during surgery without compromising nearby muscle, tissue, nerves or blood vessels.

Visualase MRI-Guided Laser Technology allows surgeons to precisely place and monitor a laser heated probe that destroys tumors, necrosis due to radiation, and seizure-producing tissue, while avoiding damage to eloquent or critical structures in the brain. Compared with other thermal techniques, such as radiofrequency ablation or cryoablation, this new, minimally invasive technology creates a sharper thermal ablation zone boundary and is significantly faster.

Referral Guidelines
The following types of cases warrant direct referral to Neurosurgery:
- Brain tumors
- Cerebrovascular conditions:
  - Aneurysm
  - Arteriovenous malformation
  - Chiari malformation
- Hydrocephalus
- Spinal conditions:
  - Compression leading to myelopathy (decreased coordination and balance)
  - Degenerative deformity, including adult scoliosis
  - Disc herniations or arthritic foraminal stenosis leading to nerve compression and intractable radicular pain
  - Fractures and trauma
  - Persistent infection
  - Symptomatic stenosis (difficulty standing or walking)
  - Tumors

Locations
1. 25 Michigan Street NE, Suite 6100, Grand Rapids, MI 49503
2. 1900 Wealthy Street SE, Suite 290, Grand Rapids, MI 49506
3. 705 South Greenville West Drive, Suite 202, Greenville, MI 48838
4. 230 West Oak Street, Lower Level, Fremont, MI 49412
5. 588 E. Lakewood Blvd., Holland, MI 49424
6. 300 North Patterson Road, Reed City, MI 49677

MICHIGAN STATE UNIVERSITY College of Human Medicine
The Spectrum Health Medical Group Department of Clinical Neurosciences holds divisional status with the Michigan State University College of Human Medicine.