Pickup Family Neurosciences Institute
Annual Report 2023
Compassionate Care, Clinical Excellence, Creative Intelligence
By any conventional measure, 2023 was a pivotal and momentous year for the Pickup Family Neurosciences Institute at Hoag. To begin with, the August 18, 2023, celebration of our 15th anniversary brought together the Pickup family itself, as well as many of our physicians and other clinical team members, administrative leaders, community supporters, and philanthropy partners, in a joyous and truly unique and memorable event.

The joy and gratitude flowing from that milestone celebration was magnified exponentially by the announcement later in the year of an astonishing and transformative $50 million gift to establish the Richard H. Pickup Center for Brain Health, under the direction of Dr. Aaron Ritter, the Larkin Family Endowed Chair in Integrative Brain Health and Director of Hoag’s Memory & Cognitive Disorders Program. Needless to say, this gift – one of the largest in Hoag’s history – will transform care delivery to the aging population in Orange County and beyond, and the cognitive, movement disorders and neurobehavioral challenges that this population faces.

On the clinical side in 2023, we were greatly gratified to learn that our neurology and neurosurgery services were ranked in the top 50 of all U.S. hospitals (over 4,500) by U.S. News & World Report. This is just one marker of the growing reach, quality and reputation of our programs and services, which are further detailed in the pages of this annual report.

Finally, as 2023 ended, 2024 brings a passing of the torch from Dr. Michael Brant-Zawadzki, as the first Executive Medical Director of the Institute, into the very able hands of Dr. Adam Kanter, whose vigor and vision will lead us to even greater heights. To borrow from Nike, there is no finish line. Indeed, our past achievements are not marked on a placard or monument, but rather woven into the fabric of all those who continue to create the expanding quilt of Compassionate Care, Clinical Excellence and Creative Intelligence that this Institute provides to all who need it.

Kambria Hittelman, PsyD, MBA
Executive Director, Neurosciences and Neurobehavioral Health

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Senior Physician Executive, Hoag Hospital
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Leslie Rosini, MSN, RN
Director, Neurosciences Ancillary Operations

Nationally ranked in the top 50 of 4,500 hospitals for neurology and neurosurgery, and high performing (top 10%) for stroke care.
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This edition of the Hoag Pickup Family Neurosciences Institute Annual Report was made possible through a generous contribution from Mary Lynn & Rusty Turner.
Pickup Family Neurosciences Institute

In 2007, Hoag announced its fifth Center of Excellence. Shortly after, the Hoag Neurosciences Institute was created to document true excellence and reengineer the specialized care delivery model. Sixteen years on (as of this 2023 report), this first and unique comprehensive collaborative of neurosciences programs in Orange County – now named Hoag’s Pickup Family Neurosciences Institute – offers a seamless spectrum of experts, the latest technology and dedicated facilities for treating individuals with disorders of the brain, mind and spine. Compassionate Care, Clinical Excellence, Creative Intelligence.

MISSION STATEMENT Provide an integrated, multidisciplinary team approach to disorders of the brain, spine and nerves using the best evidence-based clinical care, state-of-the-art technology and advanced clinical research, all focused on the individual patient need.

SCOPE Pickup Family Neurosciences Institute provides specialized services blended with a program-based approach, each program focused on a specific condition and measured by outcomes that matter to the patient. The Institute houses the following programs and services:

ESSENTIAL SERVICES
- Neurohospitalists
- Neuro Interventional Radiology
- Neuroradiology
- Neurology
- Neurosurgery/Stereotactic & Rad Therapy
- Advanced Brain/Spine Unit/NICU/ED/ORs
- Acute Rehabilitation
- Epilepsy Monitoring
- C&L Psychiatry
- Neuropathology
- Neurophysiology, EMG, IOM
- Neuropsychology
- Neuro-Rehabilitation
- Neuro-Oncology
- Pain Management
- Fundraising

PROGRAMS
- Stroke
- Addiction Medicine
- ASPIRE/Young Adult Mental Health
- Brain Tumor
- Chronic Pain & Neuropathy
- Concussion/Mild TBI
- Epilepsy
- Multiple Sclerosis & Neuroimmunology
- Memory & Cognitive Disorders/OC Vital Brain Program
- Neurobehavioral Health
- Neuro-Spine Back Pain
- Parkinson’s Disease & Movement Disorders
- Skull Base & Pituitary Tumor
- Sleep Health

Spearheading the Pickup Family Neurosciences Institute is Hoag’s multidisciplinary team of nationally recognized medical experts, who subspecialize in the fields of neurology, brain and spine neurosurgery, diagnostic and interventional neuroradiology, neuro-oncology, pain medicine, addiction medicine, psychiatry and neuropsychology. As Orange County’s only community hospital with dedicated neurohospitalists, 24/7 subspecialized neurosurgery and interventional neuroradiology coverage, Hoag is equipped to immediately respond to any neurological emergency. This integrated, sub-specialized team of neuro clinicians and scientists is also actively involved in clinical research, testing new therapies, drugs and other medical advancements to better the lives of patients suffering from neurological conditions.

Dr. Michael Brant-Zawadzki is the Ron & Sandi Simon Executive Medical Director Endowed Chair of Pickup Family Neurosciences Institute. Dr. William R. Shankle is the Judy & Richard Voltmer Endowed Chair in Memory and Cognitive Disorders and is a leader in our research in this area. Dr. Robert Louis is the Empower360 Endowed Chair in Skull Base and Minimally Invasive Neurosurgery. Dr. Aaron R. Ritter is the Larkin Family Endowed Chair in Integrative Brain Health. The remarkable generosity of our benefactors not only demonstrates the trust and support of our endeavors, but creates an aspirational level of accountability.

This report speaks to that accountability and highlights the performance of the Institute’s major individual programs over the past calendar year.

Hoag now has 22 endowed chairs (unique for a non-academic, community hospital), four of which are in the Pickup Family Neurosciences Institute.
Stroke Program

Overview

Hoag’s comprehensive Stroke Program is led by full-time neurohospitalists who specialize in advanced stroke management and intervention and continue to develop best-practice care pathways for optimal outcomes. As a founding member of the designated Comprehensive Stroke Neurology Receiving Centers in Orange County, Hoag helped pioneer many of the specialized processes and methods to reverse stroke when possible and to optimize care for stroke patients.

Our stroke rescue process starts immediately on the way to the emergency department (ED) with emergency medical services (EMS) communication and continues upon arrival with assessment of the patient and rapid triage for the most advanced treatment appropriate to the patient’s condition, all coordinated by our neurologists and ED physician experts.

In place since January 2008 but continuously updated, the so-called “Code 20” process is like a Formula 1 pit crew. Upon a stroke patient’s arrival at the ED, neurological assessment, lab testing, and neuro imaging are done within 20 minutes, allowing for the best treatment delivery.

This Code 20 process is also used for the rare hospital inpatient who suffers a stroke during their admission for a different diagnosis. The Rapid Response Team has helped identify 24 new strokes for inpatients with 50% of these meeting criteria and receiving emergency stroke treatments.

Evidence-based use of clot-busting drugs “Code TNK”, as well as endovascular mechanical intervention (thrombectomy for Large Vessel Occlusion strokes or “Code LVO”) optimizes the chances for stroke reversal. Our team has the longest experience with endovascular stroke rescue in Orange County. Since May 2021, we have been performing interventional thrombectomy “Code LVO” at Hoag Irvine with the same expert teams as Hoag Newport Beach.

Stroke patients are cared for in the Neurosciences Intensive Care Unit or the stroke unit on our 41-bed Advanced Brain and Spine floor at Newport Beach. At Irvine, stroke patients are cared for in the Critical Care Unit or the stroke unit located on the 5th floor Telemetry Unit. The physicians and nurses in these units are all experienced in advanced stroke care. This includes pathways for ischemic and hemorrhagic strokes, including subarachnoid hemorrhage due to

Stroke Program: 949-764-6066
aneurysmal rupture. Neurosurgeons, neuro-interventional radiologists, and neurohospitalists work as a team with our critical care physicians. In addition, Hoag has expertise in preventative aneurysm treatment using image-guided micro-interventional techniques.

Hoag continues to be certified by DNV as a Comprehensive Stroke Center at Hoag Newport Beach and as a Primary Stroke Center at Hoag Irvine. Hoag has been awarded the Stroke Gold PLUS Performance Achievement Award by the American Stroke Association for 15 years in a row. In 2023, Hoag achieved the Target Stroke Honor Roll Elite Award and the Target Stroke Honor Roll Advanced Therapy Award by the American Heart Association/American Stroke Association. This award recognizes the accomplishment of rapid thrombectomy treatment as measured by the door to device times of 90 minutes or less in 50% or more of all thrombectomy cases.

The Stroke Program at Hoag continues to have the highest volume of stroke patients in Orange County, and performs a high rate of lifesaving stroke treatments for acute ischemic
stroke patients—up from 2% over a decade ago to 19% currently. Of the patients arriving in the ED meeting the criteria for the intravenous (IV) thrombolytic therapy or Mechanical Endovascular Reperfusion, 100% of patients received treatment.

### Functional Outcomes

The ultimate outcome metric is the patient’s ability to return to a self-sufficient life. Every stroke patient at Hoag is called at 30 days post discharge to evaluate their functional outcome using a well-validated tool: the Modified Rankin Scale (mRS). A score of 0 to 2 reflects a self-sufficient status. Our results demonstrate self-sufficiency in 55% of our stroke survivors. At 90 days that percentage increases to 82% for patients who received IV thrombolytic therapy for acute stroke treatment. Our physical rehabilitation service, including the Fudge Family Acute Rehabilitation Center, is also key to our superior outcomes.

In addition to functional outcomes, a telephone interview is performed to provide valuable teaching regarding neurology follow-up appointments, medications, risk factor modification, stroke symptom identification, and the need to call 911 for any recurring signs of stroke.

### Team

Hoag’s Stroke Program is led by David Brown, MD, a neurologist and fellowship-trained stroke and cerebrovascular disease specialist, and a neurohospitalist. Dr. Brown oversees a dedicated, multidisciplinary Acute Stroke Team that provides comprehensive care to stroke patients and meets regularly for process improvement.

The Stroke Program Manager is Deb Mastrolia, RN. Deb is certified with the American Board of Neuroscience Nursing for both Neuroscience Nursing (CNRN) and Stroke Nursing (SCRN) along with the American Association of Critical Care Nursing (CCRN-K) specialty. She has worked with Dr. Brown to develop and certify the multidisciplinary stroke team.

The Stroke Nurse Navigators are Victoria Tomczak, RN, SCRN, and Monica Jones, RN. They work collaboratively with the multidisciplinary team to oversee the patients’ and caregivers’ needs and manage quality. They meet with the patients and their families to assess individual needs for treatment, prevention, and education.

Beth McIntyre serves as the Neuroscience Data Coordinator. Beth’s role has been instrumental in assisting with compilation of the large volume of data collected for the Stroke Program.
Male, 73, acute right paralysis, speech loss; stroke rescue.

Upper row: CT angiogram shows absence of left middle cerebral trunks; 3D CT shows missing left internal carotid artery in neck; perfusion CT shows green zone of left hemisphere at risk of permanent damage.

Lower row: Catheter angiogram shows 95% occlusive narrowing at origin of left internal carotid; spot film shows balloon dilation and stent placement; restoration of caliber; intracranial angiogram shows several distal emboli; post thrombectomy angiogram shows removal of emboli; final CT shows salvaged, normal brain.

Figure 5. Thrombolytic Treatments: Combined Hoag Hospital Newport Beach & Hoag Hospital Irvine
Hoag Recognized as Highest Ranked Hospital in Orange County for Top-Quality Care by U.S. News & World Report’s 2023-2024 Best Hospitals Rankings

NEWPORT BEACH, Calif., August 1, 2023 — For the seventh consecutive year, U.S. News & World Report’s 2023-2024 Best Hospitals Rankings named Hoag the highest ranked hospital in Orange County, the fourth-best hospital in the Los Angeles metro area and ninth-best in California. The rankings also included national rankings in two specialty areas and recognition for Hoag’s high performance in 17 specialty procedures and conditions.

The annual Best Hospitals rankings and ratings serve as an important resource to assist patients and their doctors in making informed decisions about where to receive care for challenging health conditions and common elective procedures.

“As the highest ranked hospital in Orange County, we are proud to bring our community access to the most advanced care today through Hoag’s clinical trials, state-of-the-art technologies, renowned institutes and world-class physicians,” said Robert T. Braithwaite, Hoag president and CEO. “This designation is a tribute to Hoag’s commitment to delivering the highest quality, patient-centered care each and every day to our community.”

Hoag’s 2023-2024 rankings included national recognition for specialty services, including:

• #18 in Orthopedics
• #49 in Neurology & Neurosurgery

Additional rankings included high performing (top 10%) in five adult specialties, including Diabetes & Endocrinology; Gastroenterology & GI Surgery; Geriatrics; Pulmonary & Lung Surgery; and Urology, as well as high performing in 18 common adult procedures and conditions, including Aortic Valve Surgery; Chronic Obstructive Pulmonary Disease (COPD); Colon Cancer Surgery; Diabetes; Heart Attack; Heart Bypass Surgery; Heart Failure; Hip Fracture; Hip Replacement; Kidney Failure; Knee Replacement; Leukemia, Lymphoma & Myeloma; Lung Cancer Surgery; Pneumonia; Prostate Cancer Surgery; Stroke and Transcatheter Aortic Valve Replacement (TAVR).

Nationally ranked in the top 50 of 4,500 hospitals for neurology and neurosurgery, and high performing (top 10%) for stroke care.
Support & Education

Since pandemic restrictions were lifted in April 2023, the Hoag Stroke Support Group and Brain Aneurysm & Arteriovenous Malformation (AVM) Support Group resumed in-person meetings. In order to continue to reach our virtual support group members, these meetings are now held in a hybrid format in person and on Zoom. There is an educational presentation along with a Q&A facilitated by the Stroke Nurse Navigators. The meetings are attended by stroke survivors and their families and friends.

The Stroke Support Group meets on the fourth Thursday of every month from 2 to 3:30 p.m. This is a support group for stroke survivors, caregivers, family members, and friends. To register, visit hoag.org/community-education-classes/wellness and support groups, and register for the Stroke Support Group – Hybrid. For more information, call 949-764-1450.

The Brain Aneurysm/AVM Support Group is held the second Wednesday of every other month from 6 to 7:30 p.m. This is a support group for those diagnosed or treated for an aneurysm or AVM of the brain. To register, visit hoag.org/community-education-classes/wellness and support groups, and register for the Brain Aneurysm/AVM Support Group – Hybrid. For more information, call 949-764-1450.

Community outreach is provided through educational presentations by Dr. Brown, Deb Mastrolia, and Victoria Tomczak at Hoag Health Center education classes, Hoag Health Fairs & Flu Shot Clinics, community health fairs at local churches, and multiple senior centers throughout Orange County. The focus of community education is on the warning signs and symptoms of a stroke, stroke prevention, and current stroke treatments.

Research

Dr. David Brown, Principal Investigator NIH/StrokeNet: “ASPIRE: Anticoagulation in Intracerebral Hemorrhage (ICH) Survivors for Stroke Prevention and Recovery” The primary goal of the study is to determine if apixaban is superior to aspirin for prevention of the composite outcome of any stroke (hemorrhagic or ischemic) or death from any cause in patients with recent ICH and AF. The secondary goal is to determine if apixaban, compared with aspirin, results in better functional outcomes as measured by the modified Rankin Scale.

Dr. David Brown, Principal Investigator: Bayer OCEANIC-STROKE: Oral factor eleven A inhibitor Asundexian as novel anti-thrombotic-stroke study.

A Phase 3 study to test Asundexian to prevent a clot-related stroke in participants after an acute ischemic stroke or high-risk Transient Ischemic Attack (TIA).

Dr. David Brown, Principal Investigator: Lumosa Therapeutics BRIGHT Trial: A phase II double-blind, randomized, placebo-controlled study to evaluate the safety and efficacy of multiple doses of LT3001 drug product in subjects with acute ischemic stroke.
Interventional Neuroradiology Service

Overview

Endovascular, minimally invasive intervention for stroke rescue, treatment of cerebral aneurysms, vascular malformations, and other neurovascular conditions is an essential, indispensable service within the high-functioning Pickup Family Neurosciences Institute.

Expert clinicians and proceduralists armed with the most advanced technology and highly tailored facilities are the key components to this service at Hoag.

Hoag is home to the latest generation of 3-dimensional digital subtraction angiography equipment, yielding the highest resolution angiograms at the lowest radiation doses to the patient. In addition, the most up-to-date post-processing software on these machines allows for 3D reconstructions, which enable visualization of vascular anatomy and pathology such as aneurysms and arteriovenous malformations. This greatly facilitates planning and guidance of minimally invasive, image-guided, catheter-based treatments most often utilized for life-saving stroke rescue, and other conditions such as aneurysm coiling, arteriovenous malformation (AVM) embolization, stenting, dural arteriovenous fistula treatment and chronic subdural hematoma embolization.

The Pickup Family Neurosciences Institute’s dedicated full-time neurointerventional radiologists provide 24-hour-a-day, 365-day-a-year staffing for stroke care, an essential part of Hoag’s Comprehensive Stroke Center certification. With a combined 30+ years of experience in Orange County in the treatment of strokes, aneurysms and AVMs, Hoag neurointerventionalists use the latest endovascular techniques and devices.

We continue to be recognized – since 2008 – as the leader in Orange County for the treatment of stroke, consistently achieving documented successful outcomes for patients (see data in the Stroke Program section). Hoag neurointerventionalists are also available for outpatient appointments and consultations in Hoag’s multispecialty clinic and regularly attend Hoag’s quarterly Brain Aneurysm and AVM Support Group meetings.

Interventional Neuroradiology volume continues to increase and patients continue to have exceptional outcomes. Because of the success at the Newport Beach campus, the team has expanded to provide acute stroke thrombectomy procedures in the Cath Lab at Hoag Hospital Irvine.

Neuroradiology: 949-764-6066
Top row: CT angiogram shows giant aneurysm off the right cavernous carotid artery; 3D CT angiogram depicts the aneurysm and all the normal major intracranial vessels; catheter angiogram shows the giant aneurysm with wide mouth of the carotid artery.

Lower row: Select spot films of angiogram showing deployment of a diverting sleeve, preventing filling of the aneurysm-stasis of contrast within; last frame of final angiogram shows restored artery, aneurysm obliterated.

Team

The Interventional Neuroradiology team is led by Drs. Christopher Baker and Avinash Mesipam, along with a dedicated team of four other interventional radiologists, seven technologists and nine nursing staff at the Newport Beach location, as well as seven technologists and seven nursing staff at Hoag Hospital Irvine.
Brain Tumor Program

Introduction

The Pickup Family Neurosciences Institute and the Hoag Family Cancer Institute remain well regarded in the Orange County community and regionally for our expertise and dedication to exceptional patient care. Surgical volume has continued to rise over the past several years, and gamma knife volume has remained steady. There was a minor decrease in neuro-oncology clinic volume, which could partly be due to the recent end of Hoag Memorial Hospital Presbyterian’s affiliation with Providence. However, referring physicians and patients in the community recognize that our multidisciplinary team’s advanced expertise and wealth of resources, including the most modern surgical suites equipped with advanced augmented reality (AR)-guided surgical and nonsurgical capabilities, greatly impacts outcomes. This includes three types of stereotactic-focused radiation therapy, radiosurgery allowing single-sitting tumor eradication. The team’s compassionate care is greatly facilitated by a dedicated clinical nurse navigator, and a weekly multidisciplinary neuro-oncology tumor conference. Neuro-oncology research at Hoag has also grown and will be adding several new and exciting clinical trial options for patients with advanced brain tumors. All of these factors greatly impact outcomes, longevity, and the patient experience.

Incidence & Prevalence

According to the National Cancer Institute, approximately 24,000 adults were diagnosed with a primary malignant brain tumor in 2020.¹ Metastatic brain tumors are significantly more common and will affect as many as 200,000 people in the U.S. and the incidence of brain metastasis in patients. Annually, approximately 13,000 individuals in the U.S. will require surgery for pituitary tumors; fewer than 1% of these are malignant.² The incidence of glioblastoma is 1 in 33,000.

Overview

The Brain Tumor Program at the Pickup Family Neurosciences Institute provides the entire continuum of care for all patients with primary and metastatic brain tumors in partnership with the Hoag Family Cancer Institute for seamless care.

The Brain Tumor Program aligns neurosurgeons; ear, nose, and throat (ENT) surgeons; neurologists; neuro-ophthalmologists; neuro-oncologists; radiation oncologists

Brain Tumor Program: 949-722-6237
and physicists; neuroradiologists; pathologists; geneticists; and endocrinologists in a truly comprehensive, multidisciplinary approach with a weekly Neuro-Oncology Tumor Board review to provide consensus on the best evidence-based care.

The Pickup Family Neurosciences Institute is truly at the forefront of technological advances in the areas of neurodiagnostics, non-invasive stereotactic radiosurgery, and minimally invasive brain surgery. Our unwavering commitment to providing the best care possible to our patients has led to the acquisition of the county’s only positron emission tomography-magnetic resonance imaging (PET-MRI) scanner, the unique combination of Visualase Laser Ablation, Gamma Knife, and ViewRay instruments and the use of virtual reality-guided “scalpel free” brain surgery. Our subspecialized neuro-oncologists and nurse practitioners partner with our oncologists and clinical nurse navigator to oversee the trajectory and continuum of care for our patients. We offer the latest clinical research trials overseen by our dedicated neuro-oncologists to assist in managing the wide spectrum of all malignancies, including the deadliest of primary brain tumors, glioblastoma.

Our top priority is to apply truly compassionate care, clinical excellence, and creative intelligence for one of the most daunting health challenges an individual and their family may face: care beyond compare.

2 Cancer.net, The American Society of Clinical Oncology (ASCO).

Diagnostics

Hoag subspecialized pathologists provide full expertise for intraoperative evaluation and diagnosis of all tumors. Additionally, Hoag is one of the first facilities in the country to implement a new intraoperative laser Raman spectrum analysis technology (from Invenio Imaging) for rapid intraoperative diagnosis of brain tumors, shortening surgery and optimizing full resection. Tumor molecular genomic profiling is completed on all patients with gliomas and other cancer diagnoses to help clinicians select the most precise and patient-specific targeted treatment. All cases with their bioinformatics analyses are presented for discussion at the weekly Neuro-Oncology Tumor Board for multidisciplinary collaborative choice of best treatment options.

The full range of advanced imaging options are available to patients with brain, pituitary, and skull base tumors through Hoag Radiology and Interventional Radiology. Hoag is the first hospital on the West Coast to routinely offer PET-MRI to patients. The revolutionary hybrid imaging technique is utilized for patients with brain tumors who have had surgery or radiation to evaluate and differentiate between necrosis of tumor versus recurrent disease. PET-MRI offers significant advantages over MRI alone in the differentiation of tumor recurrence and post-therapy changes. Functional MRI, blood-flow analysis, and spectroscopy is also available to help guide resection, with augmented reality precision neurosurgical preoperative and intraoperative guidance.

Team

Within the Pickup Family Neurosciences Institute, the Brain Tumor Program is led by Medical Director Christopher Duma, MD, FACS, a board-certified neurosurgeon fellowship trained in stereotactic and functional neurosurgery and a fellow of the American College of Surgeons. From within the Hoag Family Cancer Institute, Simon Khagi, MD, FACP, a triple-board certified medical neuro-oncologist, leads the Neuro-Oncology Program. Robert Louis, MD, FAANS, who is board-certified in neurosurgery and fellowship trained in complex cranial surgery and minimally invasive skull base and pituitary surgery, leads Hoag’s Pituitary & Skull Base Surgery Program. Vivek Mehta, MD, a fellowship-trained neurosurgeon specializing in the surgical treatment of complex brain tumors, performs minimally invasive laser ablation for primary and metastatic brain tumors and leads the Epilepsy Program for tumors and other lesions that cause seizures.

Treatment

SURGERY

Hoag’s neurosurgeons employ AR image-guided preoperative surgical planning as well as intraoperative navigational equipment to minimize impact on parts of the brain critical for motor, sensory, speech, visual, and memory functions. The team also specializes in awake craniotomy and functional cortical and subcortical mapping.

Whenever possible, Hoag’s neurosurgeons use minimally invasive surgical techniques employing some of the most advanced technology available including biomedical electronics, sophisticated neuronavigation systems, neuroendoscopic equipment and microsurgical tools.

The majority of pituitary and skull base surgeries at Hoag are done through tiny incisions or utilizing naturally occurring orifices such as the nostrils.
MINIMALLY INVASIVE LASER ABLATION

Minimally invasive laser ablation is now FDA approved for treatment of brain tumors and radiation necrosis. Our neurosurgeons have been offering this approach since 2015 for patients with tumors deep in the brain or for patients who are not good candidates for long, invasive open brain surgery. This minimally invasive approach is done through an approximately 2 mm incision. A small laser fiber about the thickness of a guitar string cord is passed into the tumor and, using real-time MRI guidance, brain tumors can be internally ablated (by heat) instantly. This FDA-approved approach for brain tumors offers optimal safety and efficacy for selected patients.

NEURO-ONCOLOGY CLINIC

The Hoag Neuro-Oncology Clinic provides state-of-the-art treatment for patients with cancers of the brain and central nervous system. Renowned translational scientist and clinician Dr. Simon Khagi, MD, who recently arrived from Dartmouth, is Hoag’s fellowship-trained neuro-oncologist, providing expert care for patients who are diagnosed with malignant brain tumors, brain metastases, leptomeningeal carcinomatosis, and monitoring patients for any neurologic complications from cancer or cancer therapies. The latest clinical research trials are vetted through this practice with multiple new studies in the queue to open in 2024.

TUMOR BOARD

The Hoag Neuro-Oncology Tumor Board is designed for all practitioners to present and discuss patient cases and results in a consensus for optimal, evidence-based care. The Board is attended by neurosurgeons, ENT surgeons, neurologists, neuro-ophthalmologists, neuro-oncologists, radiation oncologists, neuro-radiologists, pathologists, endocrinologists, and the specialized nurse navigator.

The Neuro-Oncology Tumor Board is held weekly in person and via video conferencing at the Hoag Family Cancer Institute in Newport Beach. In addition to in-person meetings we have moved our Tumor Board virtually for all multidisciplinary staff to attend.

To submit a case for the Neuro-Oncology Tumor Board, contact Brain, Skull Base & Pituitary Tumors Nurse Navigator Jennifer Lozano, BSN, RN at 949-764-6656 or Jennifer.Lozano@hoag.org, or Rosana Figueroa at 949-764-7044 or TumorBoard@hoag.org.
RADIOSURGERY AND RADIATION ONCOLOGY

Hoag offers many radiosurgery options for the treatment of brain tumors – Gamma Knife radiosurgery, TomoTherapy®, and ViewRay – ensuring each patient receives the most appropriate and effective treatment for their unique case. Hoag’s Radiation Oncology team includes Drs. Brian Kim, Kevin Lin, Peter Chen, Craig Cox, and Shane Lloyd.

Hoag is one of the country’s few sites to offer the ViewRay MRIdian system. This combination of an MRI scanner and a linear accelerator (LINAC) radiation machine is the first to offer MR-guided adaptive radiotherapy. In this new paradigm of treatment, tumors and surrounding soft tissue structures can be visualized with full magnetic resonance (MR) clarity, including small but critical central nervous system (CNS) structures such as the optic chiasm. Next, the radiation plan can be adapted to match the exact conditions of the patient that day. Finally, a patient’s internal anatomy can be monitored during treatment in real time with MRI. These unique capabilities allow for the delivery of radiation therapy with unprecedented precision and safety, and are particularly suited for focused, high-dose treatment forms of stereotactic brain radiation.

Hoag’s Gamma Knife® Perfexion is the most advanced radiosurgical device available, targeting brain tumors with half a millimeter accuracy. An expanded and specialized treatment area in Hoag’s Marilyn Herbert Hausman Advanced Technology Pavilion optimizes the patient experience. Hoag’s Gamma Knife team is led by Dr. Christopher Duma, who began the program at Hoag in 1997. After 26 years and 6,000 patients treated, this represents one of the largest volumes/experiences in the world.

Clinical Research

Through Hoag Family Cancer Institute’s Developmental Therapeutics and Oncology Research Program, led by Carlos Becerra, MD, patients have access to clinical trials not typically offered at community hospitals. Simon Khagi, MD will be the principal investigator of several new neuro-oncology clinical trials that are slated to open in 2024.

For a list of available clinical trials at Hoag, go to hoag.org/clinicaltrials.

Screening & High-Risk Services

It is estimated that up to 10% of all brain tumors (malignant and benign) occur because of a hereditary syndrome. In contrast to other hereditary cancer conditions, those involving brain tumors/brain cancer almost always involve more than a single tumor diagnosis. Conditions involving hereditary brain tumors include: Li Fraumeni syndrome, Lynch syndrome, familial adenomatous polyposis, neurofibromatosis types 1 and 2, Cowden syndrome, Von Hippel-Lindau syndrome, and tuberous sclerosis. Hoag Family Cancer Institute’s Hereditary Cancer Program offers genetic counseling and genetic testing.

Support & Education

In a time of inconsistency post-pandemic, we have been able to provide consistency to our patients and community members through our virtual support group offerings. Hoag Family Cancer Institute’s range of integrated cancer support services helps patients address the emotional, physical, spiritual, social and financial challenges that accompany a cancer diagnosis. Hoag’s Brain Tumor Support Group offers education and support for anyone diagnosed with a primary brain tumor or metastatic disease. The Brain Tumor Support Group is led by the program’s specialized nurse navigator, Jennifer Lozano, BSN, RN, along with licensed social worker Josephina Kim, MSW; together they optimize support for both patients and their families. The program’s clinical nurse navigator is a vital member of the team, providing guidance and navigation to patients with brain, pituitary, and skull base tumors throughout their treatment.

The Brain Tumor Support Group meets virtually on the third Wednesday of each month from 3 to 4 p.m. via Zoom. This is both an educational and support group for anyone diagnosed with a primary brain tumor or metastatic disease. Family and friends are welcome to join us. For additional information, call 949-7-CANCER (722-6237).

Brain tumor educational classes are also provided quarterly by Jennifer Lozano to our Hoag nursing staff to keep them up-to-date and well trained in the areas involving brain tumors.
Skull Base & Pituitary Tumor Program

Overview

Founded in 2014, the Skull Base & Pituitary Tumor Program of Pickup Family Neurosciences Institute (PFNI) entered its 10th year and, during its first decade, the team has treated more than 1,000 patients through minimally invasive surgical resection. This multidisciplinary program aligns neurosurgeons, otolaryngologists, radiation oncologists, neuro-ophthalmologists, neuroradiologists, and endocrinologists around the care of patients with pituitary tumors and other neoplasms of the intricate skull base region. The latter includes meningiomas, craniopharyngiomas, schwannomas, chordomas, dermoid and epidermoid tumors, and other invasive tumors that affect this portion of the anatomy. While most tumors in this region are benign, they often cause symptoms and are technically challenging to remove due to involvement of critical structures.

The program focuses on combining the latest advanced and emerging technology with minimally invasive techniques to offer the best possible outcomes to patients with these rare and complex tumors. The majority of these surgeries are done through tiny incisions or using naturally occurring orifices such as the nostrils.

While previously the majority of these patients would have needed to leave Orange County to seek treatment, the advanced, subspecialty care provided by this team delivers on Hoag's mission to provide world-class care right here in Newport Beach. The volume speaks to the demand for this subspecialty of minimally invasive neurosurgery in Orange County, and the trust that patients with these tumors have placed in our hands. While case volumes by themselves are impressive, what matters most is the effect on patient outcomes. Numerous studies have demonstrated that surgeons and centers with more experience and which perform higher numbers of these complex cases have higher success rates and lower rates of complications. Indeed, a significant minority of the cases treated in our program are repeat surgeries for inadequate treatment from other facilities.

As the only Center of Excellence for Pituitary Surgery in Orange County, the 10 years of surgical outcome data, including remission and complication rates, are meeting or exceeding nationally established standards for pituitary surgery. Accordingly, Hoag has become a quaternary referral center for pituitary and skull base tumors.

Technological Advances – Precision Neurosurgery

Since 2015, minimally invasive neurosurgery has been guided using the Surgical Navigation Advanced Platform (SNAP). This giant leap forward for planning and performing brain surgery is a system developed and based on flight simulator technology for F-16 fighter jets. It allows for virtual reality (VR) 360-degree reconstruction, planning, rehearsal, and navigation for complex neurosurgical procedures. By performing a VR simulation on each case, our surgeons are literally able to practice an operation in 3D before ever picking up the scalpel.

The tool optimizes minimally invasive approaches, with smaller incisions, fewer complications, and better overall outcomes. In fact, several studies have demonstrated superior outcomes with surgeons who first rehearse using VR. It has also been shown that preoperative simulation can lead to a change in the surgical plan nearly 25% of the time. In the five years since surgical theater was introduced, more
than 2,000 neurosurgical cases have been performed at PFNI using this innovative technology. Owe to the profound success of this technology in neurosurgery, in 2019 Hoag expanded the availability to all surgical specialties in an enterprisewide deployment. In modern practice, 360-degree VR models are used throughout the patient care continuum, from preoperative planning and patient engagement to surgical rehearsal to intraoperative 3D navigation.

In 2019, the availability of augmented reality (AR) expanded beyond endoscopic surgery to include microscopic surgery as well. With the development of SyncAR, Hoag became the first in the world to pilot and deploy neurosurgical AR with advanced ocular injection. This technology represents a significant leap forward over traditional navigation systems as it provides constant feedback on relevant anatomy and critical structures, while allowing the surgeon to maintain focus on the operative field.

This provides the surgeon a “heads-up display” and allows for pinpoint accuracy and improved visualization of critical structures. Dr. Robert Louis and the skull base team have been at the forefront of the development and implementation of VR and AR guidance for neurosurgery and beyond.

Team

The Skull Base & Pituitary Tumor Program is led by Robert Louis, MD, FAANS, the Empower360 Endowed Chair in Skull Base and Minimally Invasive Neurosurgery. Dr. Louis is an internationally renowned expert in endoscopic and minimally invasive treatment of benign and malignant brain tumors, sellar, parasellar and skull base tumors. Dr. Louis’ unique background includes two fellowships in Complex Cranial Surgery and Minimally Invasive Skull Base and Pituitary Surgery.

Timothy Kelley, MD, is the ear, nose, and throat (ENT) surgeon and partners with Dr. Louis for many of these complex cases. His particular expertise lies in endoscopic sinus and skull base surgery.

The multidisciplinary team also includes endocrinologists, neuroradiologists, neuro-ophthalmologists, neurologists, pathologists, and neuro-oncologists.

The nurse navigator for the program is Jennifer Lozano, BSN, RN, who helps offer support and guidance through the complex and often confusing journey from diagnosis to cure.

“The technology of the future is now at Hoag.”

Hoag is not only visualizing the future of medicine, but quite literally shaping it.

Experiential Reality Center at Hoag

Hoag’s PFNI is not only visualizing the future of medicine, but quite literally shaping it. With the launch of the Center for Advanced Visualization and Immersive Therapeutics, Hoag is researching, developing – and now offering patients access to – Experiential Reality (XR) technology, a field that includes VR, AR, and mixed reality. The center, located within Hoag’s PFNI Newport Beach campus, takes this leadership position to new heights. The center includes three dedicated spaces to research, develop, and implement XR. In the Innovation Lab, doctors and engineers work side-by-side to develop the newest XR technology. The Therapy Treatment Room is open to all Hoag physicians, ranging from neurologists to psychologists to cardiologists, whose patients may benefit from XR treatments.
The third space in our program is the Experiential Theater, in which patients and their family members can “fly-through” a doctor’s surgical plan to see exactly what the surgeon is planning before undergoing a procedure. This helps patients and their families better understand what they will experience. “Patients who have preoperative ‘fly-throughs’ have not only better patient experiences, but better patient reported outcomes because of the lower risk of anxiety and more thorough preparation,” Dr. Louis said. “This solves a longstanding problem within medicine, namely that patients do not understand traditional medical images.” The theater is also used for clinical training, community education and multidisciplinary team collaboration on cases to optimize patient outcomes.

Hoag physicians have been working with engineers to enhance and develop several XR innovations. Hoag’s surgeons are pioneering 3D modeling and VR tools to “rehearse” complex surgeries, not only in the brain but other organs as well, to reduce the time and risk associated with the procedures. In recent years, Hoag introduced expectant mothers to their developing babies using NurtureVR, a VR platform that pregnant women can use to watch their babies grow, receive prenatal education, and manage their pain.
Surgical Outcomes

Surgical outcomes are composed of pituitary adenoma, craniopharyngioma, Rathke’s cleft cysts, meningioma, schwannoma, metastases, epidermoid, dermoid, hemangioma, hemangioblastoma, sinonasal undifferentiated carcinoma (SNUC) and olfactory neuroblastoma.

Conference Presentations

XR in Brain Surgery: Solving Current Problems
AWE USA 2021 Santa Clara, CA
November 11, 2021

Solving Problems in Neurosurgery
Israeli Neurosurgical Society Meeting.
May 19, 2021. Israel.

Host Live Web Event
Hoag Advances in Clinical Virtual Reality Conference
October 1, 2021

Can VR/AR Be the Ultimate Precision Tool in Brain Surgery?
Interface Summit Web Event from INTERFACE Health
December 2021

Enhanced Navigation with Synchronized Augmented Reality Platform for Microsurgical Tumor Resection Procedures
CNS/AANS Tumor Section Symposium, 2021

Journal Publications


Spine Center Programs

Overview

Hoag Spine Center (Hoag Spine Institute, as of January 2024) hosts a multidisciplinary team that includes pain-management and acute-rehabilitation specialists, physical and occupational therapists, dieticians, and preeminent board-certified neurosurgeons who share a treatment philosophy focused on a conservative, preventative approach. These nationally renowned specialists provide the latest in holistic and inclusive care-management options to treat a range of spinal conditions including low back pain, spinal stenosis, spinal deformities and spinal tumors, as well as scoliosis in adults. The team emphasizes obtaining an accurate diagnosis, with subspecialized neuroradiologists armed with the most advanced magnetic resonance imaging (MRI) and computed tomography (CT) techniques. Conservative measures are prioritized before approaching surgical options.

Should surgery be required, the team utilizes an evidence-based, comprehensive approach to prepare patients in the preoperative phase, and manage their inpatient and postoperative care with the goal of providing an enhanced patient experience and optimized patient outcomes. Our Hoag Spine Center neurosurgeons specialize in the latest minimally invasive techniques, which leads to more precise surgeries, lower infection rates, and less blood loss, while avoiding unnecessary damage to healthy surrounding tissues.

Hoag’s overall neurosurgery program was ranked high performing by U.S. News & World Report 2023. Our neurosurgeons collaborate and incorporate innovative spine diagnostic technology and may use surgical navigation or robotics to provide the best possible outcomes for patients.

“\text{It was clear that Dr. Ozgur was in it to serve people, and that was really important to me. I felt like this is someone who cared about others and was going to take every case, including mine, at an individual personal level.}”

\textit{– Eric Noble, patient}

Innovation and Technology

Our operating suite is outfitted with augmented reality (AR) precision guidance. Hoag recently became the first hospital on the West Coast to offer an advanced, minimally invasive robotic navigation platform for spine surgery. The Mazor X Stealth™ combines 3D preoperative planning tools and analytics with intraoperative trajectory precision to provide surgeons with comprehensive information on the best approach and visualization of the target before the surgery starts. This new technology allows surgeons ultimate precision and efficiency, reducing the need for X-rays and minimizing pain and recovery time after surgery.

Also, our innovative spine team performed the first spinal fusion surgery utilizing the recently FDA-cleared augmented reality (SyncAR®) surgical navigator for spine, co-developed

Hoag Spine Center: 949-764-1411
by neurosurgeons from Hoag’s Pickup Family Neurosciences Institute and medical visualization platform leader Surgical Theater, the only one of its kind in Orange County. SyncAR for Spine utilizes 3D virtual reconstructions of CT and MRI images to enable detailed visualization of anatomic structures, as well as the surgical tools and hardware. The data-rich hologram produces a reconstruction of the spine to assist surgeons in making detailed, preplanned surgical decisions down to the millimeter. Using multiple displays within the AR goggles, 3D real-time feedback maximizes the accuracy of surgical precision and hardware placement.

**Clinical Excellence**

Our spine surgical cases continued to maintain pre-pandemic volumes in 2023, with over 800 surgeries performed. We have also utilized our Hoag Irvine Ambulatory Surgery Center to expand options for those who meet the criteria for outpatient cervical and lumbar surgery. We saw continued growth in patients seeking our care with a 200% increase in calls and emails. These were triaged by our spine navigator to ensure each patient received the proper guidance and treatment.

Hoag Spine Center is advancing the care and management of back pain patients in Orange County with the addition of Charles De Mesa, DO, MPH, who serves as Chief of Interventional Pain, Physical Medicine & Rehabilitation at the Hoag Spine Center. Dr. De Mesa joins the multidisciplinary, specialized team of spine care experts at Hoag to lead and develop the outpatient interventional pain management and rehabilitation services.

“Dr. De Mesa brings his leadership qualities and commitment to education to empower patients as they navigate their pain care,” said Burak Ozgur, MD, director of Hoag’s Spine Center. “His role will expand Hoag’s commitment to comprehensive management and continuity of care for patients contending with pain.”

The quality of our program is tracked by ongoing patient-reported outcomes and detailed analysis of readmissions, lengths of stay, and complications. This set of metrics has shown that our spine surgeons decreased our patients’ disabilities and pain when comparing preoperative to postoperative results related to spine surgeries. While the Hoag Spine Center continues to grow by 17% since 2022, the readmission rate and length of stay has reduced. Patient outcomes resulted in a decrease in disability and pain, and an increase in physical function, related to our lumbar spine surgeries.
Patient recruits spine surgeon to join her in Huntington Beach race

by Matt Szabo, staff writer – May 11, 2023

Beth Sanden has completed marathons on all seven continents.
And the North Pole. And Antarctica.
But her role as a coach can be just as rewarding.
In fact, she has convinced her spine surgeon to walk the Huntington Beach Doggy Dash Cause for Paws 5K with her on Saturday morning.

Not only will Dr. Burak Ozgur, a neurosurgeon and director of the Hoag Spine Center, be out there on the course, but members of his office staff – Yulia Korol, Vernice Stern, Janneinne Le – are participating too.

“She inspired our whole office to do it,” Ozgur said with a smile.
The idea started when Sanden, who lives in San Clemente, came in for her six-month checkup following spinal surgery.

“Yulia, his wonderful front-office gal said, ‘Oh my gosh, I didn’t know you did marathons,’” Sanden recalled. “She had always wanted to do a marathon. And I said, ‘Well, you might want to start with a 5K first and kind of gradually get into it.’”

Marathoner Beth Sanden, who lives in San Clemente, at the Hoag Spine Center in Irvine.

Sanden is plenty accustomed to building up to things ever since her cycling accident. When she was in a 50-mile bike race in 2002, she took a spill on some broken asphalt in Fallbrook.

“My bike hit the broken asphalt, and my bike flipped and went into a ravine,” she said. “I flipped over and onto my back, between my shoulder blades, and landed on the asphalt. I shattered T6-T7 and became a paraplegic.”

Sanden, now 68, is what’s known as an incomplete paraplegic.
After surgery, 3½ months in the hospital and months more spent in physical therapy, the results were mixed.

“My right leg came back, and my left leg didn’t,” she said. “To walk, I swing the left leg like a pendulum on a clock, and go with the right leg that leads.”

Sanden and her husband Burt began homeschooling their two daughters, who were preteens at the time, and Beth focused on parenting. But the competitive drive never left.

After a second spinal cord surgery to take the rods out, Sanden said friends convinced her to combine to do a half-Ironman, with San Diego-based nonprofit Challenged Athletes Foundation. She swam 1.2 miles after learning how to swim with just her arms, not her legs.
Through grants, she was literally back in the saddle after procuring a race chair and a hand cycle.

“That was the beginning of, ‘Let’s take off and just go,’” she said. “That started me doing triathlons again, and some marathons.”

But a bad car accident two years ago – Sanden’s vehicle was T-boned – led to another serious back injury and put her back in a wheelchair.

Not satisfied with her diagnosis and constantly in pain, Sanden came to see Ozgur at his Irvine office for a third opinion. He understood the risks but wanted to start with a clean slate.

“Was this a reinjury of the same area, or is this something new?,” he said. “That’s probably what scares away most other surgeons. If somebody has had a significant spinal cord injury and two surgeries in that area, the fear is that it’s been reignited, that’s been injured again. It makes it very complicated to reconsider surgery in that area. There can be a lot of scar tissue and cysts that develop. That area is very sensitive.”

Comprehensive Approach

We share a treatment philosophy focused on a conservative, preventative approach. The following are the resources we currently offer within the Hoag Spine Center. The goal of utilizing these services is to explore all conservative treatment options before resorting to surgery as well as assure an effective surgical recovery in patients requiring a surgical procedure.

NEUROSURGERY

The neurosurgeons at Hoag Spine Center are at the forefront of providing world-class care and restoration not only for Orange County but also beyond. When surgical intervention becomes necessary, our highly specialized neurosurgeons employ the latest surgical technologies and minimally invasive techniques to enhance outcomes and expedite recovery.

As the top choice for spine surgery and treatment in Orange County, our Spine Center provides the lowest rate of complications and the shortest length of stay when recovering from surgery.

NUTRITION

We offer nutrition services for patients pre- and post-op to optimize patient outcomes and promote better wound healing, assuring patient satisfaction. Hoag also offers excellent diabetic educators and an education center for patients with poorly controlled diabetes. Additionally, Hoag offers a well-regarded bariatric program that can help with weight loss and provide the option for weight-loss surgery (for appropriately selected patients), as weight control impacts back pain and health is improved through weight loss and proper nutrition.
ADVANCED IMAGING AND DIAGNOSTICS

Hoag Spine Center has achieved a significant milestone by becoming the first in Orange County to embrace the EOSedge System. This cutting-edge technology integrates multiple imaging techniques to enhance the diagnosis and treatment of back pain in adults. The EOS imaging technology incorporates X-ray, low-dose radiation modulation, and an innovative open cabin design to capture high-resolution images. This enables physicians to make well-informed diagnoses and formulate personalized treatment plans. The center’s investment in this advanced technology underscores its commitment to comprehending and addressing the root causes of patients’ conditions.

EOSedge introduces the innovative Flex Dose™ technology, which modulates the radiation dose along the patient’s body. This feature builds upon EOS imaging’s existing low dose and micro dose technologies, providing reduced radiation exposure to minimize long-term impact. The EOSedge system utilizes photon counting detection technology to deliver high-resolution X-ray images for the diagnosis and evaluation of musculoskeletal conditions. It stands out as the first X-ray-based system to incorporate this cutting edge technology.

INTERVENTIONAL PAIN MANAGEMENT

Hoag currently has a multidisciplinary Chronic Pain & Neuropathy Program intersecting with the Hoag Spine Center, providing patients who suffer from chronic back pain with alternative methods such as nerve stimulators and epidural injections. This provides patients further alternatives to surgery.

PHYSICAL MEDICINE AND REHAB SPECIALISTS

The Hoag Spine Center refers patients to physicians specializing in physical medicine and rehabilitation, if needed, and other experts who provide comprehensive spine-wellness services including acupuncture, chiropractic, and alternative minimally invasive methods such as nerve blocks, epidural, and trigger-point injections. This spectrum of options allows patients a holistic approach to managing spinal pain.
WHEN SURGERY IS REQUIRED, PATIENT-CENTERED ANESTHESIA

For patients who have a complex medical history, the program provides an anesthesiologist for thorough preoperative evaluations. The doctor will weigh the risks and benefits of different options for anesthesia and make the appropriate recommendations. Such preoperative engagement ensures that the surgery goes according to plan, with minimal complications and cancellations.

PSYCHIATRY

There is growing awareness of how mental health affects all aspects of care, including recovery and healing. We offer psychiatric consultation before surgery to assess the patient’s emotional well-being. Chronic pain overlaps greatly with mental health issues. Addressing this preoperatively can contribute to good outcomes and allows the surgeon to see if the patient is emotionally equipped to handle the surgery process and continue to do well postoperatively.

Educational Opportunities

Our program leaders not only focus on patient care, but also on the education and development of hospital staff directly involved in patient care. The Hoag Spine Center offers educational opportunities for healthcare staff within Hoag that cover various topics related to the spine.

We conduct regular spine case conferences and spine grand rounds driving multidisciplinary, integrative collaboration to drive patient quality and outcomes. Spine case conferences are learning opportunities for nurses, advanced practice providers (APPs), physicians, neurosurgeons and physical therapists. Multidisciplinary discussions focused on leveraging best practices through the newly established Hoag Spine Journal Club present opportunities to further advance care and drive future research. These educational opportunities drive collaboration and offer continuing medical education (CME) and continuing education unit (CEU) credits.

“The goal of utilizing these services is to explore any conservative treatment options before resorting to surgery whenever possible, as well as assure an effective surgical recovery in patients requiring a surgical procedure.”

– Burak Ozgur, MD, FAANS, Director, Hoag Spine Center
Research and Advancing Spine Care

The physicians at the Hoag Spine Center are at the forefront of their field, actively leading and educating on both national and international platforms. Their commitment to advancing knowledge and expertise is evident through their prolific contributions, including the publication of groundbreaking research and academic books.

These dedicated physicians engage in sharing their insights and findings to enrich the medical community’s understanding of spine-related issues. Through their publications, they contribute not only to the collective knowledge within the field but also play a crucial role in shaping the future of spine care on a global scale. The Hoag Spine Center’s physicians are not only practitioners but also educators, striving to elevate the standards of spine health care through their invaluable contributions to medical literature.

“Dr. Jankowski really understands and promotes the philosophy of patient-centered care. His confidence is very reassuring. I am extremely grateful to Dr. Jankowski and his medical assistant for their outstanding patient care.”

– Melanie Loscutov, patient

Team

NEUROSURGEONS
Dr. Burak Ozgur
Director, Hoag Spine Center
Dr. Adam Kanter
Chief of Neurosurgery, Hoag Specialty Clinic
Dr. Pawel Jankowski
Dr. Robert Louis
Dr. Vivek Mehta

PHYSICAL MEDICINE AND REHABILITATION PHYSICIANS
Dr. Keyvan Esmaeili
Dr. Christopher Marker

PAIN MANAGEMENT PHYSICIANS
Dr. Charles De Mesa
Dr. Aaron Przybysz
Dr. Shawn Zardouz

NEUROSURGERY ADVANCED PRACTICE PROVIDERS
Carly Bower, NP
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Vanessa Stowasser, NP
Kelly Watkins, NP

SPINE CARE NAVIGATORS
Lauren Kim, MSN, NP-C, RN
Alissa Matthews

EXECUTIVE DIRECTOR
Kelly Reynolds, MHA

PHYSICAL THERAPY
Stacie Yamasaki, DPT
Movement Disorders/Parkinson’s Program

Overview

As part of the Pickup Family Neurosciences Institute, the Salsbury Family Movement Disorders Program has not only continued to focus on providing expert, compassionate, and consistent care, but has expanded in terms of the services Hoag has been able to provide. Since its inception in 1994, the program has grown dramatically with the generous philanthropic donation of the Salsbury family and other members of the community.

The program has continued to evolve to meet the ever-growing patient population throughout Orange County. In 2023, Hoag’s Movement Disorders Clinic in Newport Beach served 4,392 patients. Additionally, in 2023, 1,062 new patients were cared for and diagnosed in the clinic. Our movement disorders physicians continue to provide care in clinics in Aliso Viejo, Huntington Beach, Irvine, Newport Beach, and Tustin, as well as through telemedicine. The program offers care and treatment of all patients with movement disorders, the most predominant of these diseases being Parkinson’s disease (PD). Patients diagnosed with dystonia, essential tremor, progressive supra-nuclear palsy, multiple system atrophy, corticobasal degeneration, Lewy body, Huntington’s disease, cerebellar ataxia, and various gait disorders are also cared for by the interdisciplinary team.

The Movement Disorders Program offers an interdisciplinary approach to disease management through the collaboration of team members, processes, and many adjunct services provided by Hoag. The focus remains on the program’s ability to provide expert, specialized patient evaluation, holistic care, education, advanced medical and surgical therapy, nurse and social worker support, and clinical research. The program offers four fellowship-trained movement disorder neurologists, two functionally trained neurosurgeons, physician assistants, nurse practitioners, nurse navigation, neuropsychology services, and neuro-rehabilitation services. Additional services and treatment options offered at Hoag which augment and compliment the care our movement disorders patients receive include physical, occupational, and speech therapy, Parkinson’s exercise classes, driver rehabilitation program, daTscan and other specialized imaging, deep brain stimulation surgery, neuropsychiatry, acute rehabilitation services, Duopa™ therapy, nutritional consultations, and a number of support groups.

Managing chronic diseases such as movement disorders translates to care that needs to be accessible, consistent, and meaningful. All our providers and the patients we serve develop long-term relationships. The program’s goal is to ensure that the outcomes of the comprehensive care provided assist patients as they achieve their highest level of independence, feel supported, and maintain a good quality of life.

In keeping with the idea of empowering patients to maintain well-being and providing them with the necessary tools, Hoag Neurosciences introduced Joey Nesler, the first full-time Licensed Clinical Social Worker (LCSW) in the neuroscience outpatient setting. This has ensured that patients and their families receive help with psychosocial issues, mental health and crisis intervention, financial resource referrals, navigation of insurance systems and disability insurance, care placement, and caregiving. The LCSW also attends to the needs of patients served in the Neuroimmunology, Cognition and Epilepsy Programs. The addition of the LCSW also allowed for expansion and growth in support groups. The Parkinson’s patient support group and care partners support group expanded. These groups are facilitated by both the nurse navigator and the LCSW, who are able to advise in line with their expertise.

In 2023, the Movement Disorders Program added a support group called Tuesdays at the Museum. This activity, facilitated by the social worker and nurse navigator,
provides patients with a monthly Parkinson’s support group that takes patients out of their homes and offers social support and creative distraction from stress and disease. The Movement Disorders Program, however, is most proud of having launched Painting with Parkinson’s. This group was created after reviewing the research, which showed that painting and art improve symptoms of PD, including tremor, anxiety, visuospatial deficits, and coordination. The resounding success culminated in an exhibition of the patients’ artwork at a gallery night and gala hosted by Hoag philanthropy.

See Support Groups section for additional details.

Incidence and Prevalence

PD continues to be the second most common neurodegenerative disorder. Each year across California and the United States the incidence is rising. In Orange County alone, approximately 10,000 people are estimated to be diagnosed with PD. Most patients diagnosed with PD or a movement disorder are diagnosed later in life. As the population of older adults in the United States continues to expand rapidly, so too does the number of older adults diagnosed with PD. An estimated 1.2 million people in the U.S. could be living with PD by 2030, and the number of younger adults diagnosed with PD also continues to rise. Approximately 20 percent to 40 percent of patients with PD also have dementia. It remains imperative that the program continue to provide access to specialized care and expand to meet the demands of these growing populations in an effort to mitigate the effects of disease burden.

Deep Brain Stimulation Surgery

The Movement Disorders Program at Hoag has a robust surgical component. Dr. Christopher Duma first brought deep brain stimulation (DBS) surgery to Hoag over 15 years ago. Both Dr. Duma and Dr. Alexander Taghva are trained in functional neurosurgery. DBS surgery is used to treat symptoms of PD, essential tremor, and dystonia. The program has developed a comprehensive protocol for patients undergoing DBS surgery. This includes neurology consultation, Unified Parkinson Disease Rating Scale (UPDRS) evaluation and filming off and on medications, and extensive neuropsychological testing. Additionally, the multidisciplinary team meets to discuss patient candidacy and plan of care.

Currently, DBS surgery offers the best procedural treatment outcomes for patients. While focused ultrasound promises help to patients with essential tremor, DBS surgery treats patients with essential tremor and PD with well documented successful outcomes. DBS also continues to evolve with the latest advancements looking to improve outcomes. Both asleep and awake surgery options are offered at Hoag. In 2023, a total of 30 patients had DBS surgery. The program partners with many neurologists within the community who send their patients to Hoag for thorough workup and DBS surgery. DBS surgery patients are evaluated at 6 and 12 months with repeat UPDRS testing.

In addition to DBS surgery, Hoag can offer patients Duopa Therapy™. Duopa Therapy in select patients provides a continuous dose of medication to the patient via an external medication pump and a tube inserted into the jejunum.
Community Events

Hoag sponsored and participated in two prominent community events. The SoCal Ride for Parkinson’s, which saw approximately 450 participants and raised $100,000 toward Parkinson’s research through the Michael J. Fox Foundation for Parkinson’s Research, was held at Hoag Irvine. Hoag had a team of riders supporting this worthy cause. Hoag sponsored and hosted this popular event organized by Mr. Robert Lear.

The Parkinson’s Disease Foundation Moving Day attracts patients, families, and community players. The event provided an opportunity to showcase Hoag’s Movement Disorders program. Hoag sponsored this event and hosted a table where the Hoag physical therapists were on hand to advise and demonstrate exercises.

After years of Covid-19 restrictions, Hoag was once again able to host a PD patient symposium. This event was held at the Oasis Senior Center and attended by over 300 people, vendors, and community players. The event was also uploaded to YouTube to provide an ongoing source of information for patients worldwide.

In an ongoing effort to provide patient education to the patients served, Hoag also partnered with the Parkinson’s and Movement Disorders Alliance, hosting an educational seminar at Hoag. Additionally, our Hoag neurologists presented online and in person for the Parkinson’s Foundation.
Parkinson’s disease patients at Hoag show their artistic side

by Matt Szabo

Living with intention is a big thing for those who suffer from Parkinson’s disease.

As automatic movements become more impaired, intentional movements become more critical.

A group of several Parkinson’s patients at Hoag’s Pickup Family Neurosciences Institute have been attending the “Painting With Parkinson’s” program since it launched last July.

The patients got to celebrate some of the fruits of their labor on Wednesday, as Hoag held a gallery night on campus in Newport Beach to showcase some of their artwork.

“They surprise me every time,” said Joey Nesler, a medical clinical social worker for the institute who’s the group instructor. “I think that they’re amazing. They’re fearless. Not all of them have artistic training, but they just jump in. I ask them what they want to do often, and one of the responses was, ‘We want to do self-portraits.’ That’s one of the hardest things to do.”

Nesler leads the 60- to 90-minute class at the Melinda Hoag Smith Center for Healthy Living once a month. The course is based on the work of Nancy Tingey, an Australian who founded a Parkinson’s painting program in 1994 to support her husband who had the neurodegenerative disorder.

Nesler said she was approached by Belinda Stewart-Burger, the nursing navigator for movement disorders at Hoag, about starting a similar program.

“I really wasn’t sure how that was going to work, but I do know about the healing power of making art,” Nesler said. “Based on the Australian curriculum we keep it small, because Parkinson’s patients do not do well in a crowded or chaotic environment. Keeping it a small group of calm vibes is really the key to it.”

Parkinson’s symptoms have been found to improve with art, according to the Parkinson’s Foundation. Creative activity can reduce tremors, and making art is a powerful non-verbal activity for those with impaired speech. Meanwhile, the social aspect helps those who may battle with isolation or depression.

It’s made a difference for Ngoclan Hoang of Orange, 63, who is taken to the class by her daughter, Jessica.

Jessica Hoang said her mother has dealt with Parkinson’s for about 15 years. It’s fairly debilitating for her, with a lot of pain and stiffness. She used to love to do sewing and embroidery, as well as painting, but it just got too painful for her hands.

The “Painting With Parkinson’s” class has allowed Ngoclan to rediscover her passion. She’s working with watercolors for the first time and really enjoying it.

“When she’s painting, she really doesn’t have so many of the symptoms that she struggles with all day,” Jessica Hoang said. “She’s able to just zone in and flow ... it’s been amazing to see her rediscover that she has that ability. It’s brought her so much joy. She’s so proud that she can still make beautiful things.”

“They’re just trying to forget about Parkinson’s and get back to life,” said Dr. Saulena Shafer, a neurologist who’s the director of the Salsbury Family Movement Disorders Program. “That’s kind of where the art program comes in, and we’re doing some other exercise programs. Instead of allowing the Parkinson’s to rule their lives, they’re trying to forget that they have Parkinson’s.”

Glenn and Marilyn Salsbury, who live on Balboa Island, also enjoyed the event. They are the namesakes of the Salsbury Family Movement Disorders Program, after making a $500,000 gift to Hoag in 2021.

Support Groups

Whether you are newly diagnosed or have been living with PD for many years, our support groups unite and strengthen our clinic community. We share knowledge, resources, and clinical guidance in a caring setting. Unless noted, all groups are facilitated by our clinic nurse navigator, Belinda Stewart-Burger, MSN, RN, CRRN, CNRN, SCRN, and clinical social worker, Joey Nesler, MSW, LCSW. To register, call Joey at 949-764-8835 or Belinda at 949-764-6277.

PAINTING WITH PARKINSON’S
This group is for patients only; no art experience is needed. The group is held the first Saturday of each month from 10 to 11:30 a.m. in Newport Beach.

PARKINSON’S AND MOVEMENT DISORDERS EVENING SUPPORT GROUP
This group is for patients, family, and partners, and is held the fourth Thursday of each month from 6 to 7:30 p.m. in Newport Beach.

PARKINSON’S AND MOVEMENT DISORDERS DAYTIME SUPPORT GROUP
This group is for patients, family, and partners, and is held the first Friday of each month from 10:30 a.m. to noon in Newport Beach.

LIVING WITH INTENTION
This group is for patients, family, and partners. This is a workbook-guided support group to help you thrive after a diagnosis. The curriculum incorporates Dr. Mindy Bixby’s 6 Pillars of Brain Health. The group is held the second Friday of each month from 10:30 a.m. to noon in Newport Beach.

CAREPARTNERS SUPPORT GROUP
This group is for partners and loved ones who are caring for our patients. The group is held the third Friday of each month from 10:30 a.m. to noon in Newport Beach.

TUESDAYS AT THE MUSEUM
Stimulate your brain with art. Friends and family are welcome, too. Tuesdays at 10 a.m. Register for dates and location information.

Additional Services

The Salsbury Family Movement Disorders Program has a dedicated nurse navigator who supports patients in both the inpatient and outpatient setting. The nurse navigator provides both patient and nurse education, emotional support, and referrals to community and other resources. The nurse navigator meets with newly diagnosed patients and their families in both the outpatient and inpatient setting, collaborates with staff to ensure correct medication regimens and appropriate medication timing. All DBS surgery patients are worked up by the nurse navigator who provides detailed education and assessment and ensures a streamlined process to ensure patient candidacy and the best possible surgical outcomes. The nurse navigator tracks data on DBS surgical outcomes and patient satisfaction. In addition, the nurse navigator oversees the entire program and works collaboratively to build and improve the resources Hoag has to offer.

An analysis of inpatient admissions in 2023 shows that most patients with PD are admitted for urinary tract infections and falls with injury. These data are consistent with previous years’ data. By tracking these data, the program seeks to build resources and educational strategies to reduce admissions in these categories especially. The information has also been the impetus to providing frequent education on the management of many chronic ailments, with the goal of reducing hospital admissions and overall disease burden.
Epilepsy Program

Overview

The Pickup Family Neurosciences Institute’s (PFNI's) epilepsy team focuses on providing an individualized and comprehensive approach to caring for patients with epilepsy and seizures. Regardless of whether a patient is referred to our program for evaluation of transient neurological symptoms, first lifetime convulsion, or drug-resistant seizures, our epilepsy team focuses on answering the most critical questions:

- Is it epilepsy?
- What kind?
- How do we eliminate or most effectively control seizures?
- Is surgery an option?
- Can we reduce side effects of medications?
- What about alternative therapies such as diet and CBD?
- What about quality of life, reproductive health, pregnancy, and long-term effects of anti-seizure medications?

These are just some of the pressing matters to our patients. The PFNI epilepsy team strives to address all of these questions and more.

Team

The program is led by David Millett, MD, PhD, a nationally recognized epileptologist and specialist in electroencephalography (EEG), who joined Hoag in 2014 and has overseen dramatic growth of the Epilepsy Program in his 10 years of leadership. The program is co-directed by James D. Park, DO, who trained at one of the top epilepsy programs in the country and joined Hoag in 2018 to help us reach National Association of Epilepsy Centers (NAEC) level 4 status.

The surgical management of patients with drug-resistant epilepsy is led by Chief of Epilepsy Surgery Vivek Mehta, MD, a nationally recognized expert in the treatment of difficult-to-treat epilepsies. Dr. Mehta is joined by Kelly Watkins, MSN, FNP-C, APRN.

Our Epilepsy Program strives to provide a patient-centered approach to epilepsy care, focusing on cognitive and psychological well-being in addition to seizure control.

Epilepsy Program: 949-764-8319
Program Highlights

VISITING SURGEON PROGRAM

Hoag is designated by Medtronic to be a visiting surgeon site for Medtronic’s Autoguide Cranial Robotic platform. Hoag is proud to share its expertise in minimally invasive robotic cranial surgery with surgeons around the U.S. and the world. This program has been made possible by the Bill and Nancy Thompson Foundation and it has allowed Hoag to train future neurosurgeons and stay at the forefront of this advanced technology. Dr. Mehta has been recognized as a leader in this technology by Medtronic.

HOAG PARTNERS WITH THE CAMERON BOYCE FOUNDATION TO END SUDEP

SUDEP, or sudden unexplained death in epilepsy, is a rare but terrible complication of poorly controlled epilepsy. In 2019, Disney star and actor Cameron Boyce tragically passed away from SUDEP at age 21. In his honor, his family formed The Cameron Boyce Foundation with the aim of raising awareness and funding research to help end SUDEP. Hoag was proud to be selected as the foundation’s premier clinical partner and Dr. Mehta serves on the foundation’s board.

The organization’s inaugural fundraising gala was held in 2022, with notable celebrities and Cameron’s friends and family attending to support the cause. As a lead sponsor for the gala, Hoag’s PFNI and its Epilepsy Program gained local, national, and global attention through entertainment and social media.

The addition of neuropsychologist Lauren Bennett, PhD, ABPP-CN, in 2020 provided a critical resource to better understand the cognitive and psychological impact of epilepsy on our patients and provide appropriate guidance and therapy to improve their quality of life. Dr. Bennett was joined by Ruth Morin, PhD, in 2021, and by Ashley Miller, PhD, ABPP-CN, in 2022 to expand these services.

Our exceptionally dedicated director of neurosciences programs and services is Sheena Dhiman, BSN, MBA, who works closely with physicians, nurses, and technicians in the EEG laboratory and epilepsy monitoring unit (EMU). Along with the epilepsy nurse navigator and newest team member, Stephanie Chow, MSN, they strive to optimize patient care, which includes coordination of appropriate referrals, providing resources and education to patients and our staff, and coordinating programs to promote psychological and physiological wellness. Our team cannot succeed without the care and expertise of our EEG technologists and nurses, both in the Lucy Curci Neurosciences Specialty Clinic and our inpatient EMU. This multidisciplinary team is dedicated to providing the most effective and least invasive treatments to help patients achieve seizure freedom and the highest possible quality of life.
“Partnering with The Cameron Boyce Foundation is a huge honor for Hoag as we aim to tackle epilepsy in all dimensions – from the clinical realm in our state-of-the-art EMU and operating rooms to the public awareness space,” said Dr. Mehta. “It’s important for patients and families to know about epilepsy and, in particular, the risks of SUDEP and how a Level 4 Epilepsy Center like Hoag can help.”

NEUROPACE CENTER OF EXCELLENCE FOR RNS IMPLANTATION AND MANAGEMENT

The PFNI Epilepsy Program acquired a novel intraoperative robot for precision guidance in the placement of stereotactic recording electrodes and laser ablation catheters. The Medtronic Stealth Autoguide system allows Dr. Mehta to advance the field of minimally invasive neurosurgery and epilepsy surgery.

- This technology at Hoag has been featured as one of the novel advances in minimally invasive neurosurgery and Dr. Mehta was honored to give a keynote lecture at the Hong Kong Neurosurgical Society regarding Hoag’s excellent outcomes.
- Dr. Mehta was named a key opinion leader for Medtronic, Surgical Theater and NeuroPace as an expert in epilepsy surgery, helping other surgeons learn this technique.
- Hoag was selected as a visiting surgeon site for this technology, enabling Hoag to host surgeons from around the world to learn the advanced techniques pioneered here.
- Nearly 90% of our patients who have undergone Responsive NeuroStimulation (RNS) implantation have reported a meaningful response to neurostimulation therapy and 64% are “super-responders” with a >90% reduction in seizures.

DEEP BRAIN STIMULATION

Deep Brain Stimulation (DBS) was FDA approved for the treatment of medically refractory epilepsy in 2018 and is now utilized alongside other neurostimulation devices such as Vagus Nerve Stimulation (VNS) and RNS. These devices have revolutionized how we treat patients with drug-resistant epilepsy. Patients who were previously not considered good candidates for epilepsy surgery now have more options available to them. Our first patient at Hoag with a DBS for epilepsy had the device placed in August 2020. He was found to have multifocal epilepsy, meaning seizures were arising from multiple locations on both sides of the brain and making focal treatments like resection impossible. DBS reduced the frequency of his seizures and has helped to prevent seizures from progressing to ones with loss of awareness. Research has shown that seizure control can improve over time the longer neuromodulation devices like DBS are stimulating the brain.

Accomplishments

Over the past several years, the PFNI Epilepsy Program has achieved several notable accomplishments. The program received the highest accreditation of Level 4 Comprehensive Epilepsy Center by the NAEC in 2018, recognizing the highly specialized physicians, resources, and number of patients with drug-resistant epilepsy who have been admitted to our monitoring unit.

In 2018, Dr. Millett was recognized by the Epilepsy Foundation at its Care and Cure Gala for his continued efforts to provide the highest level of epilepsy care in Southern California.

That same year, Dr. Millett and the PFNI Epilepsy Program received an extraordinary $1 million gift from philanthropists Nancy and Bill Thompson to expand clinical services for epilepsy to Orange County residents who have no other access to health care. This novel program has created a powerful synergy between the Lestonnac Free Clinics and Hoag’s own Charity Care Program to provide the entire spectrum of epilepsy care – from outpatient clinic visits and anti-seizure medications to diagnostic services such as EEG, magnetic resonance imaging (MRI), and video-EEG – to underserved patients in the region. We are delighted that, through the generosity of the Thompson Epilepsy Fund and Hoag’s financial assistance program, patients with severe drug-resistant epilepsy and no other access to advanced epilepsy care have been able to receive surgical treatment, dramatically improving their quality of life and the lives of their families.

The PFNI Epilepsy Program participated in an important clinical trial of a new drug-delivery system to stop seizures before they lead to disability or require emergency medical care. Our program continues to look for unique research opportunities that will advance the care of epilepsy patients.
Dr. Mehta championed the use of minimally invasive laser ablation surgery for the treatment of mesial temporal lobe epilepsy, the most common form of surgically remediable focal epilepsy.

The PFNI Epilepsy Program acquired a novel intraoperative robot for precision guidance in the placement of stereotactic recording electrodes and laser ablation catheters.

When seizure control with medication becomes challenging, advanced diagnostics, including 3D imaging, functional and metabolic brain scanning, and even minimally invasive brain activity mapping, are used to select patients who may be candidates for focused surgical intervention, which can lead to a successful seizure-free life. As part of a multidisciplinary and collaborative approach to epilepsy, neurosurgeons, epileptologists, neuro-radiologists, neuropsychologists, epilepsy care coordinators, EEG technologists, and other health care professionals meet on a monthly basis to review patient-specific cases, including those being considered for surgical interventions. Patients benefit from this combined expertise and experience of the collective physicians and professionals.

A New and Minimally Invasive Way to Treat One of the Most Challenging Forms of Epilepsy: LITT

Laser Interstitial Thermal Therapy (LITT) is a minimally-invasive technique that allows surgeons to precisely target and selectively ablate the source of the seizures using real-time MRI guidance. As compared to traditional open surgery, which would result in a several-day hospital stay with a large surgical scar, this new technique allows patients to go home either the same day or the next with just one small stitch. The result is a much faster recovery time and a significantly shorter hospital stay.

This treatment has gained popularity at high-level epilepsy centers around the U.S. and Hoag is proud to offer this option to patients whose seizures are difficult to control. The early data is promising with seizure cure and reduction rates nearly compatible with open surgery and with fewer complications and side effects.

Peer Reviewed Journal Articles


Research

Medtronic Stereotactic Laser Ablation for Temporal Lobe Epilepsy (SLATE). PI for this trial is Dr. Mehta and Drs. Millett and Park are Sub-Investigators.
EEG & Neurodiagnostics Services

Overview

The year 2023 continued to be a busy one as we started to come out of the pandemic. The Neurodiagnostics Lab provides inpatient and outpatient services for the evaluation and diagnosis of central and peripheral nervous system disorders at both the Newport Beach and Irvine campuses. Certified neurodiagnostic technologists perform many types of neurophysiologic exams on inpatients and outpatients, and sub-specialized neurologists oversee the service. The service also provides monitoring during surgeries to help assess and protect the structural integrity of the nervous system.

The Neurodiagnostics Lab provides specialized procedures such as routine, extended, sleep-deprived electroencephalography (EEG) and bedside continuous video long term monitoring (VLTM) EEG, as well as continuous brain wave monitoring on acutely hospitalized patients.

Hoag is one of a few hospitals in Orange County that provides this 24/7 inpatient EEG service, having established unique applications (BraiNet and Ceribell) protocol utilizing the entire hospital team, including our excellent nursing staff.

Other services requested by our community for various specialized neurological diagnoses include brain stem auditory evoked potentials (BAEP), somatosensory evoked potentials (SSEP) and visual evoked potentials (VEP).

Board-certified and eligible physicians with subspecialty training in nerve conduction studies (NCS) and electromyography (EMG) testing perform studies for our community in Newport Beach.

A vigorous Epilepsy Program is staffed by epilepsy monitoring technologists who perform 24/7 direct patient observation in the Epilepsy Monitoring Unit (EMU).
Team

The Neurodiagnostics Lab team includes Drs. Victor Doan, Andrew Ly, David Millett, Jason Muir, James Park, Jose Puangco, and Kaveh Saremi, who are neurophysiology-trained neurologists, along with a dedicated team of EEG technicians and specialty inpatient nursing staff.

Intraoperative Neurophysiologic Monitoring

Intraoperative Neurophysiologic Monitoring (IONM) provides surgeons with immediate data on the structural and functional integrity of the nervous system when patients are under anesthesia. Our surgeons incorporate the acquired data from these techniques during surgery to assure the utmost safety. Some of the surgeries that benefit from IONM are brain surgeries, orthopedic and spine surgeries, and surgeries for throat and larynx disorders. The year 2023 was the busiest year for our IONM services as we welcomed two additional neurosurgeons, Drs. Adam Kanter and Vikram Mehta, and one neurologist, Dr. Dan Vitantonio, to the team.
Alzheimer’s Disease and Related Dementias

Alzheimer’s disease (AD) is the most common of four overlapping neurological diseases – Lewy body disease (LBD), frontotemporal degeneration (FTD), and vascular dementia (VaD) being the others – that ultimately lead to dementia. The shared mechanism among the dementias is a poorly understood process known as neurodegeneration. Neurodegeneration triggers widespread neuronal dysfunction and accelerated brain atrophy, ultimately leading to loss of brain function and dementia. The similarities shared across the four major dementia types far outnumber their differences, and as a result, they are frequently referred to collectively as Alzheimer’s disease and related dementias (ADRD). Currently the ADRDs are the sixth leading cause of death and the costliest of all neurological diseases. More importantly, the symptoms of dementia can be heartbreaking for patients and families alike. Patients may experience a wide range of cognitive (e.g., memory, problem solving loss), psychiatric (e.g., delusions, hallucinations), or psychological symptoms (e.g., depression, anxiety). All patients with dementia due to ADRD will invariably experience a loss of independent function; this means that every single patient with dementia will eventually need another person to care for them.

Although the causes of ADRD are poorly understood, most researchers accept that the causes are likely multifactorial (e.g., contributions from genetic, environmental, immune, biochemical factors). ADRD disproportionately effect individuals over the age of 65 – increasing age is by far the most important risk factor – and an individual’s risk of ADRD doubles every five years after the age of 65. An estimated 40% of people over the age of 85 are affected by ADRD. While the challenges posed by ADRD remain an unmet need to address worldwide, these challenges are far more urgent in Orange County (OC) as we have experienced one of the largest increases in the number of people living with ADRD in the United States. It is estimated that more than 150,000 people, or 5%, of the total population living in OC live with an ADRD. Many of them are undiagnosed and are in the early stages of an ADRD (also called the mild cognitive impairment stage when symptoms are not fully manifested).

The last several decades have seen significant advances in the field of ADRD, including improved diagnostic technology and several promising new therapies. Recently, the Federal Drug Administration (FDA) approved three new drugs (aducanumab, lecanemab, and brexpiprazole) to treat symptoms related to AD. Although there are no known cures, ongoing medical management of symptoms, increased disease knowledge, and access to community resources is necessary to help alleviate some of the burdens associated with ADRD.

Institute Review

The Pickup Family Neurosciences Institute (PFNI) offers a comprehensive approach to ADRD, providing patients with a timely and accurate diagnosis, expert management of symptoms, and family support. Within PFNI is a group of physicians, scientists, and nurses with specialized expertise in ADRD who focus solely on the clinical care of individuals with ADRD. The approach to ADRD is multidisciplinary with integrated clinical care, research, and education. Access to the latest advancements in drug therapies is facilitated by our clinical trials programs, offering patients alternative treatment options. The institute model employed by Hoag also fosters collaboration between different disciplines within PFNI, integrating the expertise of neurologists, neurosurgeons, psychiatrists, neuroradiologists, and rehabilitation services across a broader range of neurological diseases. The newly inaugurated Richard H. Pickup Center for Brain Health will further transform the way ADRD is provided within O.C.

Strategy

Our goals for addressing ADRD consist of five key components:

1. Improve early detection and diagnostic accuracy of individuals with ADRD: The benefits of an early diagnosis of ADRD are impactful, including improved treatment outcomes, enhanced quality of life for patients and caregivers, and less utilization of costly medical resources. An early diagnosis permits ability to participate in clinical trials when disease-modifying therapies are likely to be more effective. Furthermore, all the newly approved monoclonal antibody therapies are only appropriate for early-stage disease. PFNI has a robust community outreach and screening program (Orange County Vital Brain Program [OCVBP]) that has completed over 7,000 memory screens in Orange County.
2. Provide expert medical and non-pharmacological care to patients and families with ADRD: ADRD are frequently accompanied by disturbing cognitive and psychiatric symptoms that require expertise in managing, especially given the often-frail population afflicted by ADRD. The neuropsychiatric symptoms of ADRD are expensive and often lead to frequent, costly emergency room visits and hospitalizations. PFNI has clinics devoted specifically to the cognitive, behavioral, and psychological aspects of ADRD. Clinicians who staff these clinics are among the most recognized in the country and devote their entire time to the care of ADRD.

3. Advance clinical research toward finding more effective therapies: Developing new therapies is a crucial aspect of combating ADRD. With enhanced knowledge of the causes of ADRD, the last several years have seen approval of disease-modifying agents which may be more effective in slowing down or preventing ADRD. Hoag’s robust clinical trials program has contributed to the success of several of these new agents. Hoag physicians have also contributed to scientific development by publishing papers and presenting work at national/international conferences.

4. Enhance medical and public knowledge of ADRD: Knowledge regarding ADRD is lacking in the public and among health care workers. We believe that improving knowledge around ADRD will enhance the care of patients within the community, lead to early diagnoses, and reduce the impact of ADRD. PFNI has a formal outreach program and conducts numerous informal education programs within the community.

5. Reduce caregiver burden, family stress, and medical utilization: The primary costs of ADRD are carried by family members of patients with ADRD who experience high rates of burnout, depression, and lost wages. PFNI employs a family based clinical model that engages family members in their care. Additionally, Hoag supports the Alzheimer’s Family Center, a day center in Huntington Beach. The OCVBP works closely with Hoag primary care services and many Hoag primary care physicians (PCP) employ a memory screen as part of routine care. The Memory & Cognitive Disorders clinic is on the same electronic medical record system and works closely with a patient’s PCP to ensure integrated care.

Figure 1. Aaron Ritter, M.D., director of the Memory & Cognitive Disorders Program within the Pickup Family Neurosciences Institute, and philanthropist Richard Pickup. In November 2023, the pair joined in announcing Mr. Pickup’s $50 million gift to create the Richard H. Pickup Center for Brain Health at Hoag. The center will transform the way care for Alzheimer’s disease and related dementias is provided, including through innovative clinical services, a planned day program, and numerous research opportunities. (Photo by Mindy Schauer, Orange County Register/SCNG; reprinted with permission.)
$50 million gift will help Hoag Hospital transform its care of memory and cognitive disorders

By Destiny Torres

Hoag Hospital officials are announcing plans for a center at the Newport Beach campus that will “pioneer new, whole family-centered approaches to brain health and healthy aging.”

A “transformational” $50 million gift from Newport Beach philanthropist Richard Pickup is helping establish the center, which will not only work on research and to improve gaps in care for memory and cognitive disorders, but also create programs for patients’ family members who are also impacted by the effects of the often devastating diseases.

Pickup, who turns 90 next month, has directed several donations over the years toward advancing care for those dealing with dementia-related diseases. The Pickup Family Neurosciences Institute, a Hoag program that offers neurologic care and treatment, was established in 2017 after a $15 million donation. This new gift will create the Richard H. Pickup Center for Brain Health.

“We really need to change the model of how we do care for people with dementia and Alzheimer’s disease. Hoag realizes, and our community realizes, that the way we’ve done things is just not going to cut it,” said Aaron Ritter, director of the Memory and Cognitive Disorders Program at the Pickup Family Neurosciences Institute.

“The idea is getting in front of this, doing things now and creating a model and programs that can actually help alleviate the suffering that comes with the disease, and also advancing new therapies and treatments that follow what we’ve done with cardiac care and diabetes care,” Ritter said. “It’s a huge change.”

Along with creating the new space on the hospital grounds, the $50 million gift will also go toward supportive programs for patients and their families with a focus on screenings, early detection and advancing technology, Hoag officials said.

Because care needs to go beyond patient treatment, Ritter said. Family members and loved ones often shoulder the burden and costs of care.

“It’s a family disease, so anybody that’s affected by dementia, you multiply it by two or three, the number of people that it takes to care for those people,” Ritter said.

"Yesterday, I saw somebody whose 21-year-old son has to move to Newport Beach to take care of his dad. He’s like, ‘I don’t know what to do. I won’t be able to make any money.’ Those are the stories we’re hearing,” Ritter said. “So how do we change that? How do we get the support and care for a 21-year-old who has to take care of their 65-year-old father? That’s the challenge that is faced by dementia care right now.”

There are warnings of a “Silver Tsunami” in the United States, as the population older than 65 grows quickly and people live longer.

Orange County’s population of older folks is growing by 15% annually, according to Hoag officials. And with aging comes several health concerns and diseases, including Alzheimer’s and dementia. Alzheimer’s rates in Orange County, Hoag officials noted, doubled between 2014 and 2021 and are projected to double again by 2040, requiring more experts in brain health and aging.
Approach

ORANGE COUNTY VITAL BRAIN PROGRAM

Early detection requires engagement with the broader community, PCPs, and other medical providers. Since 2010, the OCVBP has provided in-person memory assessments, public and healthcare professional education, and self-screen tools available on its online portal (OCBrain.org).

OCVBP staff conduct regularly scheduled memory screenings, available in both English and Spanish at four testing locations: Hoag Hospital Newport Beach, Hoag Health Center Irvine, Oasis Senior Center, and the Huntington Beach Senior Center. OCVBP screenings are supervised by neuropsychologists with expertise in ADRD. At each assessment, individuals are administered a battery of memory and cognitive tests. Immediately following testing, participants are provided with a debriefing session to discuss the results of their assessment. Those with normal test scores are provided information about maintaining cognitive health while those with abnormal test scores are triaged for further assessment by their physicians. All participants are encouraged to monitor their memory annually. Community individuals can sign up for OCVBP themselves and are frequently referred by their PCPs. There is a nominal cost for an OCVBP in-person assessment. The cost of the OCVBP is heavily subsidized by grants and philanthropy.

To date, the OCVBP has conducted more than 7,500 assessments, including 740 in 2023 (Table 1, Figures 2 and 3). OCVBP’s free online self-screening tools on risk factors for dementia, depression, and memory loss were used by a total of more than 6,300 community members (Figure 4) who remain engaged through a quarterly newsletter.
The Memory & Cognitive Disorders (MCD) program is led by Aaron Ritter, MD, who is the Larkin Family Endowed Chair in Integrative Brain Health. Dr. Ritter is a clinician and researcher who was recruited from the Cleveland Clinic in 2022. His clinical interests include AD, FTD, LBD, and chronic traumatic encephalopathy (CTE). He has been the principal investigator on more than 40 clinical trials and has authored more than 80 peer-reviewed articles. Having completed training in both psychiatry and behavioral neurology, Dr. Ritter has expertise in both the diagnosis and management of a wide range of neurological and psychiatric disease affecting individuals over the age of 65. The MCD clinic is supported by an RN nurse navigator, Stephanie Martins, who provides a key touchpoint for families and patients with ADRD. The MCD clinic is devoted to providing patients with family centered care focusing on impactful and pragmatic treatment plans.

Additionally, William R. Shankle, MS, MD, Program Research Advisor and the Judy Richard Voltmer Endowed Chair in Memory & Cognitive Disorders, has a long history of service to the Hoag community and expertise in the diagnosis and management of ADRD. He has published more than 150 peer-reviewed articles and has contributed greatly to the field of AD therapeutics. The year 2023 saw the publication of his highly successful COCOA trial, an innovative lifestyle approach to the management of AD.

These ADRD experts work collaboratively with other PFNI providers in neurology, neuropsychology, neurosurgery, behavioral sciences, rehabilitation medicine, and addiction services to provide consultation and expertise. All providers within PFNI have access to cutting-edge technologies used in ADRD diagnosis, including multiple high-resolution magnetic resonance imaging (MRI) machines that feature volumetric analysis (see Figure 6), positron emission tomography (PET) (Figure 5), and state-of-the art, patient-centered rehabilitation services.

**ADRD CLINICAL RESEARCH**

To alleviate the burden of ADRD, new therapeutics are urgently needed. Clinical research provides a great opportunity to better understand ADRD and to provide treatment options for patients. The ADRD clinical care model within PFNI is complemented by a large research program that promotes innovation and advances therapeutics. ADRD clinical research at Hoag is led by Junko Hara, PhD, who oversees program research and academic development. She also oversees OCVBP program development and outcome evaluations. Dr. Hara is a nationally renowned neuroscientist who has published papers on a variety of ADRD topics and supports data science for several national ADRD research initiatives. Dr. Hara works collaboratively with Gus Alva, MD, a psychiatrist, who is widely recognized as one of the most prolific clinical trialists in the fields of ADRD and psychiatry. Under their leadership Hoag conducts various ADRD clinical trials, including prevention studies, early-stage AD, and DLB. The ADRD research output is summarized in the Clinical Research section of this report.
Figure 6. All of the neurodegenerative diseases cause accelerated atrophy or shrinkage of the brain. Hoag uses a technology known as volumetric analysis to evaluate the volume of a person’s brain to detect if it is aging. This technology can improve diagnostic accuracy, especially in early stages when symptoms may not be fully obvious. In the graphic below we see decreases in the temporal and parietal lobes, while the frontal lobe is normal shape. This is a common finding in early-stage dementia.
OUTREACH AND EDUCATION

Among the public, there is an overall lack of understanding regarding the symptoms, risk factors, and diagnosis of ADRD. More than half of patients with an ADRD are never diagnosed; those who receive a diagnosis, on average, are delayed for three years after symptoms manifest. Furthermore, most medical providers receive very little formal education on ADRD. To combat this knowledge gap, in addition to the OCVBP, PFNI engages in a robust outreach and education program. In 2023, PFNI provided no-cost caregiver and community education to more than 425 individuals. Dr. Ritter has initiated an education program directed at primary care physicians. The MCD hosts psychiatric nurse practitioners for their clinical rotation.

THE RICHARD H. PICKUP CENTER FOR BRAIN HEALTH

Late 2023 saw the announcement of the Richard H. Pickup Center for Brain Health. The transformative philanthropy supporting this new center (currently exceeding $50 million in pledged donations) will create a national flagship for ADRD care on the Hoag medical campus in Newport Beach. Plans for the Center for Brain Health include a free-standing building devoted entirely to the comprehensive care and needs of individuals with ADRD, a clinic staffed by experts in ADRD, disease-focused rehabilitation services, a day program, and state-of-the-art research and innovation programs.

Scientific Activities

The MCD program team contributes to scientific development by publishing papers and presenting their work at national and international conferences.

PEER-REVIEWED JOURNAL ARTICLES

Year 2023


McLachlan E, Ocal D, Burgess N, Reeves S, Howard R; Alzheimer’s Disease Neuroimaging Initiative. Association Between False Memories and Delusions in Alzheimer Disease. JAMA Psychiatry. 2023 Jul 1;80(7):700-709.


**Year 2022**


**Year 2021**


**CONFERENCE PRESENTATIONS**

**Year 2023**


Illam S, Bennett L. The Moderating Effects of Working Memory on Sex and Nonverbal Learning and Memory among Elderly Adults. Poster presented the annual meeting of the International Neuropsychological Society meeting, San Diego, CA. February 2023.


Morin, RT. Suicide in Lewy Body Dementia (LBD): Characterizing Attempts in Over 50,000 Veterans Aged 50 and Older with LBD. Presented at the biannual meeting of the International Summit on Suicide Research, Barcelona, Spain. October 2023.

Year 2022


Year 2021


Multiple Sclerosis & Neuroimmunology Program

Hoag’s Pickup Family Neurosciences Institute (PFNI) is dedicated to helping patients throughout their multiple sclerosis (MS) disease journey. MS is the leading cause of disability in young adults. This disease is mediated by an autoimmune response causing damage to the nervous system. The program is led by MS expert Yasir N. Jassam, MD, FRCP, FAAN, director of the Multiple Sclerosis & Neuroimmunology Program in Hoag’s PFNI. Since the program’s recent inception, we have embraced over 400 people diagnosed with MS, and evaluated countless others in whom the disease was excluded, and other conditions where overlapping symptoms were found.

Important advances in the field are now significantly improving the course and the outcome of the disease. We have assembled the best MS specialists and most advanced technologies in neurological care to address disorders of the brain, nerves, and spine by using evidence-based clinical care, state-of-the-art technology, advanced clinical research, therapeutics and more.

Our advanced, individualized, and comprehensive MS disease management and care programs are guided by world-leading innovation.

Innovation

Hoag’s PFNI MS program partnered with Octave to ensure world-class MS care is offered to our patients (hoagoctave-ms.com). Octave’s blood biomarker test could efficiently monitor overall disease activity in people with MS. Called the MS Disease Activity (MSDA) test, the assay measures the levels of 18 proteins, showing which pathways and mechanisms related to MS are activated and to what extent. Upon completion of this blood test assay, Dr. Jassam meets with patients to review their MS disease status with the most personalized approach. Hoag is the first hospital in Southern California to offer and utilize this robust MSDA biomarker analysis.

Hoag Multiple Sclerosis Hope Center

In 2022, we opened the Hoag MS Hope Center, which offers patients a holistic approach to MS symptom management. This program is fully supported by philanthropy. MS can affect vision, sensation, coordination, movement and bladder or bowel control. Our multidisciplinary team is here to help patients and their families gain a better

**PATIENT TESTIMONIAL**

“We are already predisposed to a vast array of obstacles with multiple sclerosis. Many of which can make us feel like we are set up to fail. Being as proactive as possible allows for better navigation when our bodies decide to veer off course. Octave’s MSDA test allows me to have a closer look at my MS. If I can understand it better, I can fight it more effectively. That is a game changer!”

– MS Advocate Brittany Quiroz “A Hot MS”

**100% of participants of the Hoag MS Hope Center answered “strongly agree” to this satisfaction survey statement:**

I would recommend participation in this MS Hope Center session to other people affected by multiple sclerosis.

Multiple Sclerosis Program: 949-764-8141
understanding of the disease. Our program has a dedicated physical and occupational therapist and a registered dietician who led different meetings. With an educational focus, the Hoag MS Hope Center offers a variety of classes and services beyond routine doctor appointments. Patients acquire tools to strengthen the skills needed to manage everyday tasks at any stage along their MS journey.

This is the first comprehensive center focused on MS-related hot topics in Orange County. The National MS Society (NMSS) deemed the Hoag MS Hope Center as a novel opportunity for anyone affected by MS.

Group sessions offer beneficial peer support along with clinical experts specializing in the unique needs of MS. The goal of this exceptional program is to build up hope for those who are challenged by MS. Each session is led by an expert in the topic presented.

**SESSIONS PRESENTED**

- Stress reduction and communication techniques
- Pilates
- Fatigue management
- Yoga
- Guided meditation (virtual reality guided meditation)
- Physical therapy
- Occupational therapy
- Dietary services
- Anti-inflammatory meal preparation classes

### Support Groups

As part of Hoag’s MS Hope Center, group sessions are held the second Thursday of every month from 4 to 6 p.m. at 520 Superior Avenue, Suite 100, in Newport Beach. These free sessions offer beneficial peer support along with clinical experts specializing in the unique needs of those affected by MS. Sessions are led by a certified instructor/specialist through effective stress management practices such as virtual reality (VR) guided meditation. For more information, call 949-764-8141.

### Neuroimmunology

Our MS program also provides expertise in neuroimmunology for related conditions such as neuromyelitis optica spectrum disorder (NMOSD), myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD), autoimmune encephalitis, neurosarcoidosis, and others. This field has expanded to encompass multiple rare and challenging presentations that share similar pathology to MS, all driven by the immune system mistakenly attacking a patient’s own nervous system. Syndromes like MS such as optic neuritis (loss of vision), transverse myelitis (spinal cord dysfunction), encephalitis (brain inflammation), and meningitis can result from autoimmune syndromes. New neuroimmunological tests and therapies have given new hope to afflicted patients.

Dr. Jassam partners with the PFNI Epilepsy Program consulting on patients with complex autoimmune epilepsy.

### Team

The program is headed by neurologist and neuroimmunologist Yasir Jassam, MD, FRCP, FAAN. Notably, in 2022, Dr. Jassam was elected a Fellow of the American Academy of Neurology (FAAN), a Fellow of the Royal College of Physicians and Surgeons of Glasgow, and a Fellow of the Royal College of Physicians of London. He is a board-certified neurologist and previously was trained in the UK, Boston, and the National Institutes of Health (NIH) before joining Hoag. His focus of specialty includes autoimmune neurological and neuroinflammatory disorders.

Audrey Johns, MSN, RN, PHN is the program’s specialized nurse navigator, providing guidance and navigation for patients with MS. This includes providing advanced education on medications, infusion site coordination, disability paperwork completion, and leadership of the Hoag MS Hope Center.
Samuel Bernier, OTD, OTR/L  
Occupational Therapist

Nina Surber, PT, DPT  
Board Certified Specialist in Geriatric Physical Therapy, Vestibular Therapist

Oscar Jan  
Registered Dietitian

Hoag for Her Center for Wellness  
Pilates instructors, yoga instructors, certified personal trainers

OC Community Support

The NMSS recognized the Hoag PFNI MS program as a Partner in MS Care. The criteria for the Partner in MS Care includes demonstrated knowledge and expertise in treating people with MS. This prestigious designation consists of collaboration with the NMSS and extensive community outreach.

Hoag sponsored a team for the annual Walk MS event to support funding toward research and MS for the NMSS.

Hoag hosted Orange County’s first Pathways to Wellness in MS event supported by the NMSS Pacific South Coast Chapter. With over 200 guests affected by MS, this event was deemed the most well-attended patient education focused event this year by the NMSS. This event allowed for a robust question-and-answer section where participants reviewed inquiries with Dr. Jassam and patient advocates.

The PFNI MS program has been inducted into the Consortium of Multiple Sclerosis Centers (CMSC).

The CMSC’s mission is to be the preeminent professional organization for MS healthcare providers and researchers in North America, and a valued partner in the global MS community.

Clinical Research

The RIMS study is a two-phase project in which we aim to develop a risk score for predicting the incidence of MS in the community using certain risk factors. This part, thanks to philanthropic support, is already ongoing. The next step is to implement this test for real-life validation study and apply it to healthy individuals and relatives of MS patients to try to anticipate the risk of their family members getting MS.

We are actively enrolling for a phase 3, randomized, double-blind, double-dummy, parallel-group study, comparing the efficacy and safety of remibrutinib versus teriflunomide in participants with relapsing MS, followed by extended treatment with open-label remibrutinib. This is an interesting new target for treatment in MS which explores BTK (Bruton’s tyrosine kinase) as a target in both relapsing and progressive MS.

Currently, enrollment is open for a phase III, randomized, double-blind, placebo-controlled, multicenter basket study to evaluate the efficacy, safety, pharmacokinetics, and pharmacodynamics of satralizumab in patients with anti-n-methyl-d-aspartic acid receptor (anti-NMDA) or anti-leucine-rich glioma-inactivated 1 (LGI1) encephalitis.

We also have other future projects focusing on progressive MS and currently are in the final stages of starting a new phase 3 clinical trial (FREVIVA) for frexalimab (Anti CD40 L) monoclonal antibody in patients with non-relapsing secondary progressive MS.
Overview

The Chronic Pain & Neuropathy Program of Pickup Family Neurosciences Institute (PFNI) was launched in August 2021. The program helps to reduce or eliminate pain and improve patients’ quality of life. Our team of experts provides a comprehensive and evidence-based approach to the evaluation and treatment of chronic pain and neuropathy. We collaborate with various specialists including spine surgeons, orthopedic surgeons, neurologists, rheumatologists, radiologists, physical/occupational therapists, acupuncturists, and psychologists to offer the best treatment plans for our patients.

We also offer treatment modalities such as spinal cord and peripheral nerve stimulators, epidural steroid injections, selective nerve root blocks, radiofrequency ablations, sympathetic blocks (stellate, celiac plexus, and ganglion impar), intercostal nerve blocks, botulinum toxin injections for migraine headaches, sphenopalatine ganglion blocks, qutenza (capsaicin 8%) patches for post-herpetic neuralgia (PHN) and diabetic peripheral neuropathy (DPN), trigger point injections, and joint injections. We have initiated treatment including the use of closed loop spinal cord stimulators for the treatment of refractory back and leg pain. Additionally, we have performed basivertebral nerve ablation and restorative neurostimulation for chronic mechanical low back pain. The prescription of non-opioid medications may be recommended to alleviate pain and restore functioning, and we are investigating ketamine for selected patients. We also offer access to virtual reality modulation of pain response, a promising new approach to chronic pain management.

In 2023, the outpatient Chronic Pain & Neuropathy Program treated nearly 2,371 new patients, with dramatic growth from inception.

Our specialists focus on the diagnosis and treatment of conditions involving chronic pain ranging from neck and low-back pain to peripheral neuropathy, toxin/chemo-induced neuropathy, autoimmune neuropathy, joint pain, abdominal pain, cancer pain, and post-surgical pain as well as headaches. The program uses diagnostic technologies to evaluate nerve function such as nerve conduction studies (NCS) and electromyography (EMG), magnetic resonance (MR) neurography, and skin biopsies (to evaluate for small fiber neuropathy).

For the evaluation of chronic neck or lower-back pain, the patients undergo a thorough history and physical examination and additional X-rays; computed tomography (CT) and/or magnetic resonance imaging (MRI) studies are utilized to further evaluate the primary pain generator.

We tailor our treatment plan to each individual patient’s needs and encourage regular exercise, eating a healthy diet (with nutritionist support), as well as supporting a state of mental well-being.

The Inpatient Pain Service at Hoag is led by Matthew Reed, MD, and Tom Schreiber, NP. Dr. Reed is triple board certified in psychiatry, pain medicine and internal medicine. This newly enhanced pain service addresses acute and chronic pain issues in our patients hospitalized for other conditions, with a broad evidence-based approach mindful of psychiatric and addiction contributors to pain. The hours of in-hospital coverage for the pain service have been extended to 7 a.m. to 7 p.m. seven days per week (with after-hours coverage by phone) with a goal to achieve 24/7 coverage in 2024.

Supporting care transitions is a key priority for our service. This includes facilitating timely follow-up for needed outpatient interventional procedures or other specialized pain interventions.

As utilization of buprenorphine for both chronic pain management and addiction continues to increase in response to the opioid epidemic, collaboration between inpatient pain, addiction, and outpatient chronic pain providers has
never been more essential. Providers on the inpatient service identify appropriate patients for initiation on buprenorphine and, after initiation, facilitate continued care into the outpatient setting. Similarly, we collaborate with outpatient pain and addiction providers, anesthesiology, and surgical teams to best manage acute perioperative pain in patients on chronic opioids (including buprenorphine). This collaboration improves perioperative pain control, patient satisfaction, and decreases length of stay.

Utilization of Hoag’s new inpatient pain service has remained steady with consultation rates 50% to 75% higher following introduction of the new service. We expect utilization of the service to remain high as Hoag providers recognize its value in providing excellent evidence-based care for hospitalized patients.

Team

Charles De Mesa, DO
Chief of Interventional Pain, Physical Medicine & Rehabilitation for Hoag Spine Center
Director of the Chronic Pain & Neuropathy Program

Dr. De Mesa is double board certified in physical medicine and rehabilitation and pain medicine by the American Board of Physical Medicine and Rehabilitation. He is a current member of American Board of Anesthesiology’s content development team and the American Board of Physical Medicine & Rehabilitation’s administration team for Board Certification Specialty Examinations.

Aaron Przybysz, MD
Dr. Aaron Przybysz is a double board certified anesthesiologist and pain management physician who specializes in interventional pain management.

He has been named an Orange County Medical Association Physician of Excellence, a Super Doctors Rising Star for the Los Angeles area, and was a nominee for the prestigious John J. Bonica Award from the American Society of Regional Anesthesia and Pain Medicine.

Shawn Zardouz, MD
Dr. Zardouz is double board certified and fellowship trained in pain medicine and in neurology.

Matthew Reed, MD
In-patient Pain Service Director
Dr. Reed is triple board certified in psychiatry, pain medicine and internal medicine.

Phillip O’Carroll, MD
Program Advisor, Headache, Mind Body Disorders
Dr. O’Carroll is board certified by the American Board of Psychiatry and Neurology.

Tom Schreiber, NP
Supervisor of Pain Nurse Practitioners

Natalie Davin, BSN, RN
Curci Family Chronic Pain and Neuropathy Nurse Navigator

Charles De Mesa, DO
Aaron Przybysz, MD
Shawn Zardouz, MD
Phillip O’Carroll, MD
Matthew Reed, MD
Tom Schreiber, NP
Natalie Davin, BSN, RN
Neurobehavioral Health: Hoag Addiction Treatment Centers

Overview

Hoag Addiction Treatment Centers (HATC) is nationally recognized for providing unparalleled medical care and emotional support within a healing patient-centered environment. In this environment, health and dignity are renewed as individuals and families heal together on their path to recovery.

Addiction is a brain disease. It is chronic and progressive, and it affects the entire family. Times of stress accentuate the predisposed brain to the extremes of addiction. Treatment for addiction is as effective as treatment for other chronic conditions, such as diabetes or heart disease.

Many addiction recovery programs are available, but few provide the highest level of medically supervised, patient-centered care like the Pickup Family Neurosciences Institute (PFNI) offers. With significant expansion of inpatient, residential recovery, and intensive outpatient treatment services in Newport Beach, HATC provides the most comprehensive, vertically integrated continuum available. At all levels of care, co-morbid psychiatric conditions are treated along with primary addictions (dual diagnosis treatment across the continuum of care).

SolMar Recovery is a 21-bed residential facility, unique in the state for its location on the campus of an acute-care hospital. The residential program is certified to provide incidental medical services (IMS), making it among the best equipped to address primary addiction, co-morbid psychiatric conditions, and associated medical issues. With IMS certification, our medical providers now offer addiction treatment services on site in the residential program and administer lifesaving, long-acting injectable medications such as Sublocade and Vivitrol.

As a licensed hospital-based treatment center integrated within PFNI, Hoag provides evidence-based addiction treatment services that successfully guide families from their own trauma of exposure to addiction toward an effective partnership in the recovery process. With more than 30 years of experience as Southern California's leading addiction medicine center, Hoag has treated thousands of individuals and their families.

During the pandemic, we remained committed in our mission to provide the highest-quality health care to the communities we serve, and the individuals that require our assistance during this challenging time.

In 2023, Hoag served over 666 patients for acute detoxification, treated approximately 150 residential treatment patients, and served more than 165 patients in our intensive outpatient programs as well as partial hospitalization.

We are fortunate to be the highest-ranked hospital in Orange County, so we can easily coordinate with experts when a higher-level of acute medical care is warranted. Our inpatient detox unit is composed of highly trained and experienced medical staff and nurses who are prepared to both recognize warning signs and implement preventative measures to reduce risk. We provide medical care 24 hours per day, 7 days a week, 365 days a year.

Being able to facilitate a “warm hand-off” to our residential, partial hospitalization program (PHP), and intensive outpatient program (IOP) levels of care, we provide a seamless continuum of care through subacute face-to-face services, recognizing the importance of structure and accountability for those suffering from addiction over the longer term.

MEDICALLY MANAGED, EVIDENCE-BASED TREATMENT PROGRAMS ACROSS ALL LEVELS OF CARE

- Medical inpatient detox
- SolMar Recovery – 21-bed residential facility with medical and counseling professionals available 24/7
- Partial hospitalization program
- Intensive outpatient program

INNOVATIVE AND MULTIDISCIPLINARY TREATMENT PROGRAMMING

- Licensed master-level therapists
- Credentialed drug and alcohol counselors
- Magnet-designated hospital and nursing staff
- Individualized treatment planning involving medical providers, therapists, and counseling staff

Detox Intake Line: 949-764-6883
We recognize the importance of incorporating a variety of treatment modalities such as:

- Evidence-based individual and group therapies
- Dialectical behavioral therapy
- Cognitive behavioral therapy
- Mindfulness meditation and stress management groups
- Extensive psycho-education on relapse prevention, trigger and craving management, medication management, etc.
- Art and experiential therapies
- Equine therapy

FAMILY CONTINUUM OF CARE

At Hoag, our patient care philosophy depends greatly upon engaging families to be a part of the healing process. Due to Covid-19, Hoag continued to provide family sessions by Zoom to ensure that families continued to be an integral part of their loved ones’ healing process.

SolMar Recovery

INNOVATION

- Our achievements at SolMar over the past year reflect our commitment to providing comprehensive, evidence-based, and safe care for patients with opioid use disorder (OUD) utilizing medication-assisted treatment (MAT). As evidence for the lifesaving benefits of MAT accumulates, we have responded with significantly increased utilization of these lifesaving medications from 13% in 2019 to ~70% at present.
- As our community’s population ages, the need for effective treatments to address sedative use disorders has never been greater. At SolMar, we recognize this and are one of only a few programs in Orange County providing prolonged benzodiazepine tapers at our residential level of care. Safety and security are essential, and we are proud to report zero incidents of loss or theft of controlled substances, showcasing our stringent measures for medication security.
- To further enhance medical oversight and innovation we obtained incidental medical services (IMS) certification in early 2022. This additional certification enables Hoag to have addiction specialists on site and expands the range of medical services we offer.
- We now have nurse practitioner support on the unit 5 days per week and nursing support 7 days per week. Medical doctor oversight, direction, and 24/7 availability remains a core component of our medically intensive level of residential treatment.
- In a proactive move toward enhancing diagnostic capabilities, a streamlined process has been developed for electrocardiograms (ECGs) at SolMar, facilitating efficient cardiac assessments for our patients, which are often needed before starting certain medications. Our medical staff continue to draw labs on site providing needed monitoring and diagnostic support without requiring off-site lab visits.
- Long-acting injectable medications such as Sublocade and Vivitrol are lifesaving medications used in the treatment of opioid use disorder and alcohol use disorder. We developed policies, protocols, and partnerships with specialty pharmacies to provide these medications and have fully integrated these new offerings over the past year. Approximately 70% of patients on sublingual buprenorphine at the residential level of care are now successfully transitioning on site to the long-acting injectable formulation of this medication.
- These updates reflect our dedication to continually improving and expanding our medical services to better serve our community.
- The introduction of virtual reality (VR) at SolMar has yielded noteworthy improvements in various health indicators. Participants reported a substantial reduction in self-reported pain levels, decreasing from an average of 6.2/10 pre-VR to 4.9/10 post-VR. Similarly, self-reported stress levels have shown consistent reduction. Analysis of blood pressure metrics further reveal positive trends with reductions in both systolic and diastolic pressure after VR sessions. These outcomes underscore the tangible benefits of integrating VR into our programs, contributing to enhanced well-being among our participants.

ACCOMPLISHMENTS

- We utilize various standardized instruments to measure patient progress during residential treatment. Some of these tools include the General Anxiety Disorder 7 (GAD-7) assessing anxiety, brief addiction monitor (BAM) assessing addiction severity, and the Patient Health Questionnaire 9 (PHQ-9) assessing depressive symptoms. These measures help to monitor changes in a patient’s condition, identify areas for improvement, and guide treatment decisions to improve patient
outcomes. Evaluating 127 patients during 2023, notable improvements in GAD-7 and PHQ-9 scores were observed with reductions of ~4 points and ~6 points respectively (decreasing scores indicating improvement in anxiety and depression).

- The BAM revealed significant improvements in various domains during the assessment. Specifically, “health problems” exhibited progress, with the score decreasing from 21.43 at admission to 12.61 at discharge. Sleep-related issues also saw improvement, with the score declining from 14.63 at admission to 8.99 at discharge. Additionally, cravings showed notable reduction, decreasing from 19.42 at admission to 8.22 at discharge. These positive changes underscore the effectiveness of our interventions.

### Outpatient Program

#### INNOVATION

We had significant advancements in our virtual care initiatives in 2023, including the creation of a VR Outpatient Group Protocol. This protocol seamlessly integrates VR approval and consent into our EPIC system for outpatients. Additionally, we introduced a comprehensive 6-week VR Curriculum for our PHP, which commenced in January 2023. As part of this initiative, PHP outpatients now benefit from weekly group VR sessions throughout their 4- to 6-week stay, enhancing their overall treatment experience.

#### ACCOMPLISHMENTS

In 2023 we utilized the Association for Ambulatory Behavioral Healthcare (AABH) Perception of Care, a patient satisfaction survey specifically designed for the AABH and their PHP/IOPs. This instrument consists of 13 standard metrics for comparison with similar programs across the United States. For 2023, the HATC IOP services had satisfaction scores which exceeded the national average in all 13 metrics and had an overall average of 4.6 compared to the national average of 4.35. The IOP services ranked in the 85 to 90 percentile of all programs among approximately 9,000 patient surveys. Only 12 programs had a higher average in 2023.

#### Team

The clinical treatment team is led by Steven Ey, MD, and Matthew Reed, MD. Dr. Ey is board certified by the American Board of Preventive Medicine in Addiction Medicine and is a Distinguished Fellow of the American Society of Addiction Medicine. Dr. Ey provides medical and clinical leadership for Hoag’s Addiction Treatment Centers. As Chief of Service, Dr. Ey expanded his services and expertise to Hoag’s Emergency Department and inpatient floors with the addiction medicine consult service. He received his medical degree from UCLA and completed an addiction medicine fellowship at Loma Linda University. He has previously served as medical director of the Betty Ford Center and Mission Hospital in Laguna Beach.

Dr. Reed oversees sub-acute addiction treatment at Hoag in his role as chief of outpatient addiction services and medical director for the SolMar Recovery residential program. Dr. Reed is triple board certified in psychiatry, pain medicine and internal medicine. He received his medical education at the University of Utah School of Medicine and completed his general psychiatry residency, general internal...
Neurobehavioral Health: Hoag Addiction Treatment Centers

of Arizona, a certified eating disorder specialist (CEDS), and a certified alcohol and drug abuse counselor in the state of California (CADC-II).

Jeannette manages the operations of HATC, with long-standing experience in the community substance abuse rehabilitation field.

Michelle Freyre, MSN, RN, has worked for Hoag Hospital since 2007 and has worked as a nurse in Orange County for more than 25 years. As the clinical nurse manager, Michelle provides clinical and operational oversight for the detox unit. The detox unit is the recipient of the Guardian of Excellence Award Patient Experience from Press-Ganey for 2020 and 2021, while also being a recipient of the Pinnacle of Excellence Award for Patient Experience from Press Ganey for 2021.

The clinical team is multidisciplinary, comprising registered nurses, physicians, licensed therapists, certified addiction treatment counselors, nurse practitioners, and licensed vocational nurses. The team also provides consultation to our medical and surgical inpatient floors, helping manage those patients’ substance abuse comorbidities.

Support & Education

The program holds regular continuing education trainings for the professional community addressing the most pressing mental health concerns with the most contemporary clinical information.

Alumni

After 30 years of service, the HATC alumni continue to meet on Zoom for peer support. The alumni also provide scholarships for qualified program graduates in need of sober living. Their dedication to sobriety and service to Hoag remained steadfast throughout the pandemic restrictions.
Neurobehavioral Health: ASPIRE Program

Overview

The Covid-19 pandemic has had a significant impact – especially on the mental health of adolescents – and little support exists for children and their parents moving through this fragile stage of development. For many families, unaddressed neurobehavioral challenges have become devastating catastrophes.

A recently published article stated that suicide is the third leading cause of death for young people ages 15 to 24. Approximately 20% of teens experience depression before they reach adulthood, and between 10% to 15% suffer from symptoms at any one time. Only 30% of depressed teens are being treated for it. In addition, co-occurring mental health disorders feed and are fed by a rise in the substance abuse epidemic. If you are a parent of a teen in Orange County today, you likely have your own story – direct or indirect – to underscore this unfortunate reality. A recently published nationwide study documented that 3.2% of children aged 3-17 years (approximately 1.9 million) have diagnosed depression.

The Pickup Family Neurosciences Institute at Hoag provides an innovative, focused answer to this glaring community need: ASPIRE (After School Program: Intervention and Resiliency Education). ASPIRE is an intensive outpatient program for adolescents ages 13-17 with primary mental health disorders and possible co-occurring substance abuse challenges. The program is evidence based and outcomes driven, and guides teens and their families through an eight-week curriculum of skills-based training in stress management, resiliency, interpersonal communication, mental health and substance abuse education. It is accredited to provide high school credit toward graduation requirements.

The curriculum incorporates dialectical behavior therapy, cognitive behavioral therapy, goal creation, building healthy habits, distress tolerance skills, education on emotions, interpersonal effectiveness, identity/values building and life skills. The program provides support in respect to the multifamily group specific for parents to also learn the skills and implement and support their teens at home while in the program. In addition to communicating with academic counselors, scheduling coursework in order to graduate, secondary education, independent life skills, hygiene, sleep protocols, education on time management, ASPIRE team at Hoag scheduling (balancing productive and pleasant activities), and managing anxious and depressive features this is in conjunction with time spent processing items learned to share with peers and gain insight from one another.

Program Summary: ASPIRE

- Adolescents 13-17 and their parents
- 8-week outpatient program; skills-based curriculum
- 4 nights weekly for 3 hours; parents 2 nights weekly for multifamily group
- Multidisciplinary team
- Collaborative with local schools

PROGRAM GOALS:

- Early intervention
- Destigmatize mental illness and mental health care
- Promote mental and behavioral health and well-being
- Emphasize “skill building & resiliency training” and de-emphasize “therapy"
- Empower parents for the unique demands of this life stage
- Help adolescents navigate the challenges inherent in the age, and build a foundation for young adulthood
Community Partnership

Hoag is working in close collaboration with six school districts in Orange County to combat the growing rates of teen depression and mental health.

- Newport Mesa
- Irvine
- Tustin
- Saddleback
- Capistrano
- Huntington Beach

Hoag has played a pivotal role in community integration related to presentations that have been conducted with the various school districts, educating on various topics such as gaming and technology, substance use and vaping, in addition to general mental health of adolescents. Hoag is positioned to support high school teens identified with mental health challenges by the school staff.

The program is offered at Hoag’s Center for Healthy Living in Newport Beach, as well as in Irvine.

The ASPIRE program remained open throughout the Covid-19 pandemic, continuing to support teens during these uncertain times.

A survey conducted in 2020 showed that 92% of teens who completed the ASPIRE program felt that the skills they learned were useful throughout their time and after, and 97% of parents who attended the ASPIRE multifamily group felt that the program supported them during their teens’ time in the program.

Team

The ASPIRE clinical team is led by Sina Safahieh, MD. Dr. Safahieh is board certified in child and adolescent psychiatry, and provides the program’s medical and clinical leadership, creating a unique partnership between Hoag and Children’s Health Orange County to meet this community need. Prerana Rao, LMFT, is the clinical program manager. Prerana has developed the clinical team, and with the team structured the program content, and has positioned ASPIRE to be a model for adolescent mental health treatment. Prerana is overseeing the program’s clinical and patient experience outcomes.

Hoag ASPIRE received the prestigious WASC (Western Association for School and Colleges) accreditation in January of 2019. With this accreditation, the ASPIRE program is the first mental health program in Southern California to give school credits for teens who attend a mental health skills-based program.
As the need for mental health continued through the pandemic, the ASPIRE program launched the Young Adult Mental Health Program for those ages 18-26 with a primary mental health condition at its Irvine location. The program has since been successful as an additional resource for the community and meeting the growing mental health needs in Orange County.

Hoag’s Young Adult Mental Health Program is tailored for 18- to 26-year-olds who are working toward managing primary mental health symptoms and general habit changes to support the transition from teenage years to adulthood. The program is 8 weeks long, 3 days a week with consultation with our medical director, Sina Safahieh, MD.

The curriculum incorporates dialectical behavior therapy, cognitive behavioral therapy, goal creation, building healthy habits, distress tolerance skills, education on emotions, interpersonal effectiveness, identity/values building and life skills. The program provides support in respect to resume building, job searches, communicating with academic counselors, scheduling coursework in order to graduate secondary education, independent life skills, hygiene, sleep protocols, education on time management, scheduling (balancing productive and pleasant activities), and managing anxious and depressive features while navigating higher education and employment avenues including support while preparing for interviews, mock interviews and future goal setting.

Program Summary: Young Adult Mental Health Program

- Adults 18-26
- 8-week outpatient program; skills-based curriculum, in addition to life skills
- 3 days weekly for 3 hours
- Multidisciplinary team

PROGRAM GOALS:

- Early intervention
- Destigmatize mental illness and mental health care
- Promote mental and behavioral health and well-being
- Emphasize “skill building & resiliency training” and de-emphasize “therapy”
- Help young adults navigate through life skills and build resilience regarding decision making
Neurobehavioral Health: Psychiatry Consult & Liaison Service

Medical illness and hospitalization are very stressful experiences to all patients and Hoag recognizes the importance of treating the entire patient, including one's emotional, psychological, and behavioral health. Hoag's psychiatry consultation-liaison service (psych CL) is composed of a multidisciplinary team of psychiatrists, psychiatric nurse practitioners and a psychologist. Our specialized team has an expertise in the diagnosis and treatment of psychiatric disorders in the medically ill, and the complex neurobehavioral disturbances that arise when treating one's acute medical illnesses. The psych CL team provides support to the emergency room, medical/surgical units, and intensive care units by conducting on-site consultation, evaluation, and assistance with behavioral management at both our Newport and Irvine campuses.

Proactively addressing our patients' neurobehavioral health allows for improved identification, patient and family psychoeducation, initiation of treatment and referrals for continuation of care via outpatient psychiatric or neurobehavioral health services. Our psychiatry team collaborates with inpatient social workers and case managers to ensure that our patients receive community-based resources for ongoing treatment beyond their acute care hospitalization. Additional specialized inpatient psychiatric admission can be facilitated by our psych CL team and case managers if it is identified that a patient is in the midst of a psychiatric or neurobehavioral health emergency.

Furthermore, the quality of patient care improves when assessing and treating the whole person. Physician and staff satisfaction have also improved with the ability to provide appropriate, important neurobehavioral health care to our patients. The team has increased value in the continuum of hospital-based care by lowering the costs associated with emergency department visits, reducing lengths of stay and focusing on decreasing re-admissions as a result of untreated neurobehavioral health disorders.

Hoag's psychiatry consultation-liaison team is led by Director Renee Garcia, MD. She is board certified in both general adult psychiatry and consultation-liaison psychiatry, a subspecialty of psychiatry focusing on the interface between general medicine and psychiatry. Mohamed El-Gabalawy, MD, is board certified in both general adult psychiatry and addiction psychiatry. Ashrah Elmashat, MD, is board certified in both general adult psychiatry and child/adolescent psychiatry. Natalie Song, PMHNP-BC, is a nurse practitioner with years of experience in general adult and emergency psychiatry.
Neurobehavioral Health: Maternal Mental Health Program

Overview

Maternal depression, also known as perinatal mood and anxiety disorders (PMADs), affects 15% to 20% of new mothers. It is the most common complication related to childbirth. Hoag Maternal Mental Health Program’s outpatient clinic was launched in December 2017 as a collaboration between the Pickup Family Neurosciences Institute (PFNI) and Women’s Health Institute. The program is an integral part of the comprehensive maternity care and education provided at Hoag Hospital, which is widely recognized for excellence in obstetrics and neurobehavioral health. The Hoag Maternal Mental Health Program is committed to identifying and treating mental health conditions before, during, and after pregnancy to ensure healthy outcomes for both mothers and babies. With its focus on four core principles including universal screening for maternal depression, linkage to supportive services, early intervention and treatment and community education, the program is set to make a significant impact on the well-being of mothers and babies in our communities.

Services

This unique program provides screening services to identify maternal mental health conditions early and offers a variety of treatment options including lifestyle modifications, cognitive behavioral therapy, group psychotherapy and medication management. Under the supervision of a board-certified reproductive psychiatrist, treatments are evidence based and follow recommended guidelines. The shared decision-making process carefully considers the known risks of untreated depression and the risks and benefits of treatment. The clinical team works in collaboration with the patient, support person(s), and clinical providers to optimize care.

Some of the services offered by the Hoag Maternal Mental Health Program include:

- Preconception planning (women with existing mental health conditions or who are already taking medications with plans to conceive)
- Mental health assessment during pregnancy and postpartum
- Individual and group psychotherapy
- Medication safety evaluation during pregnancy and breastfeeding
- Linkage to supportive services through the Maternal Mental Health Support Line
- Support groups and classes

Clinic Information

The Maternal Mental Health Program’s outpatient clinic and the Maternal Mental Health Support Line operate Monday through Friday from 9 a.m. to 5 p.m. The clinic is located inside the Hoag for Her Center for Wellness in Newport Beach and Irvine. With its calm and welcoming surroundings, women feel at ease and removed from the stigma of seeking care for mental health.

Team

The clinical team is led by Dr. Mercedes Szpunar, MD, PhD. Dr. Szpunar completed her psychiatry residency at the UCSD Women’s Reproductive Mental Health clinical training program. She was junior faculty at Harvard Medical School Center for Women’s Mental Health. Dr. Szpunar led several analyses with the Massachusetts General Hospital National Pregnancy Registry for Psychiatric Medications, with the goal to increase reproductive safety after use of psychiatric medications during pregnancy.

The team also includes Sarah Kauffman, MD, and Elizabeth Whitham, MD. Dr. Kauffman is board certified in adult psychiatry by the American Board of Psychiatry and Neurology. She completed fellowship training in both women’s mental health and forensic psychiatry at Columbia University. Dr. Whitham completed her postgraduate psychiatry education in general psychiatry at Loyola University Stritch School of Medicine in Chicago where she focused on women’s mental health. Dr. Whitham has significant women’s mental health research experience and has authored numerous publications.

The Maternal Mental Health Program clinic team also includes licensed marriage and family therapists and licensed clinical social workers who are maternal mental health certified through Postpartum Support International.
Patients have access to a range of wellness providers and complementary medicine offerings within the Hoag for Her Center for Wellness including acupuncture, massage, Pilates, yoga and meditation, a registered dietitian and certified fitness trainer.

**Outcomes**

Since its launch, the clinic has provided over 10,750 individual face-to-face encounters, provided support to over 1,725 callers to the Maternal Mental Health Support Line annually, and linked individuals to community resources.

Using the Edinburgh Postnatal Depression Scale (EPDS) as a screening tool, the clinic has been able to track outcomes. At three months post treatment, over 70% of patients have five points or better improvement on the EPDS score assessment.

Staying true to its mission of providing outreach and education, the clinic team has provided virtual lectures to community physicians around maternal mental health and caring for pregnant and new moms. In September 2018, California passed into law important maternal mental health legislation requiring obstetric and primary care physicians to screen patients for depression, requiring hospitals to provide training to all clinical staff who care for pregnant and new moms and requiring the State Department of Health to secure and utilize federal funding to develop maternal mental health programs. Hoag and its Maternal Mental Health Program clinic have been at the forefront to develop and implement such programs.

In 2019, the Maternal Mental Health Program clinic, along with other Hoag Neurobehavioral Health programs, received accreditation from the Counsel on Accreditation for Rehabilitation Facilities (CARF).
Neurobehavioral Health: 
Crisis Response Team

In response to escalating workplace violence, Hoag’s Pickup Family Neurosciences Institute in collaboration with Hoag Security created a Crisis Response Team for early intervention and rapid response to acute behavioral crises. This effort was supported by hospital leadership and included nursing and physician partners. The team consists of a lead psychiatrist, supervised, trained nurse practitioners on-site 24/7 for consultation, education, interventions, and debriefing of events. Goals of this team include identifying escalating behaviors and intervention prior to a negative event, providing integrative clinical treatment to our patients, de-escalation and standardized care for an acute behavioral decompensation. This team has improved the quality of care delivered by Hoag to be proactive in managing behavioral escalations and crises.

The Crisis Response Team is led by Dr. Mathew Reed and Nurse Practitioner Supervisor Thomas C. Schreiber, FNP-BC.

Dr. Reed oversees subacute addiction treatment at Hoag in his role as chief of Outpatient Addiction Services and serves as medical director for the SolMar Residential program. Dr. Reed is triple board certified in general adult psychiatry, pain medicine, and internal medicine. He completed his general psychiatry residency, general internal medicine residency, and pain medicine fellowship at the University of California, Davis. Complementary to his roles with Hoag’s addiction programs, Dr. Reed serves as chief of the Inpatient Pain Service addressing acute and chronic pain often involving addiction or other psychiatric comorbidities.

Tom Schreiber spent most of his health care career in emergency medicine as a paramedic, emergency care technician, and registered nurse working in the emergency departments at Pine Ridge Physician’s Regional in Naples, Florida and at Hoag Hospital, Newport Beach. While obtaining his Master’s degree, Tom worked as a relief charge nurse in Hoag’s Chemical Dependency Unit. Tom has previously worked as a nurse practitioner at Pain Medicine Associates and Advatmed. Prior to graduating from USC with a Master’s degree as a family nurse practitioner, he graduated with honors with a Bachelor’s degree in nursing from West Coast University.
NFL Player’s Association Brain & Body Program

Hoag is the West Coast delivery partner for the Brain & Body Physical Program, a clinical partnership with the Cleveland Clinic sponsored by The Trust, a division of the National Football League (NFL) Players Association. Launched in February of 2016, the program has now had more than 625 former NFL players come through the Hoag administered program.

Coordinated by Hoag Corporate Health, this two-day program employs a comprehensive multispecialty approach to health care and includes examinations by Hoag-affiliated providers in the following areas:

- Internal medicine
- Exercise physiology
- Orthopedics
- Physical therapy
- Cardiology
- Sleep medicine
- Neurology
- Neuropsychology
- Advanced imaging

To complement the examinations, former players also undergo in-house imaging and laboratory testing that includes:

- Brain magnetic resonance imaging (MRI)
- Sleep study
- Neuropsychological assessments
- Calcium computed tomography (CT) scans
- Full lab panel that includes advanced lipids and hormones
- Echocardiography
- Cardiopulmonary testing
- Vision
- Audiology
- Body composition and mobility
- Balance testing
- Bone density testing

Upon completion of the assessments, a comprehensive follow-up consultation is conducted by their primary physician and clinical results and individualized recommendations are reviewed with the former player. Each former player receives a detailed report which provides results.

NFL Brain and Body Clinical Partners

Cleveland Clinic

Cleveland Clinics’ Brain Health and Restoration Program is dedicated to developing a collaborative “game plan” with former players to help maintain and enhance cognitive, motor, and social functioning.

hoag.

Pickup Family Neurosciences Institute

Pickup Family Neurosciences Institute’s Brain & Body Program develops a collaborative “game plan” with former players to assess, maintain and enhance their cognitive, motor and social functioning.

MASSACHUSETTS GENERAL HOSPITAL

The MGH Brain and Body Program is dedicated to providing world-class, evidence-based medical care to former NFL players in order to help them develop and maintain a healthy brain and body.

Tulane Institute of Sports Medicine

The multidisciplinary treatment team at Tulane Institute of Sports Medicine (TISM) takes pride in their services to support players’ health and safety both on and off the field.

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

The medical assessments offered by the CSRA, in collaboration with UNC’s Departments of Neurology and Physical Medicine and Rehabilitation, provides former athletes with a comprehensive evaluation of their cognitive and physical functioning.
Participants in the NFL Brain & Body Program.

and individualized recommendations. Hoag is committed to maintaining a close relationship with each former player and offering follow-up support in the form of providing referrals, answering questions, and more. This program is offered to players at no cost, and they are eligible to participate every five years.

With the program now entering its 8th year, former players have begun returning to Hoag for their 5-year follow-up. Return players have shown significantly improved bloodwork and as a cohort are reporting a minimum of 20 pounds of weight loss along with other marked lifestyle changes. Hoag continues to provide virtual consultations with physicians and exercise physiologists for former players who are unable to return for an in-person follow-up. Hoag continues to see increases in former player participation and was named the most requested Brain and Body exam delivery location amongst all five participating clinical institutions.

Partner Health Systems

<table>
<thead>
<tr>
<th>Dignity Health</th>
<th>Baylor Scott &amp; White Health</th>
<th>Intermountain Healthcare/Desert Orthopaedic Center</th>
<th>Atlantic Health System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emory Healthcare</td>
<td>UCSF</td>
<td>Hoag Hospital</td>
<td>Penn Medicine/Rothman Orthopaedic Institute</td>
</tr>
<tr>
<td>MedStar Health</td>
<td>Henry Ford Health System</td>
<td>Cedars Sinai</td>
<td>University of Pittsburgh Medical Center</td>
</tr>
<tr>
<td>Kaleida Health</td>
<td>Bellin Health</td>
<td>Baptist Health South Florida</td>
<td>Stanford Health Care</td>
</tr>
<tr>
<td>Atrium Health/OrthoCarolina</td>
<td>Houston Methodist</td>
<td>North Memorial Health/Twin Cities Orthopedics</td>
<td>Virginia Mason Franciscan Health</td>
</tr>
<tr>
<td>Advocate Health Care</td>
<td>Indiana University Health</td>
<td>Mass General Brigham</td>
<td>Advent Health</td>
</tr>
<tr>
<td>TriHealth</td>
<td>Baptist Health</td>
<td>Ochsner Health</td>
<td>Ascension Saint Thomas/Tennessee Orthopedic Alliance</td>
</tr>
<tr>
<td>University Hospitals</td>
<td>The University of Kansas Health System</td>
<td>Hackensac Meridian Health/Hospital for Special Surgery</td>
<td>Inova</td>
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</table>
NFL Dedicated Hospital Network Program

In September 2021, the NFL launched the Dedicated Hospital Network (DHN) Program, a clinical program designed to provide vested former players with a supplemental “first dollar” health plan solution in partnership with Cigna and covered by the NFL.

This program established a network of high-quality medical care providers in NFL markets to offer primary care and other services to former players. Services under the DHN Program are provided free of charge to eligible vested former players and cover basic preventative screenings, mental health care, and orthopedic treatments up to an annual maximum of $25,000. Hoag Corporate Health manages and facilitates this program and coordinates Hoag Sports Medicine physicians to provide the initial intake assessments and establish each former player’s personalized care plan. Since its launch, the program has provided services to just over 100 former players. The services and specialties that are being provided by Hoag-affiliated providers include:

- Sports medicine
- Orthopedics
- Cardiology
- Gastroenterology
- Advanced imaging

Former players register for the program directly with a dedicated Cigna concierge team member who then contacts the Hoag NFL program coordinator, Jocelyne Chavarria. Jocelyne then works with the former player to establish care and schedule the necessary appointments and follow-up consultations. Given Hoag’s experience with the NFL Brain & Body program, many of the processes and procedures we have developed for that program were adopted by Cigna and the national network of clinical partners for the DHN Program.
Hoag Sleep Health Program

Studies amply document that sleep disturbance greatly impacts all aspects of health, including mental health, increased risk of cardiovascular disease, metabolic disturbance, and even immune system functions. Managing sleep disorders is fundamental to health care delivery.

Overview

Pickup Family Neurosciences Institute’s (PFNI’s) Sleep Health Program was among the first centers in Orange County dedicated to studying and treating patients with sleep disorders and has now been serving the community for over 21 years.

The Judy & Richard Voltmer Sleep Center at Hoag Health Center Newport Beach has eight private bedrooms to conduct sleep studies. The Irvine Sleep Center at Hoag Health Center Sand Canyon is equipped with four private bedrooms. In both centers, each room is designed to feel like a high-quality hotel. The Sleep Health Program recently upgraded its diagnostic equipment to Nihon Kohden, which meets and exceeds the American Academy of Sleep Medicine guidelines. Sleep patterns can be evaluated throughout the night or day at both sleep centers.

Our physicians are sleep medicine specialists who can diagnose and treat various sleep disorders such as insomnia, narcolepsy, obstructive sleep apnea, periodic limb movement disorder/restless legs syndrome, and REM sleep behavior disorder. The program also offers a highly effective outpatient behavioral treatment course for insomnia. Program achievements include accreditation from the American Academy of Sleep Medicine.

Team

Hoag Sleep Health Program is led by our program director, neurologist Jose Puangco, MD. The program has multiple board-certified sleep physicians and multiple nurse practitioners giving patients a choice of sleep specialists with varying backgrounds, including critical care, pulmonology, internal medicine, and neurology specialists. Our team of physicians is supported by highly skilled and board-registered polysomnographic technologists.

Adult Sleep Studies

In 2023, Hoag Sleep Health Program saw 3,196 new patients in consultation and 3,880 returning patients. Telehealth visits continue to grow with 1,308 virtual video visits conducted by Hoag’s certified sleep specialists. The sleep labs performed 841 diagnostic polysomnography studies (PSG), 296 split night PSG studies, and 275 with a full night dedicated PAP titration (CPAP, BPAP, ASV, IVAPS). There were 25 PSG studies with oral appliance therapy or Inspire therapy, 39 multiple sleep latency tests (MSLT) and maintenance wakefulness tests (MWT). Additionally, there were 1,582 home sleep apnea tests. A total of 3,058 studies were performed in 2023.

Obstructive Sleep Apnea

According to the American Academy of Sleep Medicine, it is estimated that nearly 30 million adults in the United States have obstructive sleep apnea, which is a sleep-related breathing disorder characterized by repetitive episodes of complete or partial upper airway obstruction occurring during sleep. One treatment option for obstructive sleep apnea (OSA) is continuous positive airway pressure (CPAP).

Along with traditional methods of treating obstructive sleep apnea, the program has adopted new treatment methods. For the treatment of obstructive sleep apnea, the Sleep Health Program is working in collaboration with local dentists to provide oral appliance therapy. Hoag and Dr. Puangco were the first in Orange County to offer the Inspire medical device, giving patients a surgical option for the treatment of obstructive sleep apnea.
PFNI is the first in Orange County to offer a new, cutting-edge treatment option for OSA. The Inspire Upper Airway Stimulation therapy is the first implantable device for treating OSA. This innovative therapy represents a significant advance in sleep apnea treatment and is life-changing for some of our patients who are unable to use CPAP.

More than 30 million Americans have sleep apnea. Depending on the degree of severity, OSA can be a potentially life-threatening condition. Research shows that a person with poorly managed sleep apnea is at increased risk for heart attack, stroke, weight gain, high blood pressure and heart failure. CPAP therapy has been shown to be an effective treatment for sleep apnea; however, studies show that roughly half of all patients that start CPAP eventually become noncompliant. A recent study in the Journal of Clinical Sleep Medicine found that hospital readmission rates, for all causes including cardiovascular and pulmonary, in patients with OSA were more than double for those who did not adhere to their CPAP therapy.

**Support & Education**

Hoag Sleep Health Program offers a six-week Healthy Mind, Healthy Sleep online meditation and mindfulness course. This 90-minute online course with Hoag Wellness consultant and author Anusha Wijeyakumar is designed to help patients integrate mindfulness and meditation into their daily life to effectively reduce stress and anxiety, and help patients get a more restful sleep.

In 2023, 100% of the participants of the Healthy Mind, Healthy Sleep program reported noticeable improvements in their sleep by the end of the six-week series. For class dates or to register, call 800-400-HOAG (4624) or visit hoag.org/education. For more information about sleep disorders, visit hoag.org/sleep.
In Search of Sleep:
Hoag doctors offer advice and treatment for common disorders when restful nights prove elusive.

by Tanya A. Yacina – Winter 2023/2024

In a fast-paced world, the art of obtaining restful sleep is frequently underestimated. As a cornerstone of one’s well-being, a good night’s slumber is a deep physiological and psychological necessity, vital for cognitive functions, emotional stability and physical health.

Dr. Jose Puangco, service chief for the Hoag Sleep Health Program, including its Voltmer Sleep Center in Newport Beach and Hoag Sleep Center in Irvine, says restorative sleep is vital for overall health. REM sleep, in particular, solidifies memories and the learning process. Getting enough restorative sleep also helps with emotional stability, better stress management, improved attention span, alertness and problem-solving.

However, sometimes sleep can be elusive. It’s hard to shut off our minds as we think about events of the day, deadlines looming in the week ahead or other problems that may be weighing on us. But when trouble falling asleep becomes more than a nuisance every once in a while, it might be time to seek help.

“Everyone has occasional episodes of insomnia, but it’s the bad habits we pick up during these times, such as prolonged use of sleep medications or excessive caffeine intake, that have longlasting effects; says Hoag Sleep Health Program Supervisor Alana Sherrill. “For some patients with severe insomnia, they don’t really remember how it started, but they have picked up so many bad habits over the years, they’ve have forgotten how to sleep without them.”

The Science Behind Sleep
Achieving quality rest is a key part of well-being. Although one common diagram depicts good health as the intersection between diet and exercise, a more realistic picture is when diet, exercise and sleep intersect because sleep impacts all aspects of health, according to Sherrill, who is certified in clinical sleep health and is a registered polysomnographic technologist (the highest certification for health care professionals who clinically assess patients with sleep disorders).

She points out that Hoag was one of the first hospitals in Orange County to focus on sleep health by opening its Newport Beach sleep center in 1987. And its experts are well-versed in the medical reasons for getting good shut-eye, why this normal body function sometimes goes awry and how to get it back on track. Puangco explains that the glymphatic system is more active during sleep. “This process clears waste products that accumulate in the brain during waking hours, particularly beta amyloid, which is associated with Alzheimer’s dementia,” he says. “Sleep plays a role in the endocrine system, such as production of cortisol (stress hormone), insulin (sugar metabolism) and growth hormones. It therefore supports metabolic health and stress response.”

Over the decades, the Hoag Sleep Health Program has grown from a small unit in the hospital basement to one of the largest sleep programs in the area. “the program treats sleep disorders including insomnia, circadian rhythm disorders, narcolepsy, sleep apnea, hypersomnia and sleep movement disorders.

One of the program’s patients, Michael Helo, experienced interrupted sleep, tiredness, drowsiness when driving and a sore throat in the mornings, so he participated in a sleep analysis to figure out what was going on. For the study, his body and head were hooked up to wires to track his sleep pattern.

Continue reading at viewer.joomag.com/digital-nb79-2023/0621889001702499423?utm_campaign=%5BSENT+NEW+ISSUE%3Ddigital_NB79_2023&ref=email
Quality Assurance

The standards for accreditation by the American Academy of Sleep Medicine mandate a rigorous scoring quality assurance program comparing the scoring of registered polysomnographic technologists with a gold standard of board-certified sleep physicians with an inter scorer reliability greater than 85%.
Neuro-Rehabilitation Services:
Fudge Family Acute Rehabilitation Center

Overview

The Fudge Family Acute Rehabilitation Center (FFARC) located on the third floor of the West tower and North building of Hoag Newport Beach, is a stand-alone hospital within a hospital, providing a state-of-the-art rehabilitation center with customized programs to help patients in post-acute recovery of neuro and physical function attain their greatest level of independence and return to community living. Our world-class facility offers intensive, daily rehabilitation services to maximize independence and improve quality of life.

FFARC is available to adults who have been treated for a wide variety of illnesses and injuries including brain injury, brain tumor surgery, spinal cord injury, surgery or stroke. Our 24-bed, 25,000-square-foot center provides comprehensive care with 24-hour rehabilitation nursing, full-time medical director oversight, and a team of certified experts. We also provide state-of-the-art equipment and new technologies such as Bioness Integrated Therapy System (BITS) and functional electrical stimulation wearable devices, and REAL Immersive Virtual Reality system by Penumbra, access to Hoag education programs, as well as treatment in the outdoor therapy garden and even a putting green.

FFARC utilizes an interdisciplinary team approach focused on highly specialized assessments of each individual’s functional health patterns. Treatment goals are mutually agreed upon by patients and caregivers, targeting optimal functional outcomes. The overall well-being of the patient is achieved through realistic goals using current research and evidence-based strategies. Treatment is provided primarily in one-on-one sessions, exceeding the typical

2023 Patient Experience – Press Ganey

<table>
<thead>
<tr>
<th>Overall Care</th>
<th>Likelihood to Recommend</th>
</tr>
</thead>
<tbody>
<tr>
<td>94.44%</td>
<td>100%</td>
</tr>
<tr>
<td>MEAN SCORE</td>
<td>MEAN SCORE</td>
</tr>
<tr>
<td>99&lt;sup&gt;th&lt;/sup&gt;</td>
<td>99&lt;sup&gt;th&lt;/sup&gt;</td>
</tr>
<tr>
<td>PERCENTILE RANK</td>
<td>PERCENTILE RANK</td>
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</table>

Peer Group: All hospital DB | PG Overall N=229 | CAHPS Item Level N=Invalid | Received Date | 01 Jan 2022 - 31 Dec 2022

In 2022, the Fudge Family Acute Rehabilitation Center expanded from 18 to 24 beds, all in private rooms with warm, comfortable surroundings and state-of-the-art amenities.

Fudge Family Acute Rehabilitation Center has achieved the highest patient satisfaction.

volumes provided nationally. Families and home caregivers are included in transition hand-offs to outpatient care.

Our compassionate care environment promotes recovery. From the design of the center to the design of our team, our specialists have thought of every detail to help patients return to independent or modified independent living.

Specialized board-certified rehabilitation registered nurses account for 33% of our nursing team. Additional certifications include board-certified neurologic clinical specialists in physical therapy.

OUR INTERDISCIPLINARY TREATMENT TEAM INCLUDES:
- Licensed clinical social workers
- Neuropsychology and psychology
- Occupational therapists and assistants
- Physicians
- Rehabilitation nurses

Fudge Family Acute Rehabilitation Center: 949-764-3900
2023 Facility Metrics – Fudge Family Acute Rehabilitation Center

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharges in Sample</td>
<td>538</td>
<td>599</td>
<td>535</td>
<td>659</td>
</tr>
<tr>
<td>Average Length of Stay</td>
<td>12.2 days (14.2 days national average)</td>
<td>12.19 days (14.51 days national average)</td>
<td>12.19 days (14.51 days national average)</td>
<td>11.64 days (13.94 days national average)</td>
</tr>
<tr>
<td>60% Rule Compliance</td>
<td>72.7%</td>
<td>73.0%</td>
<td>73%</td>
<td>74%</td>
</tr>
</tbody>
</table>

2023 Quality Metrics – Fudge Family Acute Rehabilitation Center

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home/Community Discharge Rate</td>
<td>86.4% (76.9% national average)</td>
<td>88% (79% national average)</td>
<td>90% (77% national average)</td>
<td>88.47% (77.23% national average)</td>
</tr>
<tr>
<td>SNF Discharge Rate</td>
<td>2.4% (11.3% national average)</td>
<td>4% (10% national average)</td>
<td>2% (11% national average)</td>
<td>2.58% (11.38% national average)</td>
</tr>
<tr>
<td>Average Functional Gain</td>
<td>26 (23 points national average)</td>
<td>28 (30 points national average)</td>
<td>26.21 (23.78 points national average)</td>
<td>27 (24.1 national average)</td>
</tr>
<tr>
<td>Therapy Minutes per Patient Day</td>
<td>146 (139 national average)</td>
<td>146 (139 national average)</td>
<td>144 (125 national average)</td>
<td>138.86 (136 national average)</td>
</tr>
</tbody>
</table>

Functional Scoring Comparison: Functional Abilities

Hoag’s FFARC significantly exceeds national benchmarks for patients discharged to home setting, with fewer discharges to subacute nursing facility or back to hospital for acute care.
Keyvan Esmaeili, MD, is the medical director of the FFARC. He is a board-certified physical medicine and rehabilitation physician. Hadi Rasul, RN, BSN, MBA, CRRN, is the director of acute rehabilitation. Brian Boone, PT, DPT, is the therapy manager, and Lisa Fahey, MSN, RN, CRRN, is the nurse manager.

- Physical therapists and assistants
- Recreational therapist
- Speech language pathologists

**OTHER SERVICES MAY INCLUDE:**
- Case management
- Chaplain services
- Dietary services and dietitian consultations
- Hospital pharmacy
- Laboratory services
- Radiology services
- Respiratory therapy
Outpatient Neuro-Rehabilitation Services

Overview

Hoag Rehabilitation Services are available for patients across the full continuum of care, including acute hospitalization, inpatient rehabilitation facility, the outpatient setting, and home setting. The rehabilitation team of specialists is here to support patient needs at each step of their journey. Our goal is to help return our patients to their highest level of functioning and optimize outcomes by integrating skilled treatment techniques with patient and caregiver education. This program is offered at both Hoag Newport Beach and Hoag Irvine. The Fudge Family Acute Rehabilitation Center is located on the Newport Beach campus.

The rehabilitation team includes physical therapists and physical therapist assistants, occupational therapists and occupational therapy assistants and speech-language pathologists. The therapists and assistants have advanced certification or training in neurology, orthopedics, vestibular rehabilitation, geriatrics, lymphedema, pelvic floor, hand rehabilitation, voice and swallowing.

Rehabilitation Services at Hoag provides high-quality care by utilizing evidence-based practices and state-of-the-art equipment and technology. Care is delivered one on one by our licensed and specialized staff. Our highly skilled staff collaborate with the physician and the rest of the interdisciplinary team to develop an individualized plan of care.

Comprehensive rehabilitation services play an important role in assisting patients with neurological disorders to achieve their highest level of function.

PHYSICAL THERAPY

Hoag physical therapists and assistants are specifically trained to improve movement, restore function, and/or relieve pain for the following disorders:

- Neurological disorders such as stroke, traumatic brain injury and brain tumor
- Parkinson’s disease and other movement disorders
- Multiple sclerosis
- Balance and vestibular disorders including vertigo and dizziness
- Other degenerative neurological diseases

- Neuropathy
- Spinal disorders
- General weakness
- Orthopedic injuries
- Headaches
- Gait instability
- Facial weakness
- Lymphedema

Individual patient needs may include:

- Comprehensive balance and vestibular testing and fall prevention treatment
- Functional mobility and transfer training
- Gait training
- Exercises for strength and flexibility
- Neuromuscular re-education
- Cardiovascular conditioning
- Joint and soft tissue mobilization
- Modalities for swelling and muscle re-education
• Patient, family and caregiver education
• Vocational simulation
• Wheelchair evaluation
• Patient, family and caregiver education
• Comprehensive Parkinson’s disease program including PWR! Principles
• Driving assessment and training (see below)
• Neuromuscular electrical stimulation gait training with Walkaide®

**OCCUPATIONAL THERAPY**
Hoag occupational therapists and assistants help improve or maintain the ability of individuals to perform meaningful everyday occupations of life that have been affected by injury or disease, such as:
• Neurological disorders such as stroke, traumatic brain injury and brain tumor
• Parkinson’s disease and other movement disorders
• Multiple sclerosis and other degenerative neurological diseases
• Spinal disorders and orthopedic injuries
• Fracture, dislocation, and subluxation of fingers, hand, wrist and elbow

Individual patient needs may include:
• Re-training in activities of daily living such as self-care, bathing, toileting, eating, cooking, money management, gardening, housecleaning, child care and working
• Upper extremity exercises to improve strength and coordination
• Provision of orthotics and splinting
• Edema management
• Instruction in use of adaptive equipment
• Environmental modifications and fall prevention strategies
• Cognitive re-training – attention, memory, concept formation, time management, problem-solving and thinking skills
• Perceptual re-training – ability to interpret sensory information received from the environment
• Visual processing therapy – visual eye control, reading, reduced vision due to double or blurred vision and visual field deficits
• Neurodevelopmental treatment and neuromuscular electrical stimulation

**DRIVING REHABILITATION PROGRAM**
The goal of Hoag Hospital’s Driving Rehabilitation Program is to promote independence and ensure safety while using a vehicle. This program can help maintain a client’s independence, teach compensation strategies for physical, cognitive and visual limitations, and ensure safety on the road. The assessment consists of a clinical evaluation and a behind-the-wheel evaluation. The clinical evaluation includes assessment of vision, reaction time, cognition, perception, memory, concentration, attention, judgment, processing, physical function and the need for adaptive equipment. The behind-the-wheel evaluation assesses the driver’s skills under normal driving conditions. Adaptive equipment may be added to the vehicle and used if needed. Recommendations will be made for any needed car modifications. The assessment is provided by an occupational therapist and driving instructor who are certified driver rehabilitation specialists; available at the Newport Beach location.
SPECIALIZED NEONATAL CARE

Specialized neonatal occupational therapists and physical therapists also provide care in our Neonatal Intensive Care Unit at Hoag Hospital Newport Beach and Irvine. Critically ill newborns and infants are seen for developmental progression, feeding, positioning, massage and parent/family education.

SPEECH-LANGUAGE PATHOLOGY

Hoag speech-language pathologists specialize in assessment and treatment of the following:

- Communication and cognitive problems after a stroke or brain injury
- Parkinson’s disease and other movement disorders
- Aphasia – loss of the ability to express or understand spoken or written language
- Dysarthria – disturbance in the strength or coordination of the muscles of the speech mechanism
- Apraxia – difficulty sequencing movements or actions related to speech
- Voice disorders such as vocal nodules, paralyzed vocal cords and muscle tension dysphonia
- Dysphagia – swallowing difficulties; interventions include diagnostic procedures: videofluoroscopic swallowing studies (VFSS) and flexible fiberoptic endoscopic evaluation of swallowing (FEES); treatment may include exercises, strategies and neuromuscular electrical stimulation
- Communication and swallowing problems after surgical procedures and/or radiation therapy

Individual patient needs may include:

- Identification of appropriate diet that specifies the thickness and consistency of food and liquids that are safer to swallow
- Provision of recommendations for optimal swallowing safety
- Train and educate on strategies including postural changes and other maneuvers to enhance swallowing
- Instruction in appropriate oral hygiene
- Exercises for strengthening and improving coordination of the swallowing mechanism

- Neuromuscular electrical stimulation to improve swallowing ability and facial weakness
- Perceptual clinical assessment of the vocal mechanism
- Identifying factors contributing to voice problems
- Education on environmental irritants, vocal use, adequate hydration, avoidance of phonotraumatic behaviors and control of health issues — reflux, allergies and asthma
- Establishing a phonation pattern that does not cause damage — addresses pitch, loudness, intonation, phonation, breathing and resonance
- Vocal function exercises to achieve optimal stamina, strength and coordination of breath support, phonation and resonance
- Acoustic and objective analysis
- Family and caregiver training
- Comprehensive Parkinson’s disease program including SpeakOut®

SWALLOW STUDIES

Swallowing is a complex function involving the mouth, throat and esophagus. Hoag’s speech-language pathologists provide a comprehensive approach to evaluation and treatment of swallowing disorders caused by stroke, other neurologic disorders, cervical spine disease, head and neck cancer, laryngectomy and weakness of or damage to the muscles and nerves used for swallowing.

TIMS MVP® is the ultimate swallow study recording solution. It records with speeds up to 30 frames per second, with synchronized audio.
Initial assessment may include a VFSS or a modified barium swallow study (MBSS), which is an X-ray assessment of the swallowing mechanism, or FEES, which is a swallow study using a small, flexible, fiberoptic scope. These exams enable the clinicians to identify the disorder and help guide the appropriate treatment program. With the addition of the TIMS Medical Video Platform®, clinicians benefit from high-resolution video and audio recording of the swallow study. The goal of the program is to keep patients eating by mouth or to return them to eating by mouth whenever possible.

**AFTERCARE AND GROUP CLASSES**

These classes are offered to Hoag Rehabilitation Services patients at Hoag Health Center Newport Beach. Each participant has already successfully completed their individualized, one-on-one rehabilitation. These classes enable the patients to continue activities in a supervised group setting while at Hoag.

**INDEPENDENT GYM EXERCISE CLASS**

This class continues the exercise program that was prescribed by each patient’s therapist in a supervised setting utilizing the Hoag Rehabilitation gym and equipment. The participant must be able to walk unassisted and be independent. The class meets twice each week (Tuesdays and Thursdays or Wednesdays and Fridays) for eight weeks.

**ASSISTED GYM EXERCISE CLASS**

This class will enable the patient to continue the exercise program that was prescribed by their therapist in a supervised setting. This class provides closer supervision and is available for patients who require some physical assistance. If assistance is required, the participant must attend with a caregiver. The class is held twice each week (Tuesdays and Thursdays) for eight weeks.

**BALANCE MOBILITY EXERCISE CLASS**

This class focuses on balance and mobility. It will build on the principles introduced previously in physical therapy. This is for participants who may require some physical assistance and closer supervision. The class is taught by a licensed therapist. This class is held weekly (Thursdays) for eight weeks.

**FORCED USE EXERCISE CLASS**

This is a group class for people with Parkinson’s disease focusing on exercise principles using equipment including the stationary bike, treadmill, and elliptical trainer. This class includes high-intensity exercise during which participants will be working with a goal of a maximum heart rate of 60% to 80%. The classes are taught by a licensed therapist. This class meets three times each week (Monday, Wednesday and Friday) for eight weeks.

**POWER OVER PARKINSON’S EXERCISE CLASS**

This is a group exercise class for people with Parkinson’s disease utilizing large amplitude movements (PWR! Principles). Participants improve their overall movement and coordination, walking, arm and leg movement, and balance. The classes are taught by a licensed physical therapist and occupational therapist. The intermediate class meets on Wednesdays and the beginner class meets on Thursdays for eight weeks.

**COMMUNICATION RECOVERY GROUP**

This once-per-week small group meeting is for those who have experienced speech and language impairment because of a neurological disorder such as a stroke. The group is facilitated by our speech-language pathologists with a goal of enabling practice and improvement of communicative abilities. This includes spoken and written expression as well as listening and reading comprehension. The group meets on Fridays.
**Patient Outcomes 2023 – Average Functional Improvement In Patient Reported Outcomes**

<table>
<thead>
<tr>
<th>Reporting Year</th>
<th>Spinal Disorders – Neck (NDI)</th>
<th>Voice (VHI)</th>
<th>Spinal Disorders – Back (ODI)</th>
<th>Balance (ABC)</th>
<th>Lower Extremity (LEFS)</th>
<th>Vestibular Impairments (DHI)</th>
<th>Upper Extremity (Q-DASH)</th>
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</thead>
<tbody>
<tr>
<td>FY2013</td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13%</td>
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<tr>
<td>FY2014</td>
<td>12%</td>
<td></td>
<td>13%</td>
<td>14%</td>
<td>18%</td>
<td>20%</td>
<td>31%</td>
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<tr>
<td>FY2015</td>
<td></td>
<td>12%</td>
<td></td>
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<td>FY2016</td>
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<tr>
<td>FY2017</td>
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<tr>
<td>FY2017 (6 month annualized)</td>
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<td></td>
</tr>
<tr>
<td>CY2018</td>
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<tr>
<td>CY2019</td>
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<td></td>
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<tr>
<td>CY2020 (Covid)</td>
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<tr>
<td>CY2021 (Covid)</td>
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<tr>
<td>CY2022</td>
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<tr>
<td>CY2023</td>
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</tbody>
</table>

**Patient Volumes – Combined Inpatient/Outpatient Rehabilitation Sessions**

<table>
<thead>
<tr>
<th>Reporting Year</th>
<th>Patient Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2013</td>
<td>80,000</td>
</tr>
<tr>
<td>FY2014</td>
<td>70,000</td>
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<tr>
<td>FY2015</td>
<td>60,000</td>
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<td>FY2016</td>
<td>50,000</td>
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<tr>
<td>FY2017</td>
<td>60,000</td>
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<tr>
<td>FY2017 (6 month annualized)</td>
<td>60,000</td>
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<tr>
<td>CY2018</td>
<td>50,000</td>
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<tr>
<td>CY2019</td>
<td>40,000</td>
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<tr>
<td>CY2020 (Covid)</td>
<td>40,000</td>
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<tr>
<td>CY2021 (Covid)</td>
<td>40,000</td>
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<tr>
<td>CY2022</td>
<td>40,000</td>
</tr>
<tr>
<td>CY2023</td>
<td>40,000</td>
</tr>
</tbody>
</table>
Clinic Information

The outpatient rehabilitation offices operate Monday through Friday from 7 a.m. to 6 p.m. The Newport Beach office is located at 520 Superior Ave., Suite 100, and can be reached at 949-764-5645.

The Irvine office is located at 16300 Sand Canyon Ave., Suite 100, and can be reached at 949-557-0630.

State-of-the-art equipment and facilities support recovery with compassionate and dedicated Hoag staff.

Team

The Rehabilitation Services program at Hoag is led by Mark Glavinic, PT, Doctor of Physical Therapy and board-certified neurologic clinical specialist. In Newport Beach, the inpatient program is led by Tom DeBacker, PT, and the outpatient program is led by Gene Peterson, PT. In Irvine, the inpatient and outpatient programs are led by Amy M. Salinas, OT/L, MS, PAM. The inpatient and outpatient speech-language pathology program is led by Tracy Thomas, MS, CCC-SLP.

The clinical team includes board-certified clinical specialists in neurology, geriatrics, oncology, orthopedics, and women’s health. Also included are certifications in lymphedema care, vestibular rehabilitation, hand therapy, wound care, clinical expertise in use of FEES, and clinical specialization in critical care management of the adult and neonate.
Clinical Research

The Pickup Family Neurosciences Institute (PFNI) is committed to innovation through clinical research development. This is driven by PFNI’s philosophy: compassionate care, clinical excellence and creative intelligence.

Leveraging research expertise and infrastructure available at Hoag Center for Research and Education (HCRE)*, PFNI has participated in national and international clinical studies including advanced diagnostic tools, medical and surgical devices, pharmacologic and non-pharmacologic therapies, and diagnostic biomarkers.

These research studies and clinical trials have helped patients access the newest treatment options available. Ongoing collaboration between physician investigators and study volunteers is one of the foundations of modern health care that allows rapid advancement of patient care.

PFNI’s clinical research is overseen by Michael Brant-Zawadzki, MD, FACR, and the team consists of Neuroscience Clinical Research Coordinators Laurie Hendricks, MSN, RN, OCN; Adrienne Swietlikowski; Rachel Romansik; Madison Martin; and Junko Hara, PhD for Clinical Research Development.

Clinical Trials

ALZHEIMER’S DISEASE

Acumen Pharma. A Phase 1, Placebo-Controlled, Single- and Multiple-Dose Study of the Safety, Tolerability, and Pharmacokinetics of Intravenous ACU193 in Mild Cognitive Impairment or Mild Dementia due to Alzheimer’s Disease
Principal Investigator: Dr. Gustavo Alva
[Study closed July 2023]

Biogen. A Randomized, Double-Blind, Placebo-Controlled, Parallel-Group Study to Assess the Efficacy, Safety, and Tolerability of BIIB080 in Subjects With Mild Cognitive Impairment Due to Alzheimer’s Disease or Mild Alzheimer’s Disease Dementia
Principal Investigator: Dr. Gustavo Alva

Cassava Sciences. An Open-label, Long-term Extension Study to Evaluate the Safety and Tolerability of Simufilam 100 mg Tablets in Participants With Mild to Moderate Alzheimer’s Disease
Principal Investigator: Dr. William Shankle

Eli Lilly. Phase 3. A Study of Donanemab (LY3002813) in participants with early Alzheimer’s Disease (TRAILBLAZER-ALZ 2) 
Principal Investigator: Dr. Gustavo Alva
[Closed to enrollment]

NIH/Eisai, Inc. Phase 3. AHEAD 3-45 Study: A study to evaluate efficacy and safety of treatment with Lecanemab in participants with preclinical Alzheimer’s Disease and elevated amyloid and also in participants with early preclinical Alzheimer’s Disease and intermediate amyloid
Principal Investigator: Dr. William Shankle

NIH/Institute for Molecular Medicine. A Phase I, Randomized, Double-Blind Study to Evaluate Safety and Tolerability of Amyloid-β Vaccine, AV-1959D, in Patients with Early Alzheimer’s Disease
Principal Investigator: Dr. Gustavo Alva

Regeneration Biomedical, Inc. Phase 1, Open-Label Safety Study of Escalating Doses of Intracerebroventricular Injections of Ex Vivo Expanded, Autologous ADSCs in Participants With Mild-Moderate AD Whose Treatment is Not Addressed Adequately by Available Therapy
Principal Investigator: Dr. Gustavo Alva

For more information on clinical research:
Adrienne Swietlikowski | 949-764-6797 | adrienne.swietlikowski@hoag.org
Rachel Romansik | 949-764-8595 | rachel_romansik@hoag.org
MULTIPLE SCLEROSIS
Novartis. A Randomized, Double-blind, Double-dummy, Parallel-group Study, Comparing the Efficacy and Safety of Remibrutinib Versus Teriflunomide in Participants With Relapsing Multiple Sclerosis, Followed by Extended Treatment With Open-label Remibrutinib
Principal Investigator: Dr. Yasir Jassam

AUTOIMMUNE ENCEPHALITIS
Genentech, Inc. Phase 3. A Study To Evaluate The Efficacy, Safety, Pharmacokinetics, And Pharmacodynamics Of Satralizumab In Patients With Anti-N-Methyl-D-Aspartic Acid Receptor (NMDAR) Or Anti-Leucine-Rich Glioma-Inactivated 1 (LGI1) Encephalitis (Cielo)
Principal Investigator: Dr. Yasir Jassam

LEWY BODY DEMENTIA
EIP Pharma, Inc. A Phase 2b Clinical Study of the P38 Alpha Kinase Inhibitor Neflamapimod in Dementia with Lewy Bodies (DLB)
Principal Investigator: Dr. Aaron Ritter

BRAIN CANCER
Avita Biomedical. A Phase 2 Trial of AV-GBM-1 (Autologous Dendritic Cells Loaded with Autologous Tumor Associated Antigens) as adjunctive therapy following primary surgery plus concurrent chemoradiation in patients with newly diagnosed glioblastoma.
Principal Investigator: Dr. Christopher Duma [Study closed October 2023]

Nascent Biotech. A Phase 1, sequential cohort, open-label, dose-escalation study of the safety and CNS exposure of Pritumumab in patients with brain cancer.
Principal Investigator: Dr. Jose Carrillo [Closed to enrollment]

NovoCure Ltd. A pivotal randomized, open-label study of Optune (TTFIELDS, 200KHZ) concomitant with radiation therapy and temozolomide for the treatment of newly diagnosed glioblastoma
Principal Investigator: Dr. Jose Carrillo

EPILEPSY
Medtronic Neuro. Stereotactic Laser Ablation for Temporal Lobe Epilepsy (SLATE)
Principal Investigator: Dr. Vivek Mehta [Study closed September 2023]

NEUROSURGERY
7D Surgical Inc. Validation Study to evaluate utility of Flash Align Software in quantifying spinal alignment during posterior spinal fusion surgery.
Principal Investigator: Dr. Pawel Jankowski [Study closed October 2023]

PARKINSON’S DISEASE
Bukwang Pharmaceutical. A Randomized, Double-Blind, Placebo- Controlled, Two Part Study in Parkinson’s Disease Patients With Dyskinesia to Assess the Efficacy and Safety/Tolerability of Fixed Dose Combinations of JM-010 and its Individual Components
Principal Investigator: Dr. Sandeep Thakkar [Study closed November 2023]

STROKE
Bayer. Phase 3. A Multicenter, International, Randomized, Placebo Controlled, Double-blind, Parallel Group and Event Driven Phase 3 Study of the Oral FXIa Inhibitor Asundexian (BAY 2433334) for the Prevention of Ischemic Stroke in Male and Female Participants Aged 18 Years and Older After an Acute Non-cardioembolic Ischemic Stroke or High-risk TIA
Principal Investigator: Dr. David Brown

NIH/StrokeNet. Phase 3 anticoagulation in intracerebral hemorrhage (ICH) survivors for stroke prevention and recovery (ASPIRE).
Principal Investigator: Dr. David Brown [Study closed June 2023]

*Hoag Center for Research and Education enhances our vision to be nationally recognized as a Center of Excellence in clinical research. Our mission is to promote a culture of research by integrating research with clinical care, educating the communities we serve and partnering with our physician leaders. Our advances in clinical research cement our commitment to compassionate care, clinical excellence and creative intelligence.
Philanthropy

Community donors empower the Pickup Family Neurosciences Institute’s mission to provide the highest level of comprehensive care for those living with neurological conditions and diseases. Their generosity makes the difference between the expected and the exceptional and helps our team serve every patient with compassionate care, clinical excellence and creative intelligence.

The Pickup Family Neurosciences Institute is grateful for and inspired by the community’s generosity in 2023, including a $50 million gift from Richard Pickup – the largest ever in the institute’s history. Last year, philanthropic gifts of all sizes accelerated program development, funded vital patient support services and supported innovative approaches to care, all of which contributed to an enhanced experience for our patients.

2023 Philanthropy Highlights

Building on his generous support in 2017 to name the Pickup Family Neurosciences Institute, Richard Pickup made a transformative $50 million investment that will change the trajectory of brain care for the people of Orange County and beyond. The Richard H. Pickup Center for Brain Health will bring together multidisciplinary experts across the care spectrum under one roof to tackle brain health from every angle while driving enhanced support for caregivers and families.

Thanks to philanthropy, the MS Hope Center empowers patients with a holistic approach to multiple sclerosis (MS) symptom management with a focus on education, connection with other patients and support from a multidisciplinary team. Offerings like cooking and exercise classes help patients augment their ability to perform life’s daily tasks and enhance their quality of life.

We are grateful to the Allen Family Foundation for their commitment to physician excellence and education for the Addiction Medicine Program. Their gift will support Hoag in continuing to recruit the best physicians in this specialty and empower them with tools to aim higher, lead discoveries, and educate the next generation of specialists to do the same.

A generous gift from longtime Hoag supporter John Curci established the Curci Family Chronic Pain & Neuropathy Program Nurse Navigator. Navigating care and finding the right support can be overwhelming for patients with chronic pain, who typically have multiple health care providers and often feel debilitated both physically and mentally from their pain. Natalie Davin, RSN, BSN, fills this new and critically needed role. She guides inpatients and outpatients in navigating the health care system, helps with referrals, provides education, offers support and a listening ear, and ensures patients can access the care they need.

Four of Hoag’s 22 endowed chairs reside within the Pickup Family Neurosciences Institute. Endowed chairs are prestigious philanthropically funded positions that support clinical innovation at Hoag. The chairs within this institute are Michael Brant-Zawadzki, MD, FACR, the Ron & Sandi Simon Executive Medical Director Endowed Chair; William Shanks, MS, MD, FACP, the Judy & Richard Voltmer Endowed Chair in Memory & Cognitive Disorders; Aaron Ritter, MD, the Larkin Family Endowed Chair in Integrative Brain Health; and Robert Louis, MD, FAANS, the Empower360 Endowed Chair in Skull Base and Minimally Invasive Neurosurgery. Last year, these endowed chair holders used the ongoing support from their endowments to advance their specialties and programs, including funding nurse navigator positions, adopting innovative technology, and engaging in impactful clinical research.

Philanthropy launched the Painting with Parkinson’s program in 2023 as part of the Salsbury Family Movement Disorders Program. The program offers a creative outlet to Parkinson’s patients through painting, which has been shown to provide therapeutic benefits, improve motor skills, enhance cognitive function and contribute to overall emotional well-being.

A generous gift from longtime Hoag supporter John Curci established the Curci Family Chronic Pain & Neuropathy Program Nurse Navigator. Navigating care and finding the right support can be overwhelming for patients with chronic pain, who typically have multiple health care providers and often feel debilitated both physically and mentally from their pain. Natalie Davin, RSN, BSN, fills this new and critically needed role. She guides inpatients and outpatients in navigating the health care system, helps with referrals, provides education, offers support and a listening ear, and ensures patients can access the care they need.
Nationally ranked in the top 50 of 4,500 hospitals for neurology and neurosurgery, and high performing (top 10%) for stroke care.

Pickup Family Neurosciences Institute

One Hoag Drive, PO Box 6100
Newport Beach, CA 92658-6100
Phone: 949-764-6066
Fax: 949-764-6088

To learn more, visit us at hoag.org/neuro.