Patient referrals, transfers and consults are critically important, and we want to make it easy for referring providers and their staff. To refer your patient for a clinic appointment, call our Clinic Concierge at 855.312.4190.
Ochsner’s longstanding tradition of bringing physicians together to improve health outcomes continues today. Our goals are to work together with our referring providers to serve the needs of patients and to provide coordinated treatment through partnerships that put patients first. We have automated physician-to-physician patient care summaries for hospital encounters and enhanced the patient experience by giving patients the ability to schedule appointments online.

Close coordination and collaboration begin with transparency and access to the data you need to make informed decisions when advising your patients about care options. OchsnerOutcomes, a compilation of clinical data, represents only part of our efforts to better define the quality of Ochsner’s care and to share that information with you.

Trusted, independent organizations give the highest marks to Ochsner’s quality. Ochsner Medical Center was the only healthcare institution in Louisiana to receive national rankings in six specialties from U.S. News & World Report for 2015–2016. Additionally, CareChex® named Ochsner Medical Center, Ochsner Baptist, a Campus of Ochsner Medical Center and Ochsner Medical Center – West Bank Campus among the top 10% in the nation in 17 different specialties and, for the fourth year in a row, Ochsner was named #1 in the country for liver transplant. Ochsner was also recognized, again for the fourth year in a row, as one of “100 Great Hospitals in America,” by Becker’s Hospital Review.

Additionally, Ochsner Health System was named an honoree for the 2015 American Medical Group Association (AMGA) Acclaim Award. Among just four organizations nationwide to receive this recognition, Ochsner was acknowledged for our work to measurably improve quality and value of care, improve patient experience and outcomes, improve population health and promote continuous learning and innovation.

Ochsner is the first hospital in the United States – and perhaps even the globe – to partner with Apple and Epic to create a platform that can directly affect patient care in real time. We are utilizing the Apple Watch as an agent for behavioral change for patients with chronic disease, starting with patients who have uncontrolled high blood pressure.

Ochsner consistently earns the respect of independent evaluators. We do not rest on these achievements, but use them as a benchmark to continuously improve. We will continue to share the data you need to care for your patients, provide services you may not have in your community and develop the collaborative relationships essential to ensuring the best outcomes for every patient, every time.
# Table of Contents

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The Ochsner Neuroscience Institute earns national and regional recognition as a leader in providing referring physicians and patients with quality neuroscience services. Our multidisciplinary team offers the latest diagnostic and therapeutic options for adults and children in a variety of care settings and locations.

Neurological diseases are on the rise. In order to care for this complex population, we have created a comprehensive Neuroscience Institute. Ochsner integrates expert providers from a variety of specialties through centers and programs collaborating to provide patients with comprehensive, coordinated services throughout the continuum of care. We provide inpatient and outpatient neurological care in locations throughout greater New Orleans, the North Shore and Baton Rouge and in a broad range of subspecialties. Our multidisciplinary approach results in more effective and efficient care, leading to better patient outcomes.

The quality of the Ochsner Neuroscience Institute has been independently verified as being among the nation’s best. U.S. News & World Report recognizes Ochsner as #23 in the nation for Neurology and Neurosurgery. Healthgrades honors us as one of America’s 100 Best Hospitals for Stroke Care. It also recognized us with its Excellence Awards for Neurosciences, Neurosurgery and Stroke Care. We also earned its Five-Star Awards for Neurosurgery and Treatment of Stroke. Finally, CareChex®, ranks Ochsner as #11 in the nation for Neurological Care and #22 in the nation for Neurological Surgery.

We are finding new and innovative ways to bring this level of care to physicians and patients. Our fleet of medically equipped helicopters, fixed-wing aircraft and ground vehicles is available for emergency and critical care needs. It offers a flight team of physicians, critical care nurses and other specially trained neurosciences staff on call 24/7. Our unique telestroke program uses telemedicine to deliver nationally ranked care to patients in 30 hospitals across Louisiana and Mississippi and recently cared for its 4,000th patient.

Ochsner is committed to excellence in patient care and service to our referring providers. We look forward to working with you and hope you will find the results of our efforts herein useful.
Ochsner Neuroscience Institute

Neurosurgery
Neurology
PM&R
Neurocritical Care

- Pediatric Neuro/NS/PM&R
- Back & Spine Center
- Sports Neurology/TBI
- General Neurosurgery
- Neuro-radiology
- Neuro-ophthalmology
- Stroke Center
- Memory & Movement Disorders
- Neuro-muscular
- Headache
- Neuro-oncology
- General Neurology
- Epilepsy Center
- Neurotology
- Psychiatry
- MS Center
Neurological Health Issues on the Rise

**Head injury** is the leading cause of death in young adults.

1 in 6 people will have a **stroke**.

Stroke is the leading cause of adult disability.

2.2M people in the U.S. suffer from **epilepsy**.

10% of the population who have **epilepsy** will have a seizure.

8 in 10 people will have a **spine disease** at some time.

130M Hospital & ER visits resulting from **back pain**.

Louisiana ranked #50 in brain health.

64% increase in deaths from **Alzheimer’s** is expected in the next 5 years.

6th leading cause of death in the U.S. is from **Alzheimer’s**.
Neuroscience Accolades

#11 for Neurological Care
#22 for Neurological Surgery

100 Best Hospitals for Stroke Care

Excellence Awards:
- Neurosciences
- Neurosurgery
- Stroke Care

5 Star Awards:
- Neurosurgery
- Treatment of Stroke

Level 4 Epilepsy Center

#23 for Neurology & Neurosurgery

American Heart Association
American Stroke Association
CERTIFICATION
Meets standards for Comprehensive Stroke Center
Comprehensive Services Offered

- Comprehensive Stroke Center
- Level 4 Epilepsy Center
- Complex Spine Surgery
- Neuro-oncology/Radiosurgery
- Neurocritical Care
- Neurootology
- Neuro-ophthalmology
- Pediatric Neurosurgery
- Multiple Sclerosis
- Neuromuscular
- Movement Disorders
- Pediatric & Adult Inpatient Rehab
- Neurological Rehabilitation

- Traumatic Brain Injury
- Concussion
- Telemedicine
- 2nd Opinions
- Clinical Trials
- International Fellows
- General PM&R
- Psychiatry
- Back and Spine Care
- Primary Stroke Centers
- General Neurology
- General Neurosurgery
- Headache
We apply the latest technology and focus on patient-centered care. Our multidisciplinary team of nationally recognized experts from neurology, neurosurgery, neurocritical care, neuroradiology, physical medicine and rehabilitation, as well as team of excellent neuroscience nurses, provides state-of-the-art care to patients in a coordinated and efficient fashion. These experts are in one location for the convenience of patients and their families. Our team is your team – working to get patients better and back to doing what they love to do.

Neuroscience Institute Provider Growth
Ochsner Medical Center, 2005–2018 Estimated

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2015</th>
<th>2016 Estimated</th>
<th>2017 Estimated</th>
<th>2018 Estimated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6</td>
<td>43</td>
<td>71</td>
<td>86</td>
<td>96</td>
</tr>
</tbody>
</table>
In addition to the subspecialties you will read about, we also have expertise in the following areas:

**The Ochsner Adult Neurology department** has a comprehensive team of neurologists, neuropsychologists, advanced practice providers, nurses and technicians who evaluate and manage a wide variety of neurological conditions in both inpatient and outpatient settings. We work in close collaboration with specialists in internal medicine, emergency medicine, radiology, psychiatry, physical medicine and neurosurgery.

**Areas of Expertise:**
- Weakness
- Pain in the extremities
- Numbness
- Seizure disorders

**Ochsner’s Neuromuscular Program** addresses both the diagnostic and therapeutic aspects of nerve and muscle disorders. Services are delivered by a collaborative team of physicians and other healthcare providers with expertise in neuromuscular disease.

**Areas of Expertise:**
- Peripheral neuropathy
- Muscular dystrophies
- Amyotrophic lateral sclerosis (ALS)
- Myasthenia gravis

**The Memory Disorders Program** is an interdisciplinary team approach under the direction of a cognitive and behavioral neurologist, with clinical care provided by a geriatric nurse practitioner, geriatric psychologist and a neuropsychiatrist. Neurology and psychiatry residents, postdoctoral fellows in behavioral neurology, geriatric psychiatry and geriatric medicine and medical students are an integral part of the clinic team.

**Areas of Expertise:**
- Memory loss
- Age-related cognitive changes
- Mild cognitive impairment
- Alzheimer’s disease
- Vascular cognitive impairment and vascular dementia
- Frontotemporal dementias, including behavioral subtypes, primary progressive aphasia, Pick’s disease and semantic dementia
- Cortical-subcortical dementias, including Lewy body disease and corticobasal degeneration
- Metabolic and genetic types of dementias of adult onset
- Mixed types of dementia and complex cognitive cases

**Special Programs and Services:**
- Expert care in the area of aging and dementia
- Early diagnosis and treatment
- Follow-up during disease progression
- Training program for physicians
- Research program in aging, dementia and stroke
Ochsner Rehabilitation specializes in neurological and musculoskeletal rehabilitation in both inpatient and outpatient settings. The Ochsner inpatient program is certified by the Council on Accreditation of Rehabilitation Facilities (CARF) in general rehabilitation and has a specialty CARF certification in the area of stroke recovery.

Areas of Expertise:
• Gait disorders
• Spasticity management
• Stroke, spinal cord injury, neurological disease and head injury

Special Programs and Services:
• Acute and chronic stroke management
• OASIS (Ochsner Acute Stroke Intervention Service)
• Regional telemedicine program for acute stroke care
• Stroke research
• Cerebrovascular imaging
• Endovascular therapies for acute ischemic stroke
• Received $3.87M Centers for Medicare and Medicaid Services (CMS) Innovation Grant for stroke care
• Stroke rehabilitation
• Stroke risk management
• Spasticity and baclofen pump management
• Wheelchair clinic
• Driving education
• Stroke recovery clinic
• Multiple sclerosis clinic
• ALS clinic
• Adult spina bifida clinic

First In Patient-Centered Quality Care
Ochsner Neuroscience Institute has developed several multidisciplinary patient-centered programs that cater to the needs of patients with neurological disorders. Our unique approach to patient care has resulted in some of the best patient outcomes in the region and has been recognized nationally and internationally.

First in Technology
The Ochsner Neuroscience Institute offers the latest diagnostic and therapeutic technologies for our patients with diseases of the brain, spinal cord, peripheral nerves or muscles, such as the following:
• Stereotactic Radiosurgery – A noninvasive, outpatient treatment for brain tumors that uses targeted high-powered X-ray techniques
• Positron Emission Tomography-Computed Tomography (PET/CT) – A premier imaging technology used to identify cancer, dementia and brain disorders
• Telestroke Network – A network of 18 facilities using the latest remote monitoring technology, bringing first-class care to stroke patients within the states of Louisiana and Mississippi
• Comprehensive Epilepsy Monitoring Unit – Accredited by the National Association of Epilepsy Centers (NAEC) as a Level IV Epilepsy Center
• Fetal Surgery – The first in the region to have a multidisciplinary team dedicated to fetal surgery. We provide in utero treatment options for treatment of certain congenital spinal diseases
Ochsner’s Neuroscience Institute is a destination center for patients throughout the region. Transfers into Ochsner Medical Center have grown 439 percent over the past five years.
To provide physicians with access to Ochsner specialists, we implemented the CareConnect 360 Stroke Program, which enables remote consultation through innovative video technology. This program is especially beneficial to communities without 24-hour access to stroke neurologists.
Stroke Care

Ochsner’s Certified Comprehensive Stroke Center teams up neurologists, neurointensivists, neurosurgeons, interventional neuroradiologists and vascular surgeons to provide the highest level of care in managing a variety of ischemic and hemorrhagic stroke disorders in the acute, post-acute and rehabilitation settings. Our innovative Telestroke Network brings world-class care to stroke patients within the states of Louisiana and Mississippi, using the latest technology. Our telemedicine program treats more than 1,000 patients throughout our network of facilities.

Areas of Expertise:

- Ruptured and unruptured cerebral aneurysms
- Ischemic stroke
- Transient ischemic attacks (TIAs)
- Cerebral vascular malformations
- Subarachnoid hemorrhage
- Spontaneous intracerebral hemorrhage
- Chronic cerebral ischemia
- Stroke rehabilitation
- Atherosclerosis
- Stroke risk management and prevention

CareConnect 360 treats more than 1,000 patients throughout our network of facilities and provides 48 services to more than 35 facilities throughout Louisiana and Mississippi and continues to grow.
Program Growth and Development

2009–2011

- Primary Stroke Center Certification
- Ochsner Telestroke begins: 4 sites (2009), 12 sites (2011)
- Neurocritical Care Unit opens with 6 beds (2011)
- Stroke Program Coordinator; 3 Board-Certified Vascular Neurologists (BCVNs); 1 Neurocritical Care Unit (NCCU); 1 Neurointensivist (NI)

2012–2013

- Comprehensive Stroke Center Certification (May 10, 2013)
- Telestroke Coordinator, Data Manager, Stroke Data Analyst
- Physicians: 3 BCVNs, 4 NCCUs, 1 Advanced Practice Provider, 3 Physical Medicine & Rehab (PM&R) Clinicians
- Telestroke at 19 sites
- NCCU expands to 20 beds; Stroke Service and Unit

2014–2015

- Dedicated Neurosciences floor – Neurosciences Institute
- NCCU expands again to 34 beds
- Telestroke at 30 sites and growing
- Physicians: 4 BCVNs, 5 NCCUs, 2NIs; Mid-levels: 5 NCCUs + 3 stroke
- Physicians: 5 Neurosurgeons (NSs), 3 Vascular Surgeons (VSs), 5 PM&R Clinicians
Awards and Recognitions

<table>
<thead>
<tr>
<th>2009–2010</th>
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<tbody>
<tr>
<td>• Primary Stroke Center Certification</td>
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<tr>
<td>• American Stroke Association (ASA); Gold Award</td>
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<tr>
<td>• Healthgrades® Excellence Award</td>
</tr>
<tr>
<td>• Louisiana Emergency Response Network (LERN) Commission for Stroke</td>
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<table>
<thead>
<tr>
<th>2010–2011</th>
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<tbody>
<tr>
<td>• Neurointerventional Fellowship</td>
</tr>
<tr>
<td>• CDC Grant</td>
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<tr>
<td>• U.S. Department of Agriculture (USDA) Grant</td>
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<table>
<thead>
<tr>
<th>2011–2012</th>
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<tbody>
<tr>
<td>• Ochsner Innovation Award</td>
</tr>
<tr>
<td>• Healthgrades® 5 Star</td>
</tr>
<tr>
<td>• ASA Gold Plus Target Stroke</td>
</tr>
<tr>
<td>• #1 Stroke Program in LA</td>
</tr>
<tr>
<td>• <em>U.S. News &amp; World Report</em> Top 50 Neuroscience Program</td>
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<thead>
<tr>
<th>2012–2013</th>
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<tbody>
<tr>
<td>• CMS Innovations Grant</td>
</tr>
<tr>
<td>• DIAS 4 and Penumbra 3D Separator Trials</td>
</tr>
<tr>
<td>• Neurocritical care and Neurointerventional Fellowships</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>2013–2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Comprehensive Stroke Center Certification</td>
</tr>
<tr>
<td>• Healthgrades® 5 Star</td>
</tr>
<tr>
<td>• ASA Gold Plus Target Stroke</td>
</tr>
<tr>
<td>• #1 Stroke Program in LA</td>
</tr>
<tr>
<td>• <em>U.S. News &amp; World Report</em> Top 25 Neuroscience Programs</td>
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<table>
<thead>
<tr>
<th>2014–2015</th>
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</thead>
<tbody>
<tr>
<td>• ACGME-approved neurology residency program</td>
</tr>
<tr>
<td>• Multiple clinical trials including ATTACH II (completed enrollment), IcTUS, SOCRATES, MaRISS, DALF-PS, NAVIGATE-ESU and RESPECT-ESUS</td>
</tr>
<tr>
<td>• Submitted application for vascular neurology fellowship</td>
</tr>
<tr>
<td>• Multiple peer-reviewed manuscript presentations at national meetings</td>
</tr>
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</table>
On average, every 40 seconds someone in the United States has a stroke.
Stroke Central encompasses the inpatient Comprehensive Stroke Care Program. The program provides a real-time, proactive approach to ensure the patient receives the best care with the best opportunity for recovery. All patients who present to Ochsner Medical Center New Orleans are eligible for this program. Stroke Mobile continues the program into the home. This portion of the program focuses on education, behavior and lifestyle modification to reduce the likelihood of another stroke. Patients who reside in Jefferson or St. Tammany Parish are eligible for this program.

**Inpatient Stroke Unique Patients**  
(12-month rolling periods)  
Ochsner Medical Center, 2014–2015
More than half of Ochsner’s stroke patients are discharged home to their families, allowing them to enjoy life in their most comfortable environment.

Stroke Disposition at Discharge
Ochsner Medical Center, 2015

- Home: 51%
- Rehab: 21%
- Nursing Home/SNF: 12%
- Expired: 4%
- LTAC: 4%
- Hospice/LOPA: 8%
- Other: 1%
Ischemic stroke occurs as a result of an obstruction within a blood vessel supplying blood to the brain. It accounts for 87 percent of all stroke cases. Hemorrhagic stroke accounts for about 13 percent of stroke cases. It results from a weakened vessel that ruptures and bleeds into the surrounding brain. The blood accumulates and compresses the surrounding brain tissue. The two types of hemorrhagic strokes are intracerebral (within the brain) hemorrhage or subarachnoid hemorrhage. Two types of weakened blood vessels usually cause hemorrhagic stroke: aneurysms and arteriovenous malformations (AVMs).
Acute Ischemic Stroke Expected Complication Rate Index
Ochsner Medical Center, 2013–2015

- **2013**: 1.00
- **2014**: 0.99
- **2015**: 0.46

- Increased Complications
- Expected Complications
- Decreased Complications

Acute Ischemic Stroke Expected Length of Stay (in Days)
Ochsner Medical Center, 2013–2015

- **2013**: 5.0
- **2014**: 5.7
- **2015**: 6.2
Ischemic stroke accounts for 87 percent of all stroke cases.
Hemorrhagic Stroke Risk Adjusted Mortality Index
Ochsner Medical Center, 2013–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Mortality Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0.59</td>
</tr>
<tr>
<td>2014</td>
<td>0.72</td>
</tr>
<tr>
<td>2015</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Hemorrhagic Stroke Expected Complication Rate Index
Ochsner Medical Center, 2013–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Complication Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0.97</td>
</tr>
<tr>
<td>2014</td>
<td>0.67</td>
</tr>
<tr>
<td>2015</td>
<td>0.44</td>
</tr>
</tbody>
</table>
Hemorrhagic stroke accounts for about 13 percent of stroke cases.
The national average of tPA utilization is between 3.4 percent and 5.2 percent for acute ischemic strokes (Heart Disease and Stroke Statistics, 2014). The original National Institute of Neurological Disorders and Stroke (NINDS) tPA study reported that patients who received tPA within 3 hours after onset of symptoms were at least 30 percent more likely to have minimal or no disability at 3 months than those who received placebo. The ECASS III study, which looked at tPA use in the 3- to 4.5-hour window, showed a favorable outcome of 28 percent of patients returning to an independent lifestyle with tPA versus with placebo (Thrombolysis with Alteplase 3 to 4.5 hours after Acute Ischemic Stroke).
Patients who receive tPA within 3 hours of onset of stroke symptoms are more likely to have a favorable outcome.
Ochsner’s tPA administration rate has averaged 13.4 percent from 2009 to 2015. This rate far exceeds the national average of 3.4 to 5.2 percent, reported in 2011.
Recombinant tissue-type plasminogen activator (rtPA) is the only approved therapy for acute ischemic stroke (AIS). Ochsner’s stroke treatment team has seen positive outcomes, with only one tPA-related complication out of 40 cases in 2015. tPA utilization continues to increase annually.*
Mechanical thrombectomy for acute ischemic stroke is a minimally invasive procedure in which the clot responsible for the stroke is removed from the arteries of the brain. This procedure is performed by highly specialized physicians and can be safely performed only on patients who meet certain criteria. A thrombectomy allows for reestablishment of blood flow to brain tissue in order to minimize the damage of the stroke.
The modified Rankin Scale (mRS) is a commonly used scale for measuring the degree of disability or dependence in the daily activities of people who have suffered a stroke or other causes of neurological disability. It has become the most widely used clinical outcome measure for stroke clinical trials. The scale runs from 0 to 6, with 0 representing no symptoms and 6 representing death.
High blood pressure is the leading cause of stroke and the most important controllable risk factor for stroke. Approximately 77 percent of people who have a stroke have a blood pressure greater than 140/90 mmHg (Heart Disease and Stroke Statistics, 2014). The American Heart Association recommends a normal blood pressure of less than 120 mmHg systolic and less than 80 mmHg diastolic (Guidelines for the Prevention of Stroke in Patients with Stroke and TIA).

Percentage of Achievement of Blood Pressure at Control*
Ochsner Medical Center, 2015

*Measured at 12 months post-stroke.
**Telestroke Total Volume vs tPA Administered**
Ochsner Medical Center, 2009–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Volume</th>
<th>tPA Given</th>
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</thead>
<tbody>
<tr>
<td>2009</td>
<td>33</td>
<td>5</td>
</tr>
<tr>
<td>2010</td>
<td>283</td>
<td>28</td>
</tr>
<tr>
<td>2011</td>
<td>648</td>
<td>68</td>
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<td>2012</td>
<td>843</td>
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<td>2013</td>
<td>956</td>
<td>163</td>
</tr>
<tr>
<td>2014</td>
<td>1,267</td>
<td>190</td>
</tr>
<tr>
<td>2015</td>
<td>1,811</td>
<td>216</td>
</tr>
</tbody>
</table>


**Telestroke Diagnoses Volume**
CareConnect 360, 2015

- **TIA**: 233
- **AIS**: 865
- **ICH**: 19
- **Mimic**: 603
- **Other**: 80
Neurosurgical Care

Ochsner’s Neurosurgery department has grown to nine surgeons over the past few years, creating a 76 percent growth in surgical cases. Our care team, made up of nurses, residents, physician assistants and surgeons, has provided quality surgical outcomes in cranial and spinal cases.

Neuroscience Surgical Volume by Year
All Ages, Outpatient and Inpatient
Ochsner Medical Center, 2013–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Outpatient</th>
<th>Inpatient</th>
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<tbody>
<tr>
<td>2013</td>
<td>201</td>
<td>839</td>
</tr>
<tr>
<td>2014</td>
<td>360</td>
<td>866</td>
</tr>
<tr>
<td>2015</td>
<td>360</td>
<td>934</td>
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</table>
Neurosurgery Group

Increased Mortality

Expected Mortality

Decreased Mortality

<table>
<thead>
<tr>
<th>Year</th>
<th>Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0.51</td>
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<tr>
<td>2014</td>
<td>0.70</td>
</tr>
<tr>
<td>2015</td>
<td>0.50</td>
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</table>
Neurosurgery Group

<table>
<thead>
<tr>
<th>Year</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1.32</td>
</tr>
<tr>
<td>2014</td>
<td>1.18</td>
</tr>
<tr>
<td>2015</td>
<td>0.55</td>
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</table>

Neurosurgery Group
Cranial Procedure Length of Stay (in Days), 2013–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Length of Stay</th>
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<tr>
<td>2013</td>
<td>8.1</td>
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<tr>
<td>2014</td>
<td>10.7</td>
</tr>
<tr>
<td>2015</td>
<td>11.4</td>
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</table>
Neurosurgery Group

<table>
<thead>
<tr>
<th>Year</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0.63</td>
</tr>
<tr>
<td>2014</td>
<td>0.93</td>
</tr>
<tr>
<td>2015</td>
<td>1.02</td>
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</table>

Increased Mortality
Decreased Mortality

Neurosurgery Group

<table>
<thead>
<tr>
<th>Year</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1.32</td>
</tr>
<tr>
<td>2014</td>
<td>0.69</td>
</tr>
<tr>
<td>2015</td>
<td>0.79</td>
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</table>

Increased Complications
Decreased Complications
Neurosurgery Group

<table>
<thead>
<tr>
<th>Year</th>
<th>Length of Stay</th>
</tr>
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<tbody>
<tr>
<td>2013</td>
<td>4.5</td>
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<tr>
<td>2014</td>
<td>5.6</td>
</tr>
<tr>
<td>2015</td>
<td>5.4</td>
</tr>
</tbody>
</table>
Ochsner’s neuro-oncology group is a multidisciplinary team of award-winning physicians, all experts in their field. They come together to create unique plans of care to best serve each individual patient.
Neuro-oncology Care

Brain and Spinal Tumors Program
The Brain and Spinal Tumors Program at Ochsner provides patients with comprehensive, multidisciplinary care and the convenience of fast-track appointments. Our surgeons are trained in the surgical and nonsurgical treatment of brain and spinal tumors.

Treatment Modalities/Surgical Intervention
Our comprehensive team of board-certified, fellowship-trained neurosurgeons, plastic surgeons and otolaryngologists are experts in skull base tumor resection and the treatment of skull base tumors. We use the most advanced technologies, such as intraoperative navigation systems and brain mapping, to aid in the safe, maximal resection of tumors, while reducing postoperative deficits. We apply minimally invasive surgical techniques to treat patients with spinal tumors and cancer.

Radiosurgery
Our neurosurgeons eradicate tumors using radiosurgery, a sophisticated noninvasive treatment modality. Our surgeons are among the Gulf South region’s most experienced in treating tumors using this technology. They are also experienced in using Gamma Knife as well as linear accelerator-based technologies.

Medical Management
Treatment planning and adjuvant care for brain tumors are managed by a multidisciplinary team consisting of a neurosurgeon, oncologist, neuroendocrinologist and radiation oncologist (in many cases). This approach gives patients access to the most up-to-date, comprehensive care.
Stereotactic radiosurgery, also known as stereotactic radiotherapy, is a noninvasive procedure that includes the precise delivery of high-dose radiation to a small field of treatment but with a very small-dose delivery to surrounding areas. This noninvasive treatment allows patients to be treated often the same day, then go home to resume normal activities in a much shorter time than after a conventional neurosurgical procedure. Radiosurgery can be used to treat conditions such as benign and malignant brain tumors, arteriovenous malformations of the brain and trigeminal neuralgia or tic douloureux.

![Gamma Knife Distribution of Radiosurgery Cases](image-url)

**Gamma Knife Distribution of Radiosurgery Cases**
Ochsner Medical Center, 2015

- Meningioma: 33%
- Metastatic: 34%
- Acoustic Neuroma: 21%
- Glioblastoma: 6%
- Trigeminal Neuralgia: 3%
- AVM: 3%
Brain Metastasis Total Cases
Ochsner Medical Center, 2010–2015

- 7 cases in 2010
- 21 cases in 2011
- 19 cases in 2012
- 21 cases in 2013
- 20 cases in 2014
- 38 cases in 2015

Cross section of metastatic tumor in the brain
Brain metastasis is the fastest growing sector of tumors in patients with tumors. Patients are living longer with primary diseases and are therefore experiencing more metastases. Radiosurgery is an ideal treatment option for many of these patients.

<table>
<thead>
<tr>
<th>Tumor Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney</td>
<td>1</td>
</tr>
<tr>
<td>Breast</td>
<td>10</td>
</tr>
<tr>
<td>Lung</td>
<td>18</td>
</tr>
<tr>
<td>Prostate</td>
<td>2</td>
</tr>
<tr>
<td>Skin</td>
<td>4</td>
</tr>
<tr>
<td>Ovarian</td>
<td>1</td>
</tr>
<tr>
<td>Liver</td>
<td>1</td>
</tr>
<tr>
<td>Rectal</td>
<td>1</td>
</tr>
<tr>
<td>Bladder</td>
<td>1</td>
</tr>
<tr>
<td>Colon</td>
<td>1</td>
</tr>
</tbody>
</table>
The majority of primary brain tumors fall under the World Health Organization classification scheme of tumors of neuroepithelial tissue. Malignant gliomas are the most common primary brain tumor, comprising more than 80 percent of all primary brain neoplasms. Gliomas can be divided into astrocytomas, oligodendrogliomas, ependymomas and oligoastrocytomas (mixed gliomas). These neuroglial tumors can be further divided based on grade.
Glioma Total Cases
Ochsner Medical Center, 2010–2015
Our program is built upon a strong foundation of recognized excellence in neurosurgical and neuroendocrine care and research.
Pituitary Disorders

The Ochsner Center for Pituitary Disorders is a multidisciplinary center designed to provide comprehensive care to all patients with newly diagnosed and preexisting pituitary disorders.

Our program is built upon a strong foundation of recognized excellence in neurosurgical and neuroendocrine care and research. We have assembled a team of dynamic physicians, all recognized experts and current leaders in their respective fields, who have considerable experience in the evaluation and management of patients with diseases of the pituitary gland and hypothalamus.

Almost all pituitary tumors are benign (noncancerous) glandular tumors called pituitary adenomas. These tumors are considered benign because they do not spread to other parts of the body, like cancers can do. Still, even benign pituitary tumors can cause significant health problems because of their location near the brain and because many of them secrete excess hormones. Pituitary cancers (called pituitary carcinomas) are very rare.
Epilepsy Program

Ochsner’s Epilepsy Program hosts an outstanding group of experienced epileptologists and neurosurgeons who provide the most modern and innovative medical and surgical care for the evaluation and treatment of patients with epilepsy and seizure disorders. Ochsner is the only facility in the state with a comprehensive epilepsy monitoring unit (EMU) where patients with complex seizure disorders can be diagnosed and managed.

Epilepsy Growth in Long-Term Monitoring
Ochsner Medical Center, 2013–2015
Long-term monitoring is continuous, combined EEG and video recording of patients for hours to days.
Epilepsy Surgical Volume
Ochsner Medical Center, 2014–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>25</td>
</tr>
<tr>
<td>2015</td>
<td>31</td>
</tr>
</tbody>
</table>

Epilepsy Growth in Monitoring Unit Admissions
Ochsner Medical Center, 2013–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>122</td>
</tr>
<tr>
<td>2014</td>
<td>210</td>
</tr>
<tr>
<td>2015</td>
<td>289</td>
</tr>
</tbody>
</table>
Neurocritical Care Unit

Patients with acute neurological and neurosurgical injury who require critical care are treated by our specially trained and board-certified multidisciplinary team. Our neurocritical care unit offers the only high volume tertiary referral center in the state for patients with neurocritical care needs. Complex patients may be covered through the regional referral center to include neurosurgical and neurological cases. With outcomes recognized nationally as the best in the region, Ochsner’s neurocritical care unit is ready 24 hours a day to care for patients. This unit is currently equipped with 34 beds.
<table>
<thead>
<tr>
<th>National Securities Clearing Corporation (NSCC) – Overall</th>
<th>YTD 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Hygiene</td>
<td>70%</td>
</tr>
<tr>
<td>Isolation Compliance</td>
<td>91%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Catheter-Associated Urinary Tract Infection (CAUTI) Rate</th>
<th>2.30</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Healthcare Safety Network (NHSN) CAUTI Percentile</td>
<td>50th</td>
</tr>
<tr>
<td>NHSN Foley Utilization Percentile</td>
<td>25th</td>
</tr>
<tr>
<td>CAUTI Bundle Compliance</td>
<td>84%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Central Line-Associated Bloodstream Infection (CLABSI) Rate</th>
<th>1.03</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHSN CLABSI Percentile</td>
<td>50th</td>
</tr>
<tr>
<td>NHSN CL Utilization Percentile</td>
<td>50th</td>
</tr>
<tr>
<td>CLABSI Bundle Compliance</td>
<td>90%</td>
</tr>
<tr>
<td>Blood Culture Contamination Rates</td>
<td>5.07%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ventilator-Associated Pneumonia (VAP) Rate</th>
<th>0.087</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHSN VAP Percentile</td>
<td>75th</td>
</tr>
<tr>
<td>Vent Utilization</td>
<td>0.34</td>
</tr>
<tr>
<td>NHSN Vent Utilization Percentile</td>
<td>75th</td>
</tr>
<tr>
<td>VAP Bundle Compliance</td>
<td>98%</td>
</tr>
</tbody>
</table>

Ochsner’s Neurocritical Care Unit is ready 24 hours a day to care for patients.
Physical Medicine and Rehabilitation

Ochsner’s Physical Medicine and Rehabilitation Program is seeing continued annual growth, serving patients from all over Louisiana and Mississippi.

**28-Bed In-Patient Facility**
- Commission of Accreditation of Rehabilitation Facilities certified
- CARF Stroke Specialty Accreditation

**Dedicated Specialty Clinics**
- Spasticity Clinic
- Stroke Recovery Clinic
- Wheelchair Clinic
- Multiple Sclerosis Clinic (Multidisciplinary with Neurology)
- ALS Clinic (Multidisciplinary with Neurology)
- Amputee Clinic (Prosthetic & Orthotics)
- Adult Spina Bifida Clinic (Multidisciplinary with Urology and Neurosurgery)

---

**Pediatric Rehabilitation Volumes**
Ochsner Medical Center, 2014–2015

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Patients</td>
<td>171</td>
<td>198</td>
</tr>
<tr>
<td>Follow-Up Patients</td>
<td>691</td>
<td>800</td>
</tr>
</tbody>
</table>

---
In 2017, Ochsner will partner with Select Medical, a company that has helped high-ranking institutions develop rehabilitation facilities nationwide.

Plans are in place to open a 60-bed acute rehabilitation unit on Jefferson Highway. This facility will offer a regional referral center, along with specialized rehab programs for the treatment of stroke, traumatic brain injury, spinal cord injury, amputations and cardiac and orthopedic conditions. As a Center of Excellence for Stroke, Brain and Spinal Cord Injury, this unit will be able to care for higher acuity patients and will bring a whole new level of inpatient rehabilitation care to New Orleans and the surrounding Southeast Louisiana region.

A **baclofen pump** delivers the drug called Lioresal® Intrathecal (baclofen injection) for ITB TherapySM, a treatment for severe spasticity. People who suffer from severe spasticity resulting from cerebral palsy, multiple sclerosis, stroke, brain injury or spinal cord injury may be candidates for ITB Therapy. Patients may be considered for ITB Therapy if oral baclofen has not controlled their spasticity or has resulted in serious side effects.

---

**Intrathecal Baclofen Pump Patient Totals***
Ochsner Medical Center, 2014–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>29</td>
</tr>
<tr>
<td>2015</td>
<td>36</td>
</tr>
</tbody>
</table>

*13 pump trial patients in 2015

---
Concussion

A concussion is a traumatic injury to the brain that affects how the brain functions. Early diagnosis and correct treatment are important to recovery and return to play.

Children and adolescents are particularly sensitive to the effects of concussion, which, if not managed properly, can lead to prolonged time away from sports and school – or even long-term problems.

Ochsner Health System is dedicated to enhancing athletes’ health on and off the field by helping to educate athletes, families and coaches about concussion and concussion management.

Know the Facts

Children, adolescents and adults are all at risk for concussion with common causes including sports, recreational activities, falls and motor vehicle collisions. Emergency department visits for concussions in children and adolescents ages 8 to 13 years old has doubled, and concussions have risen 200 percent among teens ages 14 to 19 in the last decade, according to the American Academy of Pediatrics.

Football is the most common sport with CONCUSSION RISK FOR MALES.

75% chance that boys who play football will have a concussion.*

50% chance that girls who play soccer will have a concussion.*

While loss of consciousness is associated with FEWER THAN 20% OF CONCUSSIONS, a loss of consciousness or loss of memory after a head injury implies that a concussion has occurred.

Soccer is the most common sport with CONCUSSION RISK FOR FEMALES.

Youths who have already had a concussion are at higher risk for subsequent ones.

*Sources: The Sports Concussion Institute, Institute of Medicine and National Research Council, Centers for Disease Control and Prevention.
About the Ochsner Concussion Management Program

The Ochsner Concussion Management Program partners with more than 40 high schools, colleges and recreational sports leagues across the state, working with over 5,000 student-athletes to provide baseline ImPACT testing and continued care. The program focuses on fast diagnosis and the most effective treatment to get athletes back on the playing field as quickly and safely as possible. Individualized treatment is designed to:

- Lessen recovery time
- Lower the risk of persistent, long-term neurocognitive deficits
- Prevent potential catastrophic events such as second impact syndrome
- Reduce the risk of repeat concussion
- Recognize and treat persisting concussion symptoms requiring more than just rest to resolve

This program is the first and largest of its kind in the Gulf South and features:

- Patient assessment by board-certified physicians each with specialized training in the field of concussion management;
- Multifaceted evaluation including neurological, neurocognitive and balance examinations;
- Focused evaluation of memory, processing speed and other related functions;
- Prompt development of an individualized, medical treatment plan;
- Support services including serial assessment, concussion education, counseling, return-to-play surveillance and cognitive therapy;
- Referrals, when necessary, to our extensive network of pediatric and adult specialists and ancillary medical professionals and
- All physicians in the Ochsner Concussion Management Program have completed fellowship training in Sports Medicine, Sports Neurology or Traumatic Brain Injury.

Concussion Symptoms:

- **Physical**: headache, dizziness, nausea/vomiting
- **Cognitive**: confusion, mental fogginess, poor memory
- **Emotional**: irritability, sadness, nervousness
- **Sleep**: insomnia, fatigue, drowsiness
Concussion Patient Volumes
Ochsner Medical Center, 2014–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>New Patients</th>
<th>Follow-Up Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>298</td>
<td>2,136</td>
</tr>
<tr>
<td>2015</td>
<td>535</td>
<td>4,408</td>
</tr>
</tbody>
</table>

Baseline ImPACT Test Volume
Ochsner Medical Center, 2014–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>2,136</td>
</tr>
<tr>
<td>2015</td>
<td>4,408</td>
</tr>
</tbody>
</table>
The Back and Spine Center

The Ochsner Back and Spine Center provides the most comprehensive and specialized care and relief to patients suffering from any type of spine or back pain or discomfort. At the center, we are able to care for patients ranging from pediatric to elderly.

Each patient receives a customized treatment approach designed to address their specific condition. Patients have access to medical experts from different disciplines including neurosurgery, orthopedic, interventional pain management, physical medicine and rehabilitation and psychiatry. We offer the most sophisticated minimally invasive spine surgery techniques to treat a whole spectrum of spine diseases. These techniques offer the best treatment benefits for patients with shorter hospital stays, less blood loss and less postoperative pain. The Back and Spine Center also offers patients the convenience of same-day appointments.

The Ochsner Healthy Back Rehabilitation Program is a patient-focused, nonsurgical rehab program to treat patients with back pain. These treatments improve patient outcomes, as demonstrated below.

The Visual Analog Scale (VAS), Oswestry Disability Index (ODI), Neck Disability Index (NDI) and Australian Quality of Life (AQtL) assessments are patient-reported measurements of pain and quality of life/disability ratings. A lower score (for VAS, ODI & NDI) represents better quality of life or an improvement when compared to previous quality of life. A higher score for AQtL represents an improvement.

**Back and Spine: Healthy Back Clinic**

- Comprehensive multidisciplinary spine clinic
- Physical therapy for chronic neck and low back pain with active resistance exercise, health coaching and progression to wellness program
- Encourages collaboration between pain management, PMR, neurosurgery and orthopedic spine surgery
- Subjective and objective outcomes collected

Our minimally invasive surgical techniques get patients back to doing what they love.
All these patient measures show improvement at the 3-month mark. Pain level, ODI and NDI all go down, while Patient-Centered Outcomes and AQoL-4D go up.
The incidence and prevalence of back and spine problems are increasing in the population, with 80 percent prone to have back pain during their lifetime. When surgery is needed, we specialize in innovative, effective and minimally invasive surgical techniques.
Average Visual Analog Scale (VAS)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Average VAS Open</th>
<th>Average VAS Mini-Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Op</td>
<td>5.5</td>
<td>6.5</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>4.1</td>
<td>4.6</td>
</tr>
<tr>
<td>6 Months</td>
<td>3.8</td>
<td>3.6</td>
</tr>
<tr>
<td>1 Year +</td>
<td>6.0</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Average Oswestry Disability Index (ODI)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Average ODI Open</th>
<th>Average ODI Mini-Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Op</td>
<td>44.3</td>
<td>51.4</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>27.9</td>
<td>48.2</td>
</tr>
<tr>
<td>6 Months</td>
<td>37.3</td>
<td>30.8</td>
</tr>
<tr>
<td>1 Year +</td>
<td>64.0</td>
<td>38.6</td>
</tr>
</tbody>
</table>
Thoracolumbar Spine Surgeries: Open vs Mini

Open Corpectomy

We use minimally invasive surgical techniques even in patients with complex spine problems such as spine fracture, infection and tumor, and our technique significantly improves pain and quality of life when compared to conventional open surgical techniques.
Surgery for Degenerative Spine Diseases: Lumbar Spinal Stenosis, Disc Herniation and Spondylosis

Spondylolisthesis Average Visual Analog Scale (VAS)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>VAS Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>7.0</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>3.6</td>
</tr>
<tr>
<td>6 Months</td>
<td>3.4</td>
</tr>
<tr>
<td>1 Year +</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Spondylolisthesis Average Oswestry Disability Index (ODI)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>ODI Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>56.6</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>38.6</td>
</tr>
<tr>
<td>6 Months</td>
<td>30.6</td>
</tr>
<tr>
<td>1 Year +</td>
<td>26.9</td>
</tr>
</tbody>
</table>
Spinal Stenosis Average Visual Analog Scale (VAS)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>6.0</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>3.7</td>
</tr>
<tr>
<td>6 Months</td>
<td>4.4</td>
</tr>
<tr>
<td>1 Year +</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Spinal Stenosis Average Oswestry Disability Index (ODI)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>47.5</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>34.2</td>
</tr>
<tr>
<td>6 Months</td>
<td>31.0</td>
</tr>
<tr>
<td>1 Year +</td>
<td>33.9</td>
</tr>
</tbody>
</table>
Microdiscectomy Average Visual Analog Scale (VAS)
Ochsner Medical Center, 2015

Microdiscectomy Average Oswestry Disability Index (ODI)
Ochsner Medical Center, 2015
Anterior Cervical Discectomy and Fusion Average Visual Analog Scale (VAS)
Ochsner Medical Center, 2015

Anterior Cervical Discectomy and Fusion Average Neck Disability Index (NDI)
Ochsner Medical Center, 2015

Surgery for Degenerative Spine Diseases: Cervical
Surgery for Degenerative Spine Diseases: High Cervical C1-C2 Fusions

Posterior Cervical Fusions Average Visual Analog Scale (VAS)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th></th>
<th>Preoperative</th>
<th>6 Weeks</th>
<th>6 Months</th>
<th>1 Year +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posterior Cervical Fusions Average Visual Analog Scale (VAS)</td>
<td>6.2</td>
<td>4.8</td>
<td>4.4</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Posterior Cervical Fusions Average Neck Disability Index (NDI)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th></th>
<th>Preoperative</th>
<th>6 Weeks</th>
<th>6 Months</th>
<th>1 Year +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posterior Cervical Fusions Average Neck Disability Index (NDI)</td>
<td>45.5</td>
<td>45.9</td>
<td>38.3</td>
<td>37.5</td>
</tr>
</tbody>
</table>
Average Visual Analog Scale (VAS)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>4.7</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>2.7</td>
</tr>
<tr>
<td>6 Months</td>
<td>3.1</td>
</tr>
<tr>
<td>1 Year +</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Average Neck Disability Index (NDI)
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>27.2</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>47.6</td>
</tr>
<tr>
<td>6 Months</td>
<td>37.0</td>
</tr>
<tr>
<td>1 Year +</td>
<td>9.5</td>
</tr>
</tbody>
</table>

Our patients experience an improvement in their pain levels and quality of life even after undergoing very intricate and complex spine surgery, such as C1-C2 fusions, at the 1+ year postoperative point.
Movement Disorders

The neurological subspecialty of movement disorders addresses abnormalities in normal human movement. Symptoms of a movement disorder can be walking difficulties, tremor, jerking, “dance-like” movements or slowing of normal movement. While some movement disorders are identified by diagnostic tests, many are diagnosed by physical exam alone. Our team of neurologists and neurosurgeons applies state-of-the-art treatment modalities including deep brain stimulation (DBS) surgeries to help improve patients’ symptoms and quality of life.

Specific diseases and syndromes treated in this clinic:

- Parkinson’s disease (PD) and secondary Parkinsonism – degenerative disorder
- Normal pressure hydrocephalus – too much fluid in the brain
- Essential tremor (ET) – involuntary shaking of an arm, chin or leg either in motion or at rest
- Torticollis – abnormal, asymmetrical head or neck position
- Tourette syndrome – repetitive, involuntary movements and vocalizations
- Huntington’s disease – neurodegenerative genetic disorder
- Gait disturbance or imbalance problems
- Friedreich’s ataxia – difficulty walking or maintaining balance
- Spasticity – stiffness and involuntary muscle spasms
- Dystonia – a sudden jerk-like movement of a muscle or muscle group

Special Programs and Services:

- Botulinum toxin therapy for spasticity, dystonia and blepharospasm
- Deep brain stimulation for Parkinson’s disease, essential tremor and dystonia
- Lumbar puncture and gait evaluations for suspected normal pressure hydrocephalus
- Information and referral center for the American Parkinson’s Disease Association
- Duopa therapy
Pictured is a gentleman with Parkinson’s disease treated with the latest Duopa® therapy. The pump shown can deliver continuous dopamine through a tube to the patient. The Ochsner Neuroscience Institute’s Movement Disorders Program is the leading program in the Gulf South to provide Duopa® therapy for advanced Parkinson’s disease. Led by Dr. David Houghton and Dr. Georgia Lea, this therapy can dramatically control trembling, frozen movements and balance impairment associated with this chronic condition affecting almost a million Americans.
Pediatric Neurosurgery Program

Our program offers multidisciplinary and comprehensive neurosurgical care for children of all ages, as well as adults with congenital processes. We treat hydrocephalus, brain tumors, congenital malformations, cerebral palsy and all forms of pediatric brain and spinal disorders.

**Our top pediatric neurosurgeons provide:**
- Expertise in performing cranial endoscopy, minimally invasive cranial procedures, complex shunts, oncology and Chiari malformation evaluation
- Cranial disease treatment for hydrocephalus, tumors, craniofacial defects/craniosynostosis, Chiari malformations, seizure disorders, cranial cysts and congenital cranial or brain defects
- Expertise in diagnosing spinal occipital/cervical pathologies, tumors and congenital defects
- Spinal disease treatment for tumors, cervical instability due to Down syndrome, spinal dysraphism, myelomeningocele, lipomeningocele, fatty filum terminale, tethered cord, cerebral palsy spasticity and sports-related spinal injuries

We offer the only multidisciplinary fetal surgery team in the Gulf South. In 2011, Ochsner’s pediatric neurosurgeon assisted the Maternal Fetal Medicine division with our first in utero fetal myelomeningocele correction.

**Our team includes:**
- Pediatric Neurosurgery
- Maternal Fetal Medicine/ OBGYN
- Plastic Surgery
- Pediatric Cardiology
- OB Anesthesia
- NICU
Annual Pediatric Neurosurgical Volume
Ochsner Medical Center, 2012–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>132</td>
</tr>
<tr>
<td>2013</td>
<td>110</td>
</tr>
<tr>
<td>2014</td>
<td>141</td>
</tr>
<tr>
<td>2015</td>
<td>119</td>
</tr>
</tbody>
</table>
We offer several pediatric multidisciplinary clinics, such as the spina bifida clinic and the craniofacial clinic. These specialized care teams provide improved outcomes for children with complex congenital diseases.

Myelomeningocele (spina bifida) is the most common form of congenital central nervous system defect that is compatible with life. Most spina bifida patients have significant problems with walking and bowel and bladder function. They require permanent cerebrospinal fluid diversion with shunting and have a significant chance of complications from hindbrain herniation (Chiari II malformation). The advent of intrauterine surgery has provided new opportunities to better address this lifelong debilitating disease.

At Ochsner, we have assembled a fetal surgery team with the active participation of pediatric neurosurgery, maternal fetal medicine, pediatric surgery, obstetric anesthesia, pediatric cardiology and pediatrics. After more than a year of preparation, the first fetal surgery in the southeast region was performed on December 3, 2012. We have completed 11 surgeries to date with positive outcomes and without intraoperative complications.

### Pediatric Cranial Length of Stay (in Days)
Ochsner Medical Center, 2013–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Length of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>9.3</td>
</tr>
<tr>
<td>2014</td>
<td>6.3</td>
</tr>
<tr>
<td>2015</td>
<td>5.9</td>
</tr>
</tbody>
</table>
At the Comprehensive Headache Center, we recognize that headaches, along with several other associated symptoms like nausea, dizziness and fatigue, can be extremely disabling. In fact, migraine is the seventh most common cause of disability globally. Thirty-six million Americans, about 12 percent of the population, suffer from migraine headaches. To fulfill this need, the Comprehensive Headache Center, which comprises nationally recognized experts, was launched in 2014. We diagnose and treat primary and secondary causes of complex head and neck pains.
Several advanced and innovative therapies are offered at the Comprehensive Headache Center:

- BOTOX (Botulinum toxin A)
- Peripheral nerve block and trigger point injections
- Sphenopalatine ganglion block
- Trigeminal nerve block
- Intranasal lidocaine therapy
- Cryoanalgiesia
- DHE (dihydroergotamine) infusion
- Transcutaneous electrical stimulation
- Intracranial pressure monitoring and treatment trials
- Vitamin replacement therapy

The headache Fast Track Program is an exclusive program that allows patients to receive rapid intravenous therapies for an acute headache without the need of an emergency department. This reduces emergency department wait time, cost and inconvenience. Most importantly, this program is driven by personalized medicine, allowing maximum effectiveness specific to each individual patient.

Thirty-six million Americans, about 12 percent of the population, suffer from migraine headaches.

Outcomes of Fast Track Program
Ochsner Medical Center, 2015

<table>
<thead>
<tr>
<th></th>
<th>Pre-Infusion</th>
<th>Post-Infusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity of Pain (0–10)</td>
<td>7.9</td>
<td>4.3</td>
</tr>
<tr>
<td>Severity of Nausea/Vomiting (0–10)</td>
<td>4.9</td>
<td>0.9</td>
</tr>
</tbody>
</table>
Multiple Sclerosis Program

The Ochsner Multiple Sclerosis (MS) Program combines state-of-the-art therapeutics, including the latest infusion therapies, for individuals with MS. It consists of coordinated and comprehensive care for patients and their families, including the management of all symptoms associated with MS. The program focuses on patient wellness, such as routine counseling on vitamin supplementation, diet, exercise and stress reduction. We participate in translating leading-edge research into better treatments for patients with MS.

**Areas of Expertise:**
- Multiple sclerosis
- Neuromyelitis optica
- Optic neuritis
- Neuroimmunological disorders
- Spasticity

**Special Programs and Services:**
- MS wellness and education
- Advanced MS management
- Intrathecal baclofen therapy for spasticity
- Botulinum toxin therapy for spasticity
- Information and referral center for Multiple Sclerosis Education and Resource Center

**Research:**
- Participating in four industry-sponsored clinical trials and one investigator-initiated clinical trial in collaboration with the University of Queensland

**Other Highlights:**
- Comprehensive model of care
- All advanced immunotherapies and treatment of all symptoms associated with MS
- Focus on wellness
- Mental health services provided within our own clinic
- MS yoga class at Elmwood Fitness Center
- 800 patients followed by MS clinic by end of 2014
- Patients travel to Ochsner from all over the Gulf South (northern and western LA and AL)

**Awards and certification:**
Certified by the National Multiple Sclerosis Society as a Partner in MS Care, Comprehensive Care Center
Memory Disorders Program

The Memory Disorders Program is an interdisciplinary team approach under the direction of a cognitive and behavioral neurologist, with clinical care provided by a geriatric nurse practitioner, geriatric psychologist and a neuropsychiatrist. Neurology and psychiatry residents, postdoctoral fellows in Behavioral Neurology, Geriatric Psychiatry and Geriatric Medicine and medical students are an integral part of the clinic team.

Areas of Expertise:

- Memory loss
- Age-related cognitive changes
- Mild cognitive impairment
- Alzheimer’s disease
- Vascular cognitive impairment and vascular dementia
- Frontotemporal dementias, including behavioral subtypes, primary progressive aphasia, Pick’s disease and semantic dementia
- Cortical-subcortical dementias, including Lewy body disease and corticobasal degeneration
- Metabolic and genetic types of dementias of adult onset
- Mixed types of dementia and complex cognitive cases

Special Programs and Services:

- Expert care in the areas of aging and dementia
- Early diagnosis and treatment
- Follow-up during disease progression
- Training program for physicians
- Research program in aging, dementia and stroke
**Research**

**Internal Studies:**


Blood 2014.091.A. Sabharwal V. A chart review on the incidence and management of status epilepticus in the neurocritical care unit.


2013.157.A. Bagert B. Association between MTHFR mutation and leukoencephalopathy on Brain MRI Neurology Investigator Other.


2015.046.C. Khan F. Sphenopalatine ganglion block for episodic and chronic headaches..

2015.232.A. Larriviere D. Quality improvement and practice based research in neurology using the EMR neurology.


2013.085.A. Bui C. Increased intracranial pressure in children with cerebral palsy; implications for baclofen pump placement and associated complications.

2013.188.A. Wale Sulaiman. Minimally invasive DLIF: outcome studies.

2013.196.B. Wale Sulaiman. Intraoperative neurophysiological monitoring for minimally invasive one and two level transforaminal lumbar interbody fusion: A retrospective review of its need and outcomes at a single institution.

2013.201.A. Ware M. Efficacy of radiosurgery as part of a multimodal treatment protocol for central nervous system pathologies.


2015.119.B. Ware M. Effectiveness of stereotactic radiosurgery as a primary or adjunct therapy for central nervous system pathologies.


**Sponsored Clinical Trials:**


2014.067.C. Bagert B. A multicenter, global, observational study to collect information on safety and to document the drug utilization of Tecfidera™ (dimethyl fumarate) when used in routine medical practice in the treatment of multiple sclerosis (ESTEEM).

2014.260.C. Vidal G. Mild and rapidly improving stroke study (MaRISS).

2015.223.A. Bagert B. PLEGRIDY™ (peginterferon 1a) real world effectiveness and safety observational program (POP). Biogen Idec protocol number: 105MS401.

2012.158.A. Vidal G. A randomized, concurrent controlled trial to assess the safety and effectiveness of the Separator 3D as a component of the Penumbra System in the revascularization of large vessel occlusion in acute ischemic stroke.

CLP 4853.A 2012.137.C. Bagert B. FTY720/fingolimod clinical trial protocol CFTY720D2312 A 12-month, randomized, rater-and dose-blinded study to compare the efficacy and safety of fingolimod 0.25 mg and 0.5 mg administered orally once daily with glatiramer acetate 20 mg administered subcutaneously once daily in patients with relapsing-remitting multiple sclerosis.

2014.078.C. Bagert B. A placebo-controlled randomized withdrawal evaluation of the efficacy and safety of baclofen er capsules (GRS) in subjects with spasticity due to multiple sclerosis.


2014.302.B. Vidal G. A randomized, double-blind, multinational study to prevent major vascular events with ticagrelor compared to aspirin (ASA) in patients with acute ischaemic stroke or TIA.


2015.080.A. Zweifler T. Randomized, double-blind evaluation in secondary stroke prevention comparing the efficacy and safety of the thrombin inhibitor dabigatran etexilate 110 or 150 mg (twice daily) versus acetylsalicylic acid (100 mg once daily) in patients with embolic stroke of undetermined source (RE-SPECT ESUS).
2015.136.C. Bagert B. A clinical evaluation of the safety of baclofen ER capsules (GRS) when administered once daily to subjects with spasticity due to multiple sclerosis (MS): an open label, long-term safety trial.

2015.098.C. Ramsay R. A randomized, double-blind, placebo-controlled trial examining the safety and efficacy of midazolam intranasal spray (USL261) for the treatment of intermittent bouts of increased seizure activity in the epilepsy monitoring unit (EMU).

2015.148.B. Zweifler R. Study title: Multicenter, randomized, double-blind, double-dummy, active-comparator, event-driven, superiority phase III study of secondary prevention of stroke and prevention of systemic embolism in patients with a recent embolic stroke of undetermined source (ESUS), comparing rivaroxaban 15 mg once daily with aspirin 100 mg (NAVIGATE ESUS).


2013.137.A. Bui C. DuraSeal Exact spine sealant system post-approval study.

2014.001.A. Ware M. Central nervous system (CNS) molecular characterization and chemotherapeutic susceptibility.

2014.036.A. Ware M. A Phase II trial: safety and tolerance of intravenous 4-demethyl-4-cholesteryloxy carbonylpencromedine (DM-CHOC-PEN) in patients with malignancies involving the central nervous system.

2015.071.B. Ware M. A single-blinded, randomized, controlled study to evaluate the safety and effectiveness of EVICEL® fibrin sealant (human) compared to a hydrogel sealant as an adjunct to sutured dural repair.

2015.086.B. Ware M. A Phase 1/2 Study of SL-701, a subcutaneously injected multivalent glioma-associated antigen vaccine, in adult patients with recurrent glioblastoma multiforme.

2015.175.A. Wale Sulaiman. Prospective randomized clinical study to evaluate the clinical impact of pharmacogenetics – guided treatment for patients undergoing elective spinal surgical procedures.

2015.216.B. Ramsay R. An open-label study to evaluate the safety, efficacy, and pharmacokinetics of SAGE-547 injection as adjunctive therapy in the treatment of adults with super-refractory status epilepticus (SAGE 547-SSE-201).

2011.091.C. Ramsay R. A prospective, open-label study of the structure and function of the retina in adult patients with refractory complex partial seizures treated with vigabatrin (Sabril®).

Neuroscience 2015 Publications:


Mathkour M, Garces J, Sulaiman WAR. Brachial plexus injuries: risk factors, management and neurological complications (October 2015 – present), invited by Nova Sciences Publisher, chapter ongoing.
Mathkour M, Garces J, Sulaiman WAR. Spondylolisthesis classification, diagnosis and treatment (March 2015 – present), invited by Nova Sciences Publisher. 2016


Sulaiman WAR. Transforming growth factor-b promotes axonal regeneration after chronic nerve injury. SPINE 2016; 41(7S): S29.


Contact Information and Locations

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985.875.2828

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Slidell, LA 70458
985.639.3777

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1057 Paul Maillard Rd.
Luling, LA 70070
985.785.6242

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Metairie, LA 70002
504.836.9820

Ochsner Health Center – Central
Central Park Professional Plaza
11424-2 Sullivan Road
Central, LA 70818
225.261.9790

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Taylor Bailey, NP
About Ochsner Health System

Ochsner Health System is Louisiana’s largest non-profit, academic healthcare system. Driven by a mission to Serve, Heal, Lead, Educate and Innovate, coordinated clinical and hospital patient care is provided across the region by Ochsner’s 28 owned, managed and affiliated hospitals and more than 60 health centers. Ochsner cares for patients from all 50 states and more than 80 countries worldwide each year. Ochsner employs 17,000 employees and over 1,000 physicians in over 90 medical specialties and subspecialties, and conducts more than 1,000 clinical research studies. Ochsner Health System is proud to be a tobacco-free environment. For more information, please visit ochsner.org and follow us on Twitter and Facebook.

Visit us online at ochsner.org

Patient referrals, transfers and consults are critically important. We make it easy for referring providers and their staff. To refer your patient for a clinic appointment, call our Clinic Concierge at 855.312.4190. To initiate a transfer to any Ochsner hospital, call our Regional Referral Center, staffed 24/7 by clinicians, at 855.OHS.LINK (647.5465).

For patients needing to schedule their own appointments, please call 866.OCHSNER (624.7637).
Healthgrades® awarded Ochsner hospitals a combined total of 29 Five-Star Rankings in 16 categories in 2015, including neurosurgery, total knee replacement, coronary interventional procedures and for treatment of stroke, heart attack and respiratory failure.

U.S. News & World Report ranked Ochsner Medical Center as one of the nation’s top hospitals in six specialties, including ear, nose and throat, gastroenterology & GI surgery, nephrology, neurology & neurosurgery, orthopedics and pulmonology.

CareChex® ranked Ochsner Medical Center as one of the nation’s top hospitals for Medical Excellence in 17 specialties, including #1 for liver transplants, #4 for trauma care and #8 for overall hospital care in 2015.