PICKUP FAMILY NEUROSCIENCES INSTITUTE
ANNUAL REPORT 2021
COMPASSIONATE CARE, CLINICAL EXCELLENCE AND CREATIVE INTELLIGENCE
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“Plagues are infrequent but constant and they do not alter the conditions of mankind (everybody dies), but rather concentrate our misfortunes into moments where everyone thinks for a change that mortality is afoot.”

– Albert Camus, The Plague

This Covid-apt quote from one of the most iconic novels of the 20th century existential movement, captures the angst of the human condition. Mortality being afoot is a constant and can make human endeavor seem futile. Yet great achievements are possible despite the end we all meet. We define the meaning of our lives in the face of the inevitable by our purposeful actions. That is the existentialist perspective.

No nobler example of such purpose exists than the actions of our Pickup Family Neurosciences Institute (PFNI) clinicians and affiliated staff during the second year of the Covid pandemic. As we tally their accomplishments, summarized in this annual report to the community and especially our supporters, our pride and gratitude for all those dedicated colleagues knows no bounds. By the time you read this, the hope is that we will be done with the pandemic, thanks to vaccines and the now (as I write this in March) ubiquitous Omicron “booster” combining to provide an element of immunity to the vast majority of individuals.

Despite the challenges posed by the Delta and Omicron waves, the mission of PFNI – our compassionate care, clinical excellence and creative intelligence directive – was paramount. Just a few of the many notable achievements included a highly successful re-accreditation of our Stroke Program by our deeming agency, DNV. The surveyors found zero non-conformities and heaped plaudits on our services. One said of our Fudge Family Acute Rehabilitation Center, “I would bring my mother here.” Our Epilepsy Program under the direction of Dr. David Millett again achieved Level 4 accreditation, one of only two such programs in Orange County. PFNI opened the Center for Advanced Visualization and Immersive Therapeutics with the leadership of Dr. Robert Louis, innovating applications of augmented reality in health care. One of those applications, SyncAR, promises to revolutionize minimally invasive surgery for spinal disorders, while another utilizes virtual reality to replace narcotics for post-operative pain control. Our addiction programs, dramatically oversubscribed due to the pandemic, won several awards, including our SolMar Recovery facility being named a top residential rehab program in the U.S. by Newsweek magazine.

We were able to recruit superb specialists to our team this year, including Dr. Yassir Jassam, a National Institutes of Health-trained expert in neuroimmunology from the University of Kansas, to resurrect our Multiple Sclerosis & Immunology Program in the Lucy Curci Neurosciences Specialty Clinic; Dr. Mindy Bixby, a renowned Parkinson’s and movement disorders neurologist from Scripps in San Diego, who joined our Salsbury Family Movement Disorders Program; Dr. Gus Alva, a nationally recognized geriatric psychiatrist, who is helping us develop the Center for Senior Brain Integrative Health; and Dr. Lauren Bennet, who joined us from the Cleveland Clinic’s Lou Ruvo Center for Brain Health.

These are just a few examples of PFNI’s 2021 trajectory toward the highest levels of excellence in caring for those with disorders of the brain, mind and spine. Overcoming barriers in that trajectory, such as Covid, is now second nature to our team, thanks to their brilliance and relentless dedication to the purpose of compassionate care, clinical excellence and creative intelligence, buoyed by our community’s trust and support, without which we would simply not exist.

Michael Brant-Zawadzki, M.D., F.A.C.R.
Senior Physician Executive, Hoag Hospital
Ron & Sandi Simon Executive Medical Director Endowed Chair
Pickup Family Neurosciences Institute, Hoag Memorial Hospital Presbyterian

Mark V. Glavinic, PT, DPT, NCS
Director, Rehabilitation Services

Kambria Hittelman, Psy.D.
Director, Neurobehavioral Health

Leslie Rosini, MSN, RN
Director, Neurosciences Ancillary Operations
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. Fourteen years on (as of this 2021 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.

Spearheading 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.

Hoag now has 21 endowed chairs (unique for a non-academic, community hospital), three of which are in Pickup Family Neurosciences Institute.

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. Dr. Robert Louis is the Empower360 Endowed Chair in Skull Base and Minimally Invasive Neurosurgery. 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.
Overview

The Covid-19 pandemic significantly decreased the volumes of stroke emergencies coming into the hospital in 2020 as many patients feared coming to the Emergency Department (ED). By 2021, our stroke volumes returned to pre-pandemic levels at Hoag Newport Beach while increasing by 23% at Hoag Irvine.

Our stroke team remained relentless in its dedication to excellence in treating stroke throughout 2021. Toward the end of the year, we underwent the three-day annual survey conducted by DNV, the agency that accredits for Medicare eligibility as a stroke center. The results of the survey were simply superb. The surveyors essentially found nothing to improve and marveled at our ability to conduct business as usual (which is world-class for Hoag), despite the extreme circumstances imposed by Covid. All three surveyors were very impressed with the strength and maturity of the program, commenting how wonderful it was to survey a fabulous facility that takes such great care of patients.

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. The ultimate outcome metric is the patient’s ability to return to a self-sufficient life, an outcome we measure in every patient with a 90-day survey. Our results demonstrate self-sufficiency in 72% of our stroke survivors, whereas the national benchmark average is 43%.

Our stroke rescue process starts immediately on the way to the ED with 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 neuroimaging are done within 20 minutes, allowing best treatment delivery.

Stroke Program: 949-764-6066
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 28 new strokes for inpatients with 29% of these meeting criteria and receiving emergency stroke treatments.

Evidence-based use of clot-busting drugs “Code TPA”, 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.

Beginning in May 2021, we are performing interventional thrombectomy “Code LVO” at Hoag Irvine with the same expert teams as Hoag Newport Beach.

Patients are then cared for in the hospital’s Neurosurgical Intensive Care Unit and/or the stroke unit on our 41-bed Advanced Brain and Spine floor. At Hoag Irvine, stroke patients are cared for in the Critical Care Unit and 5th floor Telemetry Unit. All stages of care are staffed with nurses experienced in the diagnosis, treatment and complications of stroke. Hemorrhagic strokes, including aneurysmal rupture, have a distinct care pathway, led by our neurosurgeons, neuro-interventional radiologists and neurohospitalists, together with our critical care physicians. Preventative aneurysm treatment using image-guided micro-interventional techniques is a component of the Stroke Program’s portfolio and is also used in acute aneurysm rupture.

Hoag’s Newport Beach campus is a repeatedly certified Comprehensive Stroke Center and Hoag Irvine is a certified Primary Stroke Center by DNV. Hoag has been awarded the Stroke Gold PLUS Performance Achievement Award by the American Stroke Association for 12 years in a row. In 2021, Hoag achieved the Target Stroke Honor Roll Elite Award and the new Target Stroke Honor Roll Advanced Therapy Award by the American Heart Association/American Stroke Association. This new award recognizes the accomplishment of Door to Device Times of 90 minutes or less in 50% or more of all thrombectomy cases.

### Table 4. Hoag Newport Beach

<table>
<thead>
<tr>
<th>Gold “Get with the Guidelines” Stroke Core Measures</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV tPA Arrive by 3.5 Hr, Treat by 4.5 Hr</td>
<td>94.0%</td>
<td>96.5%</td>
<td>93.3%</td>
</tr>
<tr>
<td>Early Antithrombotics</td>
<td>98.7%</td>
<td>99.5%</td>
<td>99.5%</td>
</tr>
<tr>
<td>VTE Prophlaxis</td>
<td>99.8%</td>
<td>99.4%</td>
<td>99.0%</td>
</tr>
<tr>
<td>Antithrombotics on Discharge</td>
<td>100.0%</td>
<td>99.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Anticoagulation for AFib/Flutter</td>
<td>99.1%</td>
<td>98.2%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Smoking Cessation</td>
<td>100.0%</td>
<td>100.0%</td>
<td>98.3%</td>
</tr>
<tr>
<td>Intensive Statin Therapy on Discharge</td>
<td>99.2%</td>
<td>98.9%</td>
<td>99.7%</td>
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<table>
<thead>
<tr>
<th>Gold Plus “Get with the Guidelines” Stroke Quality Measures</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysphagia Screen</td>
<td>92.7%</td>
<td>92.2%</td>
<td>89.6%</td>
</tr>
<tr>
<td>LDL Documented</td>
<td>99.8%</td>
<td>100.0%</td>
<td>99.9%</td>
</tr>
<tr>
<td>Stroke Education</td>
<td>99.8%</td>
<td>99.8%</td>
<td>99.7%</td>
</tr>
<tr>
<td>NIHSS Reported</td>
<td>100.0%</td>
<td>100.0%</td>
<td>99.5%</td>
</tr>
<tr>
<td>Rehab Considered</td>
<td>99.8%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Time to IV tPA – 60 minutes or less</td>
<td>94.6%</td>
<td>95.9%</td>
<td>96.0%</td>
</tr>
<tr>
<td>Time to IV tPA – 45 minutes or less</td>
<td>63.3%</td>
<td>73.7%</td>
<td>80.7%</td>
</tr>
<tr>
<td>Door to Device (First Pass)</td>
<td>28.6%</td>
<td>57.6%</td>
<td>51.0%</td>
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</table>

### Table 5. Hoag Irvine

<table>
<thead>
<tr>
<th>Gold “Get with the Guidelines” Stroke Core Measures</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
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<tr>
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<td>88.9%</td>
<td>90.0%</td>
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<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>VTE Prophlaxis</td>
<td>95.6%</td>
<td>98.4%</td>
<td>98.8%</td>
</tr>
<tr>
<td>Antithrombotics on Discharge</td>
<td>99.4%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Anticoagulation for AFib/Flutter</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Smoking Cessation</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Intensive Statin Therapy on Discharge</td>
<td>99.4%</td>
<td>99.2%</td>
<td>99.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gold Plus “Get with the Guidelines” Stroke Quality Measures</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysphagia Screen</td>
<td>88.7%</td>
<td>92.4%</td>
<td>86.3%</td>
</tr>
<tr>
<td>LDL Documented</td>
<td>100.0%</td>
<td>99.3%</td>
<td>99.5%</td>
</tr>
<tr>
<td>Stroke Education</td>
<td>99.2%</td>
<td>98.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td>NIHSS Reported</td>
<td>99.9%</td>
<td>100.0%</td>
<td>97.5%</td>
</tr>
<tr>
<td>Rehab Considered</td>
<td>99.2%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Time to IV tPA – 60 minutes or less</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Time to IV tPA – 45 minutes or less</td>
<td>33.3%</td>
<td>100.0%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Door to Device (First Pass)</td>
<td>N/A</td>
<td>N/A</td>
<td>100.0%</td>
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Hoag has dramatically increased the rate at which IV tPA is administered to all acute ischemic stroke patients – up from 2% a decade ago to 12% currently. Of the patients arriving in the ED meeting the criteria for the drug, 100% of patients received treatment. At 90 days, 82% of Hoag’s stroke patients who received IV tPA returned to a self-sufficient lifestyle. Our Physical Rehabilitation service, including the Fudge Family Acute Rehabilitation Center, is also key to our superior outcomes.

Team

Hoag’s Stroke Program is led by David Brown, MD, a neurologist with a specialty in stroke and cerebro-vascular disease and a neurohospitalist. Dr. Brown oversees a dedicated, multi-disciplinary 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. She also consults as a program reviewer for Stroke certifying agencies.

The Stroke Nurse Navigator is Victoria Tomczak, RN, SCRN. She works collaboratively with the multidisciplinary team to oversee the patients’ and caregiver’s needs and manage quality. She meets with the patients and families to assess individual needs for treatment, prevention and education.

STROKE PROGRAM

Every Stroke patient is called at 30 and 90 days to evaluate their functional outcome using a well-validated tool: the Modified Rankin Scale (mRS). A score of 0 – 2 reflects a self-sufficient status.

Table 7. Hoag Hospital Newport Beach & Hoag Hospital Irvine mRS Results for all Ischemic Strokes

<table>
<thead>
<tr>
<th>Sample</th>
<th>Yes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>590</td>
<td>293</td>
</tr>
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</table>

74% (590/796) of patients reached at 30 days.

Table 8. IV tPA Patients with Favorable Outcomes (mRS 0–2) at 90 Days

98% of all IV tPA (Alteplase) patients were reached by phone at 90 days. 87% of the ischemic stroke patients who were treated with IV tPA were self-sufficient at 90 days.

This is the top 5th percentile of favorable outcomes in the nation when benchmarked with AHA Stroke Get With the Guidelines (GWTG) Comprehensive Stroke Centers (CSC).

Table 9. Patients with Favorable Outcomes (mRS) at 90 Days with All Thrombolytic Treatments

<table>
<thead>
<tr>
<th>Hoag</th>
<th>All GWTG CSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>80%</td>
</tr>
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</table>

76% (583/770) of patients reached at 90 days.

Functional Outcomes

All stroke survivors are called at 30 days and 90 days post discharge by the stroke nurse navigator. A telephone interview is performed to assess functional status of the survivor. Valuable teaching is reinforced regarding neurology follow-up appointments, medication teaching, risk factor modification, stroke symptom identification and the need to call 911 for any recurring signs of stroke.

Hoag continues to have the second highest volume of ischemic stroke patients in the state of California.

Support & Education

Since Covid, a stroke support group meets monthly in a virtual setting, as does a brain aneurysm & AVM support group. There is an educational presentation along with Q&A facilitated by the stroke nurse navigator. The meetings are attended by survivors and their families and friends.

Community outreach is provided through educational presentations by Dr. Brown, Deb Mastrolia and Victoria Tomczak via Hoag Health live stream. They teach the signs and symptoms of a stroke, stroke prevention and treatments.

Beth McIntyre serves as the Neuroscience Data Coordinator. Beth’s role has been instrumental in assisting with data compilation for the Stroke Program.
First stroke rescue at Hoag Hospital Irvine - 18 y/o, normal the night before. Unable to talk or to move his left side. CT Perfusion showed at-risk right hemisphere for permanent damage, CT Angio showed blockage of the artery leading to the right hemisphere. Angiogram before and after clot extraction. Speech and strength were restored.

Research

INTERVENTIONAL NEURORADIOLOGY HUMANITARIAN USE DEVICES (HUDS)

Dr. Michael Brant-Zawadzki, Principal Investigator: Boston Scientific Target Neuroform™ Microdelivery Stent System and Neuroform EZ Stent System for Cerebral Aneurysm (H020002)

Dr. Wallace Peck, Principal Investigator: Stryker Corporation Wingspan™ Stent System with Gateway™ PTA Balloon Catheter for Cerebral Aneurysm (H050001)

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.
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 successful outcomes for patients. 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 rescue procedures in the Cath Lab at Hoag Hospital Irvine. By avoiding the time for transportation to Newport Beach, these patients can have blood flow restored to the affected part of the brain much faster. This greatly improves their chances of having a full recovery by avoiding potentially devastating ischemic brain injuries. When the Irvine campus expansion is completed, we expect to have a second stroke receiving center designation which will enable our team to help many more patients in Orange County.

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 technicians and 19 nursing staff at the Newport Beach location and seven technicians and seven nursing staff at Hoag Hospital Irvine.
Giant ICA aneurysm repaired with pipeline embolization device

Distal ICA occlusion revascularized with aspiration thrombectomy

Giant brain aneurysm: progressive coil occlusion
Despite the impact of the Covid pandemic, our community need for expert management of brain tumors continues to increase, as does Hoag’s market share of neuro-oncology patients. Referring physicians and patients in the community recognize that our multidisciplinary team’s armament, including the most modern surgical suites equipped with advanced Augmented Reality (AR)-guided surgical and non-surgical capabilities, greatly impacts outcomes. This includes three types of stereotactic radiation therapy as well as compassionate care facilitated by a clinical nurse navigator. These components greatly impact outcomes, longevity and the patient experience. In addition, we offer clinical trial options for Glioblastoma, our most challenging tumor type.

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. each year, although estimates vary widely. Annually, approximately 13,000 individuals in the U.S. will require surgery for pituitary tumors; fewer than 1% of these are malignant.²

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 Center for seamless care.

The Brain Tumor Program aligns neurosurgeons, ENT surgeons, neurologists, neuro-ophthalmologists, neuro-oncologists, radiation oncologists and physicists, neuro-radiologists, pathologists, geneticists and endocrinologists in a truly comprehensive, multidisciplinary approach with a weekly Neuro-Oncology Tumor Board review to provide consensus on 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 PET-MRI scanner, the unique combination of Visualase Laser Ablation, GammaKnife, CyberKnife 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 of care for our patients. We offer the latest clinical research trials to assist in managing 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.

¹ Surveillance, Epidemiology, and End Results Program of the National Cancer Institute, https://seer.cancer.gov/statfacts/html/brain.html
² Cancer.net, The American Society of Clinical Oncology (ASCO)
**Team**

The Brain Tumor Program is led by Medical Director Christopher Duma, MD, FACS, a board-certified neurosurgeon and a fellow of the American College of Surgeons. Robert Louis, MD, 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. Vik Mehta, MD, a fellowship-trained neurosurgeon, performs minimally invasive laser ablation for primary and metastatic brain tumors and leads the program for tumors and other lesions that cause seizures.

**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 laser spectrum technology, Invenio, for rapid intra-operative 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 targeted treatment. This bioinformatic analysis is presented for discussion at the Neuro-Oncology Tumor Board.

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 are also available.

**Treatment**

**Surgery**

Hoag's neurosurgeons employ 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. Hoag is prone to be a pioneer in the treatment of this therapy. Dr. Vik Mehta has been offering this approach to patients with tumors deep in the brain or patients who were not good candidates for long, invasive open brain surgery. This minimally invasive approach...
BRAIN TUMOR PROGRAM

Each of the next generation of neurosurgical operating suites is equipped with the Storz CollaboratOR; an 84 inch ultra-HD, multi-input, interactive display allowing for visualization of relevant imaging and surgical data in a single location.

Surgery planning using Surgical Theater
3D Virtual Reality

Ambient green light enhances surgeons’ visualization, minimizes distraction and decreases eye strain, especially during complex procedures.

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 (removed by heat) instantly. This specific designation by the FDA for brain tumors is a testament to the safety and efficacy of this technique. There are less than two dozen hospitals in the United States performing this therapy and Hoag is proud to be one of the leading sites.

Hoag leads the nation with robotic minimally invasive surgery to diagnose and treat brain tumors. Dr. Vik Mehta has been a pioneer in the establishment of this technology at Hoag Hospital. Patients are often able to go home the same day after surgery with minimal pain and fast recovery.

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. Physicians Santosh Kesari, MD, and Jose Carrillo, MD, provide expert care for patients who are diagnosed with malignant brain tumors and monitor our patients for any neurologic complications from cancer or cancer therapies. The latest clinical research trials are vetted through this practice.

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. It 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 Hoag Cancer Center Irvine. In addition to in-person we have moved our Tumor Board virtually for all multidisciplinary staff to attend. It is moderated by Christopher Duma, MD, FACS.

To submit a case for the Neuro-Oncology Tumor Board, contact Brain, Skull Base & Pituitary Tumors Nurse Navigator Lori Berberet, MS, RN, at 949-764-6656 or lori.berberet@hoag.org, or Rosana Figueroa at 949-764-7044 or TumorBoard@hoag.org.
BRAIN TUMOR PROGRAM

**Number of visits to the Neuro-Oncology Clinic**

<table>
<thead>
<tr>
<th>Year</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>500</td>
</tr>
<tr>
<td>2020</td>
<td>1000</td>
</tr>
<tr>
<td>2021</td>
<td>1500</td>
</tr>
</tbody>
</table>

**Radiation Oncology**

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

Hoag continues to usher in new technologies with the ViewRay MRIdian system. This combination of an MRI scanner and a 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 MR clarity, including small but critical CNS structures such as the optic chiasm. Next, the radiation plan can be adapted to match the exact conditions of the day. Finally, a patient’s internal anatomy can be monitored during treatment in real time with MRI cine at eight frames per second. These unique capabilities allow for the delivery of radiation therapy with unprecedented precision and safety, and is particularly suited for focused, high-dose treatments such as Stereotactic Brain and Body Radiation Therapy. Hoag is the first in Orange County (and 13th in the nation) to introduce this breakthrough technology.

Hoag offers Gamma Knife® Perfexion, which is the most advanced radiosurgical device available and targets 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 includes neurosurgeons, radiation oncologists, physicists and specially trained nurses.

Stereotactic radiation therapy can also be delivered in fractionated form using Hoag’s advanced technologies in cases where single treatment radiosurgery is not indicated. Hoag radiation oncologists meet weekly to discuss the most appropriate treatment modalities and have expertise in utilizing both radiosurgery and stereotactic radiation therapy techniques.

Cyberknife is a non-invasive robotic radiosurgery system that can be used to treat both neurological sites (i.e., the brain and spine) as well as tumors throughout the body. Because of its unique engineering and freely moving robotic arm, it can target tumors from hundreds of angles with submillimeter accuracy. The Cyberknife at the Newport Beach Radiosurgery Center/Hoag Hospital (NBRC) treated hundreds of cancer patients from referral centers across Southern California. Cyberknife has the ability to treat extracranial lesions, and both brain and spine tumors (malignant and benign). Amanda Schwer, MD, a Hoag-affiliated radiation oncologist, is the medical director for the Cyberknife at NBRC.

**Clinical Research**

Through Hoag Family Cancer Institute’s Developmental Therapeutics Program, in alliance with USC Norris Comprehensive Cancer Center, patients have access to clinical trials not typically offered at community hospitals. For an up-to-date list of open trials, please contact Leila Andres, MS, at 888-862-5318.

**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 and tuberous sclerosis. Hoag Family Cancer Institute’s Hereditary Cancer Program offers genetic counseling and genetic testing.

**Support & Education**

In a time of inconsistency during the Covid-19 pandemic, we have been able to provide consistency to our patients and community members through our Virtual Support Group offerings. Hoag’s Brain Tumor Support Group offers education and support for anyone diagnosed with a primary brain tumor or metastatic disease. The group meets monthly via Zoom and is beneficial for patients, family and friends.

The program’s specialized nurse navigator, Lori Berberet, MS, RN, is a vital member of the team, providing guidance and navigation to patients with brain, pituitary and skull base tumors throughout their treatment. She also leads the brain tumor support group that meets regularly every third Wednesday of the month at 3 p.m. 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.

Brain Tumor educational classes are also provided quarterly by Lori Berberet to our Hoag Nursing staff to keep them up to date and well trained in the area’s involving brain tumors.
Overview
The Skull Base and Pituitary Tumor Program of Pickup Family Neurosciences Institute (PFNI) aligns neurosurgeons, otolaryngologists, neurologists, 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, 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 in order 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.

Since 2014, the Skull Base and Pituitary Tumor Program has seen dramatic growth under the direction of Robert Louis, MD. In the years since the program’s inception, a total of 614 minimally invasive surgeries for tumor removal have been completed at PFNI.

This rapid growth in case 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 a great measure of growth, 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 a result, PFNI at Hoag is establishing itself as the only Center of Excellence for Pituitary Surgery in Orange County. The five years of surgical outcome data, including remission and complication rates, are meeting or exceeding nationally established standards for pituitary surgery. As such, Hoag has become a quaternary referral center for skull base and pituitary tumors.

Technological Advances – Precision Neurosurgery
Since 2015, minimally invasive neurosurgery has been guided using the Surgical Navigation Advanced Platform (SNAP), by Surgical Theater. 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 “fly-through” on each case, our surgeons are literally able to practice an operation in 3D before ever picking up the scalpel.

View through the surgical microscope is enhanced with augmented reality by superimposing the 3D data from patient’s brain scan on the live surgical field.

Pituitary & Skull Base Program: 949-764-6066
Surgical Theater 3D Virtual reality tumor surgery planning in the OR
The tool optimizes minimally invasive approaches, with smaller incisions, fewer complications and better overall outcomes. In fact, several studies have demonstrated superior outcomes in surgeons who first rehearse using VR. It has also been shown that preoperative rehearsal 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 surgical cases have been performed at PFNI using this innovative technology. Owing to the profound success of this technology in neurosurgery, in 2019 Hoag expanded the availability to all surgical specialties in an enterprise-wide 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.

Building upon the same platform, in 2017, EndoSNAP was introduced at Hoag. This provides the additional capabilities of augmented reality for endoscopic cases. The split screen view provided by the EndoSNAP gives the surgeon a “heads-up display” and allows for pinpoint accuracy and improved visualization of critical structures. Dr. Louis has been at the forefront of the development and implantation of VR and augmented reality guidance for neurosurgery and beyond.

In 2019, the availability of augmented reality 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 augmented reality 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.

**Team**

The Pituitary & Skull Base Surgery Program is led by Robert Louis, MD, 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 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, neuro-radiologists, neuro-ophthalmologists, neurologists, pathologists and neuro-oncologists.

The nurse navigator for the program is Lori Berberet, MS, 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 Pickup Family Neurosciences Institute 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, augmented reality 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. And this past year, 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.
PITUITARY & SKULL BASE SURGERY PROGRAM

Surgical Outcomes
Composed of pituitary adenoma, craniopharyngioma, Rathke's Cleft Cysts, meningioma, schwannoma, metastases, epidermoid, dermoid, hemangioma, hemangioblastoma, 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

Louis RG, Cagigas J, Brant-Zawadzki M, Ricks M. Response to Letter to Editor: Impact of Neurosurgical Consultation with 360-Degree Virtual Reality Technology on Patient Engagement and Satisfaction. Neurosurgery Open 2021; 2(2); okab010,


Hoag opens dedicated centre for researching, developing, and implementing XR

By Mark Dugdale
October 4, 2021

**Hoag is providing an interdisciplinary XR resource for patients and doctors from all specialties**

Hoag Memorial Hospital Presbyterian, the medical services provider in Orange County, California, USA, has opened a new centre dedicated to the application of extended reality (XR) technology in healthcare.

The Hoag Center for Advanced Visualization and Immersive Therapeutics, located inside Hoag’s Pickup Family Neurosciences Institute Newport Beach campus, is a testament to the potential of augmented, virtual and mixed reality (AR, VR and MR) technology to deliver treatments for a range of illnesses and conditions.

Hoag is particularly interested in XR for advanced surgery, pain and stress management, patient education and maternal care, with Dr Robert Louis, chief of neurosurgery and the Empower360 Endowed Chair in Skull Base and Minimally Invasive Neurosurgery, leading its work in these areas.

Dr Louis comments: “The future is now at Hoag Hospital. This exceptional technology is transforming care in multiple institutes hospital-wide and requires an equally exceptional dedicated space. We are thrilled to provide an interdisciplinary resource for patients and doctors from all specialties.”

**‘Hoag’s commitment to exploring and perfecting innovative treatment options’**

Hoag says the new centre will house three dedicated spaces for researching, developing and implementing XR.

The development lab will bring together physicians and engineers to work hand-in-hand to develop the newest XR technology.

A therapy treatment room is available to all Hoag physicians whose patients can benefit from XR and will treat patients with myriad diagnoses, from phobias to pain to post-traumatic stress disorder.

Finally, the experiential theater, featuring comfortable seating for six, will enable ‘virtual fly-through’ experiences for patients and their families to visualise surgical objectives before treatment, as well as provide a setting for nursing education, community engagement, case collaboration and various other demonstrations.

Robert T Braithwaite, president and chief executive officer of Hoag Memorial Hospital Presbyterian, says: “As a trusted healthcare leader and the highest ranked hospital in Orange County, the opening of the centre furthers Hoag’s commitment to exploring and perfecting innovative treatment options and elevating our delivery of personalised, compassionate care.”
The Neurosurgery Spine and Back Pain Program consists of a dedicated multidisciplinary team that actively investigates and develops best practices to provide the highest quality care for its spine patients, regardless of whether surgery is required. The team emphasizes obtaining an accurate diagnosis and applying conservative measures before approaching surgical options. If the patient reaches the surgical stage, 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.

Hoag’s overall neurosurgery program, including Spinal Fusion, was ranked high performing by U.S. News & World Report 2021. The neurosurgeons collaborate and incorporate innovative spine diagnostic technology and surgical robots to provide the best possible outcomes for patients. The Mazur Robot is one of the surgical robots that our neurosurgeons use to perform minimally invasive spine surgery.

The Pickup Family Neurosciences Institute’s surgical case numbers maintained pre-pandemic levels with over 700 surgeries performed. With 37% of our surgeries being minimally invasive, we are one of the leaders in the country. 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. This not only allowed desirable options for the patient but more needed beds in the hospital for those sickened during the pandemic surges. We saw success and growth in patients seeking care in our spine program with a 25% increase in calls and emails. These were triaged appropriately by our spine nurse navigator to ensure the patient received the proper guidance and treatment.

The program’s spine surgeons advance minimally invasive surgeries by participating in clinical trials. Currently, our program’s spine surgeons are in a trial using Augmented Reality for spinal fusions. This technology consists of a headset with a see-through eye display that projects the patient’s specific internal anatomy based on pre-surgical CT scans of the patient. Augmented reality is increasingly used in surgery at this time.

The quality of our program is tracked by ongoing patient-reported outcomes and detailed analysis of readmissions, length of stays 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 cervical surgeries. We saw an even bigger decrease in disability and pain, and an increase in physical functions, related to our lumbar spine surgeries. Patients also have a dedicated nurse navigator for preoperative, inpatient and postoperative questions or concerns.

The Neurosurgery Spine Program: 949-764-6066
NEUROSURGERY SPINE AND BACK PAIN PROGRAM

Figure 1. Spine Surgery Volume

Figure 2. Minimally Invasive Spine Surgery Annual Totals at Hoag Hospital Newport Beach

Comprehensive Approach
Following are the resources we currently offer within the Neurosurgery Spine and Back Pain Program. 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.

Nutrition
We offer nutrition services for patients preoperatively to optimize patient outcomes and promote better wound healing, assuring patient satisfaction. The patient can access a nutritionist preoperatively as well as following surgery. 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.

Pain Management
Hoag currently has a multidisciplinary Chronic Pain & Neuropathy Disorders Program intersecting with the Neurosurgery Spine and Back Pain Program, 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.

“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.”

Eric Noble, patient
Addiction Medicine

Hoag has dedicated addiction medicine physicians who can help those with inpatient substance abuse issues. These patients can be challenging to treat due to their high pain levels and many may also suffer from mental health issues. While the patient is in the acute care setting, we treat these conditions holistically. We also offer patients our residential rehab facility, support groups, methadone clinic and other resources.

Education 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 Neurosurgery Spine and Back Pain Program offers educational opportunities for healthcare staff within Hoag that cover various topics related to the spine. These initiatives foster a cohesive work environment and learning opportunities which, in turn, creates a positive work experience and reduces staff turnover.

We conduct regular Spine Case Conferences and Spine Grand Rounds. Spine Case Conferences are learning opportunities for nurses, physicians, neurosurgeons and physical therapists. These two activities alternate monthly and provide CEU and CME credits for those who attend.
Hoag Becomes 1st West Coast Hospital to Offer Mazor X Robot for Spine Surgery

By Carly Behm
March 4, 2021

Newport Beach, Calif.-based Hoag Pickup Family Neurosciences Institute became the first West Coast hospital to use Medtronic’s Mazor X Stealth Edition robotic platform.

The Mazor X is designed for precise, efficient minimally invasive spine surgeries. It also reduces the need for X-rays and minimizes pain and recovery time, according to a March 2 news release. It provides surgeons with information from 3D preoperative planning tools and analytics.

“This robotic instrument allows the surgeon to be in complete control, but gives them the superior benefit of 3D-guided navigation in one easy-to-use tool,” said Burak Ozgur, MD, chief of service for the neurosurgery spine program at PFNI.

Hoag has received recognition for its robotic-assisted surgery and has been designated as a Center of Excellence in Robotic Surgery from the Surgical Review Corp.
Team

**Physical Medicine and Rehabilitation Physicians**
Dr. Christopher Marker
Dr. Neil Washburn

**Pain Management Physicians**
Dr. Medhat Mikhael
Dr. Alfred Beshai
Dr. James Kim

**Nutrition**
Loshi Vue, RD

**Neurosurgeons**
Dr. Daniel Yanni
Dr. Burak Ozgur
Dr. Pawel Jankowski
Dr. Robert Louis
Dr. Vivek Mehta

**Neurosurgery Nurse Practitioners and Physician Assistants**
Suzanne Pach, NP
Carly Bower, NP
Victoria Hegler, PA
Vy Nguyen, NP
Kelly Watkins, NP

**Nurse Navigator**
Charlotte Davis, MSN, RN, PCCN, PHN

**Executive Director**
Thomas Hutchinson

**Physical Therapy**
Stacie Yamasaki, DPT

“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, Mileni Avalos for their outstanding patient care.”

*Melanie Loscutov, patient*
Overview

The Pickup Family Neuroscience Institute's Movement Disorders Program originated in 1994 and has seen substantial growth over the years. The focus today is on the program’s ability to provide specialized patient evaluation, collaborative and multidisciplinary holistic care, education, advanced medical and surgical therapy and clinical research. In 2020, the generous philanthropic gift from the Salsbury family allowed further expansion of the program which now includes four fellowship-trained movement disorder neurologists, three functionally-trained neurosurgeons, physician assistants, nurse navigation, neuropsychologists, neuro-rehabilitation services, as well as speech-language pathologists. In addition, the program’s growth has facilitated expanding clinic services to additional locations in Huntington Beach, Tustin, Laguna Beach and Irvine.

The program treats all patients with movement disorders, predominately those with Parkinson’s disease, but also Dystonia, Essential Tremor, Progressive Supra-Nuclear Palsy, Multiple System Atrophy, Corticobasal Degeneration, Lewy Body Disease and various gait disorders. The goal of the care provided is to enable these patients to achieve their highest level of independence and to maintain a good quality of life.

The Salsbury Family Movement Disorders Program at Hoag continued to see significant growth in 2021. Despite the continued impact of Covid-19 on patient visits with Parkinson’s and movement disorders, the program began to see the recovery of the patient services with patients emerging from isolated states to resume their care and re-engage in their therapies. The Movement Disorders Clinic and physicians continued to attract new patients in need of specialized care and disease management.

Dr. Mindy Bixby joined Hoag in 2021. Her expertise and commitment to the Parkinson’s community – especially in south Orange County is an enormous asset to the Movement Disorder’s Program. Dr. Bixby’s reputation has drawn many new patients to Hoag. In 2021, the movement disorder physicians collectively consulted 870 new patients at the Newport location alone. The clinic also continued to provide telemedicine options to enhance follow up consistency.

Parkinson’s disease (PD) continues to be the second most common neurodegenerative disorder. Each year across the United States more patients are diagnosed. 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. It remains an imperative that the program continues to expand to meet the demands of this growing population and to mitigate the effects of disease burden.

In 2021, the program added a nurse navigator dedicated specifically to movement disorders. This has allowed for additional support of patients in the outpatient setting and an increased ability to provide contact, education, resources and emotional support to patients. The nurse navigator has continued to evaluate all patients admitted to Hoag who also have PD or a movement disorder. The nurse navigator meets with patients and their families, confirms home PD medication regimens, reviews specific Parkinson’s symptoms and provides education and support. This service has facilitated oversight of Parkinson’s related specific care, promotion of therapies and ensures lack

**Figure 1. Number of New Outpatient Consultations for Movement Disorders**

<table>
<thead>
<tr>
<th>Year</th>
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<th>2020</th>
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<td>1,328</td>
<td>727</td>
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</tr>
</tbody>
</table>

Movement Disorders Program: 949-764-6066
of disruption in medication regimens. Additionally, the nurse navigator inpatient role provides an opportunity for tailored patient advocacy, end-of-life and palliative collaborative input and care-partner support. Recurrent inpatient admissions, particularly for Parkinson’s patients, can signal a new set of challenges in the disease process and a new focus of care which is guided by the navigator.

The Salsbury Family Movement Disorders Program offers two surgical options: Duopa therapy and Deep Brain Stimulation surgery (DBS). 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. Dr. Christopher Duma first brought DBS surgery to Hoag over 15 years ago. During this time, the Movement Disorders Program has worked toward developing a comprehensive protocol for patients undergoing DBS surgery.

In 2021, Dr. Alexander Taghva joined Hoag. Dr. Taghva is a board-certified neurosurgeon and has completed a fellowship in neuromodulation and functional neurosurgery. His reputation and technical expertise are an asset to Hoag. Dr. Taghva’s addition to the team will allow for future expansion of neurosurgical services to patients with Parkinson’s disease. Many DBS surgeries had to be postponed in 2021 due to Covid reflecting a total of 73 surgeries which were performed on 55 patients.

Research
The Salsbury Family Movement Disorders Program participated in research on an extended-release version of Carbidopa-Levodopa, with Dr. Sandeep Thakkar as the principal investigator. As of this writing, several other research trials are in the start up phases.
Here’s one testimonial about the care received from the Salsbury Family Movement Disorders Program:

“The care John received was beyond excellence. From the moment we hit the ER we were part of a well-run, organized group of life savers. I was brought to tears more times than I can even remember by the staff who showed compassion and strength and expertise beyond measure. I truly believe without these incredible souls Johnnie would have never survived.

I can’t begin to express my awe and love for this amazing hospital.

Thank you, Hoag, for giving us the best medical care in the world. For giving us dignity and compassion in the hardest of times.”

Michelle and John Long

### Deep Brain Stimulation Surgeries Performed and Number of Patients Who Received Surgeries

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</table>

### Community Classes & Collaboration

In 2021, Hoag and the Pickup Family Neurosciences Institute sponsored the So Cal Ride for Parkinson’s Disease with the mission to increase awareness of PD in the greater Southern California community and raise funds for research. There were 220 participants, which included riders, walkers and volunteers. The Salsbury Family Movement Disorders Program also continued to collaborate with community groups who serve the Parkinson’s population in Southern California.

Hoag Neuro-rehabilitation therapy has continued to offer services to patients with PD, offering weekly specialized group classes and individual therapy sessions.

As can be seen, the Covid-19 pandemic and related mandates to stop elective surgeries, including DBS, limited our numbers over the past two years. However, with this writing (February 2022), we are seeing the return to pre-pandemic needs being addressed.
Salsbury Family Movement Disorders Program Team

**Fellowship-trained Movement Disorder Neurologists**
Mindy Bixby, DO  
Kaveh Saremi, MD  
Saulena Shafer, DO  
Sandeep Thakkar, MD

**Functional Neurosurgeon**
Christopher Duma, MD, FACS  
Alexander Taghva, MD  
Kevin Binder, MD

**Neuropsychology Team**
Lauren Bennett, PhD  
Seda Terzyn, PhD

**Neuro-Rehabilitation Therapy Team**
Nurse Navigator:  
Belinda Stewart-Burger, MSN
Overview

The Pickup Family Neurosciences Institute's (PFNI) Epilepsy Team is dedicated to providing an individualized and comprehensive approach to all aspects of caring for patients with epilepsy and seizures. Regardless of whether a patient is referred to our program for transient symptoms mimicking epilepsy, a first convolution, or severe 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 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 eight years of leadership. Dr. Millett is now joined by fellowship-trained epileptologist Dr. James Park, DO, and two nurse practitioners: Angel Samich, NP-C, and Kelly Watkins, MSN, FNP-C, APRN, in the outpatient clinics.

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.

Our epilepsy program strives to provide a holistic, patient-centered approach to epilepsy care, focusing on cognitive and psychological well-being. 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. In 2021, Dr. Bennett was joined by Ruth Morin, PhD, to expand these services.

Epilepsy Program: 949-764-6066
Our exceptionally dedicated program manager and Nurse Navigator is Sheena Dhiman, BSN, MBA, who works closely with physicians, nurses, and technicians in the EEG laboratory and epilepsy monitoring unit (EMU) to optimize patient care, including appropriate referrals and resources, education of patients and staff, and coordinating programs to promote psychological and physiological wellness. Our team cannot be successful without the care and expertise that our trained registered nurses and registered EEG technologists provide. 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.

2021 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 expertise in minimally invasive robotic cranial surgery with surgeons around the U.S. and world. This program has been made possible by the Bill and Nancy Thompson Foundation and 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.

SLATE

Hoag is proud to be named a clinical trial site for minimally invasive laser ablation to treat epilepsy. Hoag’s Level 4 epilepsy program is proud to be only the 3rd clinical site in California (along with UCSF and Stanford) to offer this treatment for patients with difficult-to-treat epilepsy. “We are aiming to make surgery scarless, less scary and with an easier recovery,” Dr. Mehta said. “We are excited to be a part of this study and to pioneer an effective option for our patients with epilepsy.”

Cameron Boyce Foundation

Hoag is proud to be a clinical partner with The Cameron Boyce Foundation (TCBF). TCBF is named in Honor of Cameron Boyce, a talented young actor and Disney star who tragically died of Sudden Unexpected Death in Epilepsy (SUDEP) and aims to bring awareness about epilepsy and SUDEP. Hoag and TCBF will work closely to develop clinical content and patient engagement and education to address the disease of epilepsy at a public health level. To honor Cameron’s legacy, Hoag aims to raise the importance of Level 4 Epilepsy centers, the need for subspecialized epilepsy care, and the innovative and minimally invasive treatment options recently made available to treat patients with epilepsy.

Figure 1. Epilepsy Monitoring Unit Volume

Figure 2. Laser Ablation

MRI guided real-time laser ablation allows surgeons to selectively target structures deep in the brain that cause seizures without affecting surrounding areas. The PFNI at Hoag is one of only a few places in the country to offer this minimally invasive epilepsy treatment.
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 Theatre and NeuroPace as an expert in epilepsy surgery, helping other surgeons learn this technique.
- Hoag was selected to be named a visiting surgeon site for this technology, enabling Hoag to host surgeons from around the world to learn the advanced techniques pioneered here.
- Our patients who have benefited from this technology have 87% seizure freedom rate compared to the national average of 61%.

Cortical Dysplasia: 3D MRI brain surface rendering of the right frontal lobe shows the disorganized right frontal grey matter convolutions

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 Responsive NeuroStimulation (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 National Association of Epilepsy Centers in 2018, recognizing the highly specialized physicians, resources, and number of patients with drug-resistant epilepsy who have been admitted to our monitoring unit.
(A) Axial T2 image of a 33-year-old male, showing disorganized grey matter (polymicrogyria-arrows), a common cause of focal epilepsy and (B) Co-registration of MRI axial images pre-implantation CT post-implantation of electrodes for intracranial video-EEG monitoring in a patient with drug-resistant epilepsy. Surface and deep temporal electrodes are shown.

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, MRI, and video-EEG. We are delighted that through the generosity of philanthropy and the Charity Care program, two patients with severe drug-resistant epilepsy, and no other access to advanced epilepsy care, were able to undergo surgical evaluation and minimally invasive laser ablation for temporal lobe epilepsy.

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.

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 (Figure 2).

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 that will lead to a successful seizure-free life. As part of a multi-disciplinary and collaborative approach to epilepsy, neurosurgeons, epileptologists, neuro-radiologists, neuropsychologists, epilepsy care coordinators,
Clinical trial at Hoag leads some epilepsy patients to be seizure-free

By Zarina Khairzada | Newport Beach
July 14, 2021

NEWPORT BEACH, Calif. – Going out for a drive is a dream come true for Lisa Egli, who suffered from seizures most of her life.

“It’s amazing. Something that people truly don’t understand what a privilege it is until you have to carpool all the time, find somebody to carpool with or look at local transportation,” she said.

In her 20s, Egli was diagnosed with epilepsy, a brain disorder that impacts nearly 3.5 Americans. The condition overwhelmingly controlled her life, forcing her to take multiple medications, yet, she said, she still couldn’t predict what would trigger her next seizure.

“You go through life not knowing what’s going to happen. You can’t drive a car. You can’t explain to your friends; you can’t explain it to your family,” Egli said.

Her seizures ranged from one a week to three in one day with medication. So, she began looking for medical options that could change her life.

That’s when she learned about the SLATE clinical trial at Hoag Memorial Hospital Presbyterian. The only hospital where neurosurgeons like Dr. Vivek Mehta use virtual and augmented reality to highlight the problem area and rehearse a minimally invasive brain surgery using a laser for drug-resistant epilepsy patients.

“By rehearsing this prior to surgery, we’re able to protect the critical structures of the brain such as the optic fibers and maximize the tissue that’s ablated causing seizures,” Mehta said.

Mehta said the surgery is performed with an almost as thin instrument as a guitar string to pinpoint the exact location for laser ablation. The procedure that is being studied through the clinical trial could help more than one-third of epilepsy patients become seizure-free with minimal side effects and a short hospital stay.

“The results are still pending. But, we are seeing promising results, and the 14 patients we’ve treated here at Hoag with this approach, 11 are completely seizure-free,” Mehta said.

The doctor said that patients who do not experience a seizure after a year post-surgery are considered seizure-free. Egli is one of those 11 patients.

She’ll be two years seizure-free this September.

“It’s so refreshing to be in a different place. To be where you see everyone else and just know that I’m going to be fine, wake up each morning and know I don’t have to worry about that.”

For Egli, she said she couldn’t be happier to work and live her life without fear of when the next seizure will strike.
EEG technologists and other health care professionals meet on a regular 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

Vivek Mehta, MD, and Christopher Duma, MD, neurosurgeons at the Hoag PFNI, along with epileptologist David Millett, MD, have partnered to bring this revolutionary treatment option to cure the most difficult form of epilepsy.

Laser Interstitial Thermal Therapy (LITT) is a technique to selectively ablate areas of the brain that cause seizures. This new minimally-invasive technique allows surgeons to precisely target and 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 next with just one small stitch. The result is much faster healing and recovery 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 to patients whose epilepsy is difficult to treat. The early data is promising with seizure cure and reduction rates nearly compatible with open surgery and with fewer complications and side effects.

Support & Education

The Epilepsy Center at Hoag offers an interactive support group for all adolescent and adult epilepsy patients. This support group functions under the direction of a licensed clinical social worker and includes group and family discussions to help patients better understand and cope with epilepsy. Despite the pandemic, we continued to provide support to our patients in the virtual setting.

Peer Reviewed Journal Articles


Wiersig, S. & Bennett, L. (2022, February). Diagnostic Validity Comparisons of MMSE and ADAS-Cog Using CSF Tau. Poster accepted for presentation the annual meeting of the International Neuropsychological Society (INS), New Orleans, LA.

Conference Presentations


Nguyen, A., McClure, R., Martinez, A., & Bennett, L. (2021, February). Examination of Potential Cross-Cultural Differences in Individuals who are at a Higher-Risk for Dementia. Poster presented at the annual meeting of the International Neuropsychological Society (INS), San Diego, CA.


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

“My family and I couldn’t be more thankful to Dr. James D. Park and the entire Hoag team for guiding us through my strange and frightening experience with autoimmune epilepsy.”

Katy Cohen, patient

To read more patient stories, go to www.hoag.org/patient-stories/
Overview

The Neurodiagnostics Lab provides inpatient and outpatient services for the evaluation and diagnosis of central and peripheral nervous system disorders at both Newport Beach and Irvine campuses. Certified neurodiagnostics 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 long-term video electroencephalography (VLTM) 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 a unique application (BraiNet) protocol utilizing the entire hospital team, including our excellent nursing staff.

During the pandemic, we also implemented the use of another disposable EEG system called Ceribell. Our nursing staff was very quick to learn this system. It has been very helpful with patients who are awake or maybe confused as well as with Covid patients as it takes less than 15 minutes to apply and begin monitoring.

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); with administrative staff providing oversight and education for Movement Disorders, Spine, MS, headache, stroke, and in-house support for our neurohospitalists.
The Neurodiagnostic 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 (IONM)

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 surgery, orthopedic and spine surgeries, and surgeries for throat and larynx disorders.
Overview

Covid-19 has greatly impacted our community and our patients, rapidly increasing the need for cognitive and mental health support and services. While Covid-19 brought great challenges and restrictions to providing comprehensive care for our community, the team has renewed our commitment to serve our community safely and effectively.

There are many conditions that lead to cognitive impairment (CI). These include not only neurodegenerative disorders such as Alzheimer’s disease (AD), Lewy body disease, and Parkinson’s disease, but also conditions such as stroke, heart and lung diseases, diabetes, obesity, anxiety or depression, and alcohol and/or chemical dependencies. Certain behavioral and lifestyle factors also are known causes of CI including sedentary lifestyle, smoking, poor diet, and lack of mental and physical exercise. With the prolonged effect of Covid-19 on our daily life, management and treatment of all those conditions have been hindered, requiring innovative and pragmatic approaches to address cognitive health in our community.

Our Memory and Cognitive Disorders Program continues to focus on three main goals:

1. Promoting cognitive health through the Orange County Vital Brain Program (OCVBP), a population-based cognitive health initiative offering public and physician education, cognitive assessment services embedded within the community, and coordination and triage of health care resources for the program participants.

2. Delivering an accurate diagnostic assessment and monitoring of mild cognitive impairment, AD and related disorders (ADRD). The services include a comprehensive neuropsychologic assessment as well as a biomarker analysis (e.g., quantitative volumetric MRI (Figures 1 and 2), functional MRI, amyloid PET imaging (Figure 3), and cerebrospinal fluid assessment), allowing the earliest stage diagnosis and wider treatment options.

3. Providing an access to clinical research and trials such as FDA AD Phase I, II, and III clinical trials and prevention trials, as well as research in behavior and health care outcomes to improve measurements of AD in health care.

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**Figure 1. Quantitative volumetric MRI**

Selected coronal MRI slice with the cortical segmentation algorithm shows the hippocampal atrophy (olive green region) as well as enlargement of lateral ventricles and inferior lateral ventricles commonly observed in patients with Alzheimer’s disease.

**Figure 2. Quantitative measure for the hippocampal region. Patient’s hippocampal volume below 2 standard deviations, a biomarker of Alzheimer’s**

<table>
<thead>
<tr>
<th>Brain Structure</th>
<th>Volume (cm³)</th>
<th>% of ICV (5%-95% Normative Percentile)</th>
<th>Normative Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hippocampi</td>
<td>7.33</td>
<td>0.40 (0.41-0.58)</td>
<td>&lt; 5</td>
</tr>
</tbody>
</table>

**Figure 3. MR-PET amyloid imaging**

MR-PET allows regional quantification of AD pathology such as beta amyloid (arrows), offering better diagnostic insights.
Strategy

“Prevention through Delay” characterizes the philosophical approach of the Memory and Cognitive Disorders Program. Our sensitive monitoring tools, advanced diagnostic methods, state-of-the-art treatment approaches, and disease management work with optimal community education and other services coordinated among physicians, patients, and community organizations. This approach is critical to slow progression of cognitive impairment and prevent full-blown dementia that incapacitates people and raises health care costs.

Team

The program is led by William R. Shankle, MS, MD, FACP, the Judy & Richard Voltmer Endowed Chair in Memory and Cognitive Disorders. He also serves as a guiding force of OCVBP, and is teamed with neurology, neuropsychology, and psychiatry colleagues with support from multi-disciplinary talent in education, research, and outreach. The team includes Greg Whitman, MD, an ADRD specialist serving the Irvine community, neurologists Bruce Cleeremans, MD and Victor Doan, MD, and a neuropsychologist Lauren Bennett, PhD, ABPP-CN, who also serves as a clinical supervisor for the OCVBP coordinating its education, assessment, and outreach efforts. Junko Hara, PhD, oversees the OCVBP program development, and leads its research and academic development including grant procurement activities. In 2021, the team was joined by Gustavo Alva, MD, DFAPA, a renowned psychiatrist and clinical trialist, to lead senior mental health services, Mindy Bixby, DO, a neurology specialist to bridge between cognitive and movement disorders, and Ruth Morin, PhD, a neuropsychologist.

Orange County Vital Brain Program

OCVBp and its online portal (www.OCBrain.org) has provided a community-wide, multi-disciplinary portfolio of services, supported by prior grants and philanthropy, promoting cognitive health in our community since 2010. Targeting persons over 45 years old, this effort is disseminated through public and healthcare professional education seminars, self-education and self-screen tools, in-person memory assessment services, plus triaging community resources and healthcare services when indicated.

The program also collaborates with Hoag Medical Group (HMG) to further promote cognitive health in primary care settings, and with Melinda Hoag Smith Center for Healthy Living (MHSCHL) to provide scholarship for some of its services to those who require financial assistance.

In spite of its limited capacity imposed by the pandemic, OCVBP received continuous interest and participation from our community through 2021.

OCVBp’s free self-screen tools, accessible on its website, evaluate, educate, and monitor users on risk factors for cognitive impairment, depression and mood, and memory loss. In 2021, there were 211 new registered users doubling from the year prior, totaling 5,876 community members to date, who have taken advantage of those tools (Figure 4).
OCBVP’s in-person memory assessment service is provided in both English and Spanish at five testing locations – Hoag Hospital Newport Beach, Hoag Health Center Irvine, Oasis Senior Center, Senior Center Huntington Beach, MHSCHL (since April 2020, the service locations have been limited due to the pandemic).

At the assessment, those found cognitively normal learn about maintaining their cognitive health through managing existing medical conditions, modifying their lifestyle, and engaging in regular physical, cognitive and social activities. Those identified with CI are assisted in finding the right healthcare professionals to diagnose the underlying causes and to treat and manage them. All participants are encouraged to monitor their memory annually after age 45.

In 2021, despite the prolonged pandemic, 591 individuals participated in OCBVP’s in-person assessment (Table 1), totaling 6,218 individuals in our assessment program with many returning each year. This high participation underscores the community’s interest in their cognitive health and the importance of our services.

Figure 5a. Participants by Age Group (2021) (n=591)

Figure 5b. Participants by Ethnic Group (2021)

Table 1. In-Person Assessment Summary (2021)

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td># Assessed (%)</td>
<td>362 (61%)</td>
<td>229 (39%)</td>
<td>591 (100%)</td>
</tr>
<tr>
<td>Average Age</td>
<td>70.4 +/- 10.0</td>
<td>72.8 +/- 11.00</td>
<td>71.3 +/- 10.5</td>
</tr>
<tr>
<td># Below Normal (%)</td>
<td>93 (25.7%)</td>
<td>90 (39.3%)</td>
<td>183 (31.0%)</td>
</tr>
</tbody>
</table>

Among the participants in 2021, 24% were age under 65 years (Figure 5a) and 12% were non-white (Figure 5b), reflecting our effort to reach younger and diverse at-risk population. This effort will be further emphasized in the coming years.

Among those participants, the overall rate of CI was 31.0%, a dramatic increase from 24.3% prior year. This increase was largely driven by the larger number of participants over 75 years old who have higher rate of CI, which is similar to nationally published data in primary care settings. There were close to twice as many assessments of females (61%) than males (39%), although males had higher impairment rate (39.3%) than females (25.7%) (Figure 6ab). This is partly due to older average age for male participants as the CI rate increases with age.
The program’s collaborative efforts with community physicians were reflected in their referral to our program. Approximately 35% of new participants were referred by community physicians.

Support and Education
The Memory and Cognitive Disorders Program provides ongoing public education classes. In 2021, these classes were held virtually through LiveStream, focusing on the basics of mild CI and dementia due to ADRD, including risk factors, causes, preventive strategies, and practical ways to maintain cognitive health. The recordings of those classes are available through Hoag’s YouTube channel.

Clinical Research
Clinical research provides a great opportunity to better understand the ADRD mechanisms and to provide treatment options for our patients. In June 2021, a new treatment, Aduhelm®, was approved by the FDA for the first time in 20 years for mild cognitive impairment and mild stages of AD. Most importantly, it is the first FDA-approved disease modifying therapy (DMT) for AD, shedding the hope for the future of AD management especially with many other DMTs of the same class, and some with different target mechanisms in the development pipeline. Our clinical research team participated in the clinical trial. The team continues to engage not only in FDA AD clinical trials, but also primary prevention trials funded by the National Institutes of Health (NIH) where cognitively healthy participants with increased risk for AD are studied to understand how to prevent or delay the disease (e.g., AHEAD Study).

Our research team has continued to support the study evaluating Covid-19 antibody prevalence and longevity in health care workers at Hoag Hospital. This study has contributed to a better work force stratification and an understanding of possible innate immunity among health care workers. This study was funded by the Orange County Healthcare Agency and Hoag Hospital Foundation.

PEER REVIEWED JOURNAL ARTICLES


CONFERENCE PRESENTATIONS


Hoag to Participate in Groundbreaking Study Aiming to Help Prevent Memory Loss Due to Alzheimer’s Disease

Hoag Memorial Hospital Presbyterian
June 3, 2021

NEWPORT BEACH, Calif., June 3, 2021 / PRNewswire/ – Hoag’s Pickup Family Neurosciences Institute has started recruiting volunteers for a study testing an investigational treatment that aims to help prevent the earliest stages of memory loss due to Alzheimer’s disease.

Funded by the National Institutes of Health (NIH) and Eisai Inc., a U.S. subsidiary of Eisai Co., Ltd. (Headquarters: Tokyo), the AHEAD Study is the first Alzheimer’s disease research study to recruit people as young as 55 years old who are at risk of developing symptoms of Alzheimer’s disease as they get older. It introduces a personalized approach that will tailor treatment dosing levels to a participant’s particular risk of memory loss related to Alzheimer’s disease.

The AHEAD Study consists of two different clinical trials testing the same investigational treatment (known as BAN2401 (lecanemab)). Participants are enrolled in one of the two trials based on the level of amyloid in their brain. Amyloid is a protein that builds up in people who can go on to have memory problems and develop Alzheimer’s disease.

“The tailored approach of this study, starting treatment years before memory loss has begun, has the potential to be a breakthrough step in our aim to prevent Alzheimer’s disease,” said William R. Shankle, MS, MD, FACP, program director of Memory & Cognitive Disorders at Hoag and the Judy & Richard Voltmer Endowed Chair in Memory and Cognitive Disorders at the Pickup Family Neurosciences Institute, who is serving as the principal investigator of the study at Hoag. “It can potentially serve as a model to improve future clinical trials in Alzheimer’s research and other diseases.”

The AHEAD Study will be conducted in the US, Japan, Canada, Australia, Singapore, and Europe. Hoag was selected to participate in the parallel, 216-week study in part because of its renowned Orange County Vital Brain Aging Program and our track record of successfully conducting complex clinical studies.

“Hoag’s Pickup Family Neurosciences Institute has pioneered a comprehensive program to maintain cognitive health as we age, and to combat the community’s fear of Alzheimer’s disease and related disorders, through the Orange County Vital Brain Program,” said Michael Brant-Zawadzki, MD, FACP, Hoag’s senior physician executive and the Ron & Sandi Simon Executive Medical Director Endowed Chair of the Pickup Family Neurosciences Institute. “As a result, we are able to offer our community unique opportunities to participate in studies like the AHEAD Study. This is well-aligned with the mission of our Institute, and we are very excited to be a part of this pioneering effort to help identify ways to prevent Alzheimer’s disease.”

People may be eligible to enroll in the trial if they are between the ages of 55 and 80 and meet certain eligibility criteria. For more information on the study and the study participation, please email clinicalresearch@hoag.org.

Research reported in this press release was supported by the NIH’s National Institute on Aging under award numbers R01AG054029 and R01AG061848. The AHEAD Study (Clinical Trial number NCT04468659) received funding from NIH and from nongovernmental sources. The content is solely the responsibility of the researchers and does not necessarily represent the official views of the National Institutes of Health.
Overview
MULTIPLE SCLEROSIS & IMMUNOLOGY PROGRAM

Multiple Sclerosis (MS) is the leading cause of disability in young adults. This disease is mediated by an autoimmune response causing damage to the nervous system. Important advances in the field are now significantly improving the course and the outcome of the disease. In addition to multiple disease-modifying therapies that tackle the immune response from various aspects, there are multiple therapies targeting the symptoms of the disease.

At Pickup Family Neurosciences Institute (PFNI), we offer a multidisciplinary team dedicated to helping patients at any stage of the MS journey. This comprehensive and integrated approach lessens the burden of the disease on patients and caregivers.

Since the program’s inception in March 2021, the MS program has embraced over 100 people with MS. We coordinate not only an expert physical exam by a neurologist, but advanced diagnostic studies. These studies include: the 3.0T Magnetic Resonance Imaging (MRI) study, a spinal fluid sample, and blood work to rule out other autoimmune conditions – all conveniently co-located with our clinic.

Though there is no cure for MS, ongoing medical management of MS is required (with a holistic approach) and available for patients to maintain their best quality of life. We tailor the assessment and treatment of MS one patient at a time, based on the individualized disease sub-type, stage, and personal needs.

Our MS program also provides expertise in neuroimmunology, for related conditions such as neuropathy (see separate section in this report) 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 similar to 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.

MRIs of the brain and cervical spine showing classical brain periventricular and cervical spine intramedullary demyelinating lesions.

Hoag’s Multiple Sclerosis and Neuroimmunology Program offers:
- Thorough assessment and testing of patients
- A patient-centered and comprehensive treatment
- Management of MS and neuroimmune inflammatory disorders of the central nervous system
- Diagnosis and management of rare neuroimmunological diseases such as neurosarcoïdosis
- A multidisciplinary approach to balance and gait disorders, spasticity, neurogenic bladder and bowel, MS-related fatigue, and cognitive decline.

In addition to advanced medical therapy, the program offers research therapeutics, nurse navigation, and physical and psychological therapy to enhance the patient’s quality of life.

Accomplishments & Support
The National Multiple Sclerosis Society recognized the Hoag MS program as a Partner in MS Care. The criteria for the Partner in MS Care include demonstrated knowledge and expertise in treating people with MS. This cherished designation includes collaboration with the national MS Society and extensive community outreach. We sponsor a team for

Multiple Sclerosis Program: 949-764-8141
“A doctor and his advocate are important tools to your MS wellness success. I found this completely in Dr. Jassam and his nurse navigator Audrey Johns. They navigated a first of a kind condition with a collaborative skill and energy that reflects a high degree of patient wellness care. My unique experience with MS treatment was truly a success.”

Steven R. Miranda
on disease-modifying medications (approved by the Food and Drug Administration to treat MS) and individualized emotional support. Dr. Jassam has hosted virtual educational sessions including, An Introduction to MS (which is available on Hoag Health YouTube channel). Also Dr. Jassam conducted several other zoom sessions including topics such as Cognitive Changes in MS. MS educational classes are also provided by the nurse navigator to our Hoag Nursing Staff to illustrate the general treatment goals for patients with MS who are hospitalized due to an MS crisis.

Team
In March 2021, PFNI welcomed neurologist and neuroimmunologist Yasir Jassam, MBChB, MRCP (UK). Dr. Jassam is a board-certified neurologist, previously professor of neurology and neuroimmunology at Kansas University Medical Center before joining Hoag in March 2021. His focus of specialty includes autoimmune neurological and neuroinflammatory disorders.

Audrey Johns MSN, RN, BSN, PHN joined the team as nurse navigator, armed with 5 years of bedside experience from the Advanced Brain and Spine Unit at Hoag Hospital Newport Beach as an inpatient clinical nurse.

The Hoag MS multidisciplinary team includes a Registered Dietitian dedicated to individualized autoimmune diet counseling for our patients. Patients are also offered A Multiple Sclerosis and Diet informational sheet created by our MS team. At their three-month follow-up visit, patients are assessed utilizing the Expanded Disability Status Scale (EDSS). Referrals are then made to Hoag’s outpatient rehabilitation clinic where there is a strong focus on vestibular and balance training.

“I was initially diagnosed as having an MS attack at an ER recently. Dr. Jassam insisted I come for retesting and followed up with the results. Because of Dr. Jassam I was admitted to Hoag Hospital and treated for a stroke.

I am grateful to him. Dr Jassam is knowledgeable, thorough, and caring.”

Evelyn Cabler
Overview

The Chronic Pain and Neuropathy Program of the Pickup Family Neurosciences Institute (PFNI) was launched in August of 2021. The program helps to reduce or eliminate pain and improve our 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 addiction medicine experts, general neurologists, physical/occupational therapists, acupuncturists, psychologists, and surgical colleagues to offer the best treatment plan for our patients.

We also offer treatment modalities such as minimally invasive injections of botulinum toxins for headaches, pain trigger site injections, nerve blocks, and dorsal spinal column stimulations, and are beginning to explore novel drug therapies including Ketamine.

Since starting the Chronic Pain and Neuropathy Program in August of 2021, 288 new patients have been treated.

Figure 1. New Patient Volume

Our specialists focus on the diagnosis and treatment of conditions involving chronic pain ranging from neck and back pain to peripheral neuropathy, toxin/chemo-induced neuropathy, congenital and autoimmune neuropathy, joint pain, cancer pain, and post-surgical pain. The program uses diagnostic technologies to evaluate nerve function such as EMG, MR neurography, and nerve biopsies. We perform the latest interventional procedures including peripheral nerve stimulation, selective nerve root injections, botulinum toxin (Botox) injections, facet joint blocks and radiofrequency ablation. The prescription of non-opioid medications may be recommended.
to alleviate pain and restore functioning, and we are investigating new pharmaceuticals, including Ketamine, for selected patients. We also offer access to virtual reality modulation of pain response, a promising new approach to chronic pain management.

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.

Team

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

Yasir Jassam, MD
Dr. Jassam is board-certified by the American Board of Psychiatry and Neurology for treatment of inflammatory diseases associated neuropathies, with fellowship training in neuro-immunology.

Phillip O’Carroll, MD
Program Advisor Headache, Mind Body Disorders
Dr. O’Carroll is Board Certified by the American Board of Psychiatry and Neurology. He is an internationally recognized expert in the treatment of migraine, and other headache disorders, as well as psychosomatic pain management.
Overview

The Covid-19 pandemic fueled another type of surge: that of substance abuse, overdoses, and accidental suicides from opiates and other drugs. Alcoholism and related liver disorders also greatly increased, with over 120,000 overdose deaths in the US in 2021. Our team never “sheltered in place” but ran into the firestorm brought on by Covid-19 in terms of staying open, active, and resilient during this immense challenge to those with substance abuse issues, and those who descended into substance abuse for the first time due to Covid-19. Though the Covid-19 pandemic is receding as of this writing, the next wave of addiction caused by it is just reaching our shores.

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.

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

SolMar Recovery is a 21-bed residential facility, which is unique in the state in that it is located on the campus of an acute care hospital.

The program is also now certified to provide incidental medical services (IMS) making the residential program among the best equipped to address primary addiction, comorbid psychiatric conditions, and associated medical issues.

As a licensed hospital-based treatment center integrated within Pickup Family Neurosciences Institute (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 remain 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 2021, Hoag served over 700 patients for acute detoxification, treated approximately 150 residential treatment patients, and served more than 275 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 comprised 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 have full medical attention, 24 hours per day, 7 days a week, 365 days a year.

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

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
• Outpatient programs (PHP and IOP)
• Extended-care transitional programs
• Ongoing recovery management through lifetime support groups and alumni programs

Innovative and Multidisciplinary Treatment Programming

• State licensed and credentialed clinicians
• Licensed master level therapists
• Individualized treatment planning involving both medical and counseling staff
• Individual and group therapy
• Dialectical Behavioral Therapy
NEUROBEHAVIORAL HEALTH: HOAG ADDICTION TREATMENT CENTERS

• Cognitive Behavioral Therapy
• Blend of 12-step recovery and other evidence-based treatment modalities
• Mindfulness meditation and stress management groups
• Extensive psychoeducation on relapse prevention
• Psychoeducation of triggers and cravings as well as integration to outpatient care

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 one’s healing process.

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.

Hoag has expanded its psychiatric services in pain and addiction with Dr. Reed directing these efforts. Dr. Reed is board certified in both general adult psychiatry and internal medicine. He also completed fellowship training in pain medicine. He received his medical education at the University of Utah School of Medicine and completed his general psychiatry residency, general internal medicine residency, and pain medicine fellowship at the University of California Davis. Dr. Reed directs the SolMar Recovery residential program and operates as site director for Hoag’s collaborative UC Irvine medical resident addiction psychiatry rotation where he oversees the training of second year general psychiatry residents in addiction medicine. Dr. Reed will continue to work closely with Hoag’s PFNI to expand psychiatric services in both pain and addiction.

SolMar Recovery and the outpatient programs are led by Jeannette Rojas Rivero, HATC’s Operational Manager. Jeannette brings over 25 years of extensive experience across the mental health, addictions, and eating disorder treatment continuum. Her experience spans all levels of care, from intensive outpatient, to detox and residential treatment. She originally studied at Anahuac University, becoming a clinical psychologist in Mexico City. While at Anahuac, she also received a postgraduate degree in Substance Abuse and Alcoholism.

Jeannette manages the operations of Hoag Addiction Treatment centers, with a long-standing experience in the community substance abuse rehabilitation field.

Michelle Freyre, MSN, RN, has worked for Hoag Hospital since 2007 and as an RN in the local community for more than 20 years. As the Clinical Nurse Manager, Michelle provides clinical and operational oversight for the detox unit and helps support our outpatient services.

The clinical team is multidisciplinary, comprised of physicians, licensed therapists, certified addiction treatment counselors, nurse practitioners, and licensed vocational nurses. It also provides consultation to our medical and surgical inpatient floors, helping manage those patients’ substance abuse co-morbidities.

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 thirty 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 remains steadfast throughout the pandemic restrictions.
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 percent of teens experience depression before they reach adulthood, and between 10 to 15 percent suffer from symptoms at any one time. Only 30 percent 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 percent of children aged 3-17 years (approximately 1.9 million) have diagnosed depression.

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
Commentary: Taking teen mental health seriously

By Sina M. Safahieh, MD

December 22, 2021 3:27 PM PT

Alarming headlines have filled the news this past week. First, there was a chilling expose of a website that encourages teenagers to take their own lives. Then Instagram CEO Adam Mosseri’s testimony before Congress failed to articulate safeguards for teens’ mental health, despite research that links the social media site to teen depression, anxiety and suicidal ideation.

There is no doubt that the nation’s youth are hurting. The one-two punch of pandemic-related isolation and social media exploiting children’s vulnerabilities has scarred our teens and young adults.

A recent advisory from the U.S. Surgeon General on the youth mental health crisis warns of worsening depression, anxiety and suicides among our adolescent population that was already experiencing a major national crisis prior to COVID-19. The number of U.S. emergency room visits for suspected suicide attempts by teen girls jumped during the COVID-19 pandemic by as much as 51%.

Here in Orange County, we are experiencing this firsthand.

The California Department of Health reported that the number of suicides among people age 18 and under rose in 2020. In Orange County as of September, 11 young people took their lives, far surpassing the four-year average of eight suicides.

COVID-19 has precipitated a mental health crisis, fueled by social isolation, collapse of routines and structure, and increased uncertainty about the future. All of us, whether young or old, have developed disease fatigue, which is exacerbated by continuous contact and exposure to potential triggers without respite.

Mental health issues are medical issues and need to be treated as such. It’s critical – now more than ever – to take mental health seriously and get our teens the help they deserve.

Parents can do their part by keeping an open mind, asking questions in an open-ended fashion and remaining non-judgmental, non-critical, and non-accusatory. Timing is everything; find the right time and place to have this important and potentially emotionally charged conversation and remain patient to revisit this conversation at a later time and date if necessary.

Emphasize that your concerns are coming from a place of love, warmth and support and don’t expect teens to open up immediately about how they feel.

Many times, teens do not feel comfortable sharing these potentially deep seated issues with family members and may be more open and transparent with a third party like a therapist, psychologist, pediatrician or psychiatrist.

Don’t be afraid to reach out for help.

There are resources available in many communities, including through local, county and state departments. Parents can find various directories online for mental providers and should reach out to their respective insurance companies to obtain a list of providers, whether therapist, psychologist or psychiatrists. Depending on the need or severity of symptoms, parents may need to inquire about higher levels of care, including intensive outpatient programs, partial hospitalization programs, inpatient psychiatric units and residential treatment centers including therapeutic boarding school, wilderness programs and dual diagnosis (drug/alcohol combined in conjunction with primary mental health issues).

The ASPIRE adolescent intensive outpatient program at Hoag, one of the few programs that has remained open in person in Orange County, has seen a significant rise in admissions due to the unnatural demands of this global health crisis.

No doubt, this has been a traumatic time for this generation, but I have hope for teens. They are much more resilient and adaptable than we realize, but they have much better odds of flourishing and persevering in this time of crisis if they get the attention and support they deserve.
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, 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. Prerna Rao, LMFT, is the clinical program manager. Prerna 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. Prerna 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 18-26-year-olds that are working towards 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.
Hoag launches young adults mental health program

By Sina M. Safahieh, MD
May 7, 2021

In response to the growing concern around mental health, which has been exacerbated by the COVID-19 pandemic, the team of neurobehavioral health experts at Hoag’s Pickup Family Neurosciences Institute has designed an accredited, outpatient program to target the specific mental health needs for young adults ages 18-26.

The Hoag Young Adults Mental Health Program will help individuals in this very vulnerable age group who are struggling with depression, anxiety, trauma, OCD, PTSD and other symptoms relating to a mood disorder or mental health issue and navigate the challenges of the transition into adulthood. Led by a team of experts, this treatment program equips young adults with tools to adopt coping strategies and build healthy relationships.

“The negative impact that the COVID-19 pandemic has had on young adults will be felt for many years to come and it is imperative, now more than ever, to offer a program that supports those transitioning to one of the most crucial stages of life – adulthood,” said Michael Brant-Zawadzki, M.D., F.A.C.R., Hoag’s senior physician executive and the Ron & Sandi Simon Executive Medical Director Endowed Chair of the Pickup Family Neurosciences Institute. “This program empowers young adults to better meet the stresses and pitfalls common to this stage of life.”

The Young Adults Mental Health Program uses dialectical behavior therapy and cognitive behavioral therapy in a group setting. Participants of the eight-week program will meet in person, three days a week to build relationship skills, which can improve effectiveness in school, work and interpersonal situations.

“Part of what makes our program stand out is the experienced, interdisciplinary treatment team,” said Sina Safahieh, M.D., program director and child, adolescent and adult psychiatrist. “Our licensed therapists are among the top in their field, and with access to Hoag’s superior Pickup Family Neurosciences Institute, we are able to reach young adults with evidenced-based, proven methods.”

The Young Adults Mental Health Program, along with other Hoag Neurobehavioral Health programs, received accreditation from the Counsel on Accreditation for Rehabilitation Facilities (CARF).

A key focus of the program is improving participants’ sense of self to better incorporate strategies related to emotional regulation and distress tolerance. People going through the program will learn and be encouraged to apply effective coping skills to their day-to-day lives.

“As a psychiatrist, I have never seen this level of anxiety and depression in the community as I have over the past year. It is critical at the stage of a person’s life when they’re making the transition between adolescence and adulthood, that they establish and maintain healthy relationships with not only themselves but with family members, friends and the community,” Dr. Safahieh said. “This program will help them to build their own identity.”

Community support through philanthropy is essential to providing these highly demanded services. For more information about how to support the program, call 949.764.7210.

To learn more about the Hoag Young Adults Mental Health Program, visit www.hoag.org/yamh.
The Hoag psychiatry consultation-liaison service is comprised of five specialized psychiatrists who have expertise in the diagnosis and treatment of psychiatric disorders in complex medically ill patients. This team supports the various medical subspecialty teams throughout the hospital with on-site consultation, evaluation and assistance with behavioral management. Additionally, our psychiatrists work closely with our social services department ensuring patients with neurobehavioral disorders receive community-based resources for ongoing treatment beyond their acute care hospitalization.

Our psychiatry consultation-liaison team is comprised of five psychiatrists, two psychiatric nurse practitioners, and a psychologist. The team provides on-site consultations to the various medical disciplines delivering acute care in both our Newport Beach and Irvine campuses. Hoag recognizes the benefits of proactively evaluating and managing the complex neurobehavioral elements encountered when treating our patient’s acute medical issues. Furthermore, addressing our patient’s neurobehavioral health allows for improved identification of neurobehavioral disorders, patient and family psychoeducation, initiation of treatment, and connection with outpatient neurobehavioral services.

The addition of our psychiatric consultation-liaison team improves the overall quality of emergency room and inpatient care delivered at Hoag by assessing and treating the whole person, which has further translated into improved patient, physician and staff satisfaction. The team has increased value in the continuum of hospital-based care by lowering the costs associated with emergency department visits, reducing hospital and emergency room lengths of stay, and focusing on decreasing re-admissions as a result of untreated neurobehavioral health disorders.

Team
Hoag’s psychiatry consultation-liaison team is led by director, Renee Garcia, MD. Dr. Garcia is board certified in both general adult psychiatry and consultation-liaison psychiatry, a subspecialty of psychiatry that focuses on the interface between general medicine and psychiatry. She completed her medical education at Loma Linda University School of Medicine, general psychiatry residency at University of Southern California (USC), and consultation-liaison fellowship at Stanford University. Dr. Garcia has worked closely with Hoag’s Pickup Family Neurosciences Institute to further grow and develop the neurobehavioral services provided to Hoag’s patient population. The other team members include Drs. Mohamed El-Gabalawy, Matthew Reed, Ashraf Elmashat and Kelly Jones, all board-certified psychiatrists.
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 wellbeing 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:

- 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 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 co-led by 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 post-graduate 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, registered dietitian, and certified fitness trainer.
Outcomes
Since its launch, the clinic has provided over 6,750 individual face-to-face encounters, provided support to over 1,500 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 seventy percent 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).
Hoag is the West Coast partner to administer the Brain & Body Wellness Program and the Milestone Wellness Assessment. These programs are sponsored by The Trust, a division of the National Football League Players Association. Launched in February of 2016, the program has now seen over 400 former NFL players.

Coordinated by Hoag Executive Health, this 2-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
- Imaging

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

- Brain MRI
- Sleep Study
- Calcium Score CT
- Full lab panel that includes advanced lipids and hormones
- EKG
- Pulmonary Function Test
- Vision
- Audiology
- Body composition analysis
- Urinalysis

Upon completion of the assessments, all results are reviewed by a primary care physician and a call is scheduled with the player. Each player is provided a detailed report which provides results and individualized recommendations. Hoag is committed to maintaining a close relationship with each 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.

Due to the Covid-19 pandemic, air travel for these exams was suspended in 2021 and Hoag only treated players within driving distance. To bridge this gap and continue the focus on good health, Hoag provided virtual consultations with physicians and exercise physiologists for players that have already gone through the program.
Hoag Sleep Center Irvine
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 Hoag Sleep 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. Jason Muir, MD and Robert Moore MD, both board-certified Neurologists provide support for the Sleep Center, as do several pulmonary and ENT physicians with expertise in the management of sleep apnea. Thus, the program has multiple board-certified sleep physicians and one nurse practitioner giving patients a choice in sleep specialists with varying backgrounds, including critical care, pulmonology, and neurology specialists. Our team of physicians is supported by highly-skilled and board-registered polysomnographic technologists.

Marlene Grady, RPSGT, RST
Jose Puangco, MD

Adult Sleep Studies

Sleep Health Program: 949-764-8070
Total Number of Patients Diagnosed with Obstructive Sleep Apnea (OSA)

- Severe OSA: 498
- Mild OSA: 418
- Moderate OSA: 328

Adult Sleep Studies
In 2021, Hoag Sleep Health Program saw 2,734 new patients in consultation and 3,606 returning patients. Telehealth visits continue to grow this year with 2,365 virtual video visits and 75 telephonic visits conducted by Hoag’s Certified Sleep Specialists. The sleep labs performed 672 diagnostic polysomnography studies (PSG), 187 split night PSG studies, and 172 with a full night dedicated PAP titration (CPAP, BPAP, ASV). There were 14 PSG studies classified as other (including Oral Appliance Therapy or Inspire Therapy titrations), 28 Multiple Sleep Latency Tests (MSLT) and Maintenance Wakefulness Tests (MWT), which was an increase from last year of 28%. Additionally, there were 1,306 home sleep studies. A total of 2,379 studies were performed in 2021.

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 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.

Inspire
PFNI is the first in Orange County to offer a new, cutting-edge treatment option for obstructive sleep apnea (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 non-compliant. 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 Behavioral Sleep Medicine six-week course to help with insomnia. Designed to break the pattern of insomnia through cognitive-behavioral therapy, this class teaches the participants techniques to alleviate insomnia and improve quality of life. Insomnia is difficulty falling asleep or staying asleep during the night. Chronic illness, caffeine, medications, physical discomfort, daytime napping, counterproductive sleeping habits and excessive time spent awake in bed are all factors associated with insomnia. These classes are now being offered via Zoom to help those who suffer with insomnia through the pandemic.
In 2021, we had a total of 26 participants in four different sessions of our Insomnia Class Series. Of those participants, 23 reported noticeable improvements in insomnia severity by the end of the 6-week series.

For class dates or to register, call 800-400-HOAG (4624) or go to hoag.org/education. For more information about sleep disorders, visit hoag.org/sleep.

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%.

Covid-19 Safety Measures

Rest assured that Hoag Hospital is taking key safety measures to protect patients and staff during these unprecedented times.

Scheduling Appointments

- To minimize patients’ time in waiting areas, we are scheduling to add space between visits.
- Telehealth appointments via phone or video are available and recommended.

During the Appointment

- Anyone entering a Hoag facility – physicians, staff, or patients, are required to wear a face mask or cloth covering. Individuals will also be screened at hospital entrances and at all outpatient facility entrances.
- Hand sanitizer is routinely used, as well as disinfectant cleaning products on all equipment and exam rooms between patients.
- Physicians and staff are using the proper personal protective equipment for all visits.

Covid-19 testing and rapid testing for certain procedures have been added for both the safety of staff and patients.

For additional information on Covid-19 and to view videos about Covid-19, visit www.hoag.org/COVID.

Contact us by calling 949-764-8070 or email sleepcenter@hoag.org.
Overview
The Fudge Family Acute Rehabilitation Center (FFARC), located on the third floor of the West Tower and North Building of Hoag Hospital Newport Beach, is a stand alone hospital within a hospital, providing a state-of-the-art rehabilitation center with customized programs to help patients improve function, attain their greatest level of independence, and return to community living. Our world-class facility offers intensive rehabilitation 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 and surgery, or stroke. Our 18-bed, 21,000-square-foot center provides comprehensive care with 24-hour nursing, full time medical director oversight, and a team of certified experts. We also provide state-of-the-art equipment and access to Hoag education programs, as well as treatment in the therapy garden and even a putting green. The Center expanded to using up to 28 beds on 4-East in 2021 due to increasing demand and consistent

Therapy Team - Consists of Physical, Occupational, Speech and Recreational Therapists and Assistants.

Caregiver - Family member, significant other or friend who will be helping with your rehabilitation process.

Registered Dietitian - Works with the clinical care team to make recommendations regarding diet/nutrition, as well as nutrition education.

Rehabilitation Nurse - Your primary caregiver, along with the patient care assistants, who are specialized in rehabilitation.

Clinical Psychologist - Provides oversight and clinical evaluation of your mental, behavioral, and emotional well-being.

Social Worker - Supports your emotional needs during your hospital stays. Spiritual care services are available through our chaplain.

Fudge Family Acute Rehabilitation Center: 949-764-3900
delivery of high-quality care. The long-term project includes physical expansion which is scheduled to be completed in September 2022. This will allow the entire program to be housed in one contiguous space.

FFARC utilizes an interdisciplinary team approach focused on highly-specialized assessments of 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 volumes provided nationally.

### 2021 Facility Metrics – Fudge Family Acute Rehabilitation Center

<table>
<thead>
<tr>
<th>Metric</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharges in Sample</td>
<td>455 patients</td>
<td>538 patients</td>
<td>599 patients</td>
</tr>
<tr>
<td>Average length of stay</td>
<td>12.3 days</td>
<td>12.2 days (14.2 days national average)</td>
<td>12.19 days (14.51 days national average)</td>
</tr>
<tr>
<td>60% Rule Compliance</td>
<td>76.3%</td>
<td>72.7%</td>
<td>73% (69% national average)</td>
</tr>
</tbody>
</table>

### 2021 Quality Metrics – Fudge Family Acute Rehabilitation Center

<table>
<thead>
<tr>
<th>Metric</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Discharge Rate</td>
<td>90% home</td>
<td>86.4% home (76.9% national average)</td>
<td>88% home (79% national average)</td>
</tr>
<tr>
<td>Skilled Nursing Facility Discharge Rate</td>
<td>3.7%</td>
<td>2.4% (11.3% national average)</td>
<td>4% (10% national average)</td>
</tr>
<tr>
<td>Average Functional Change</td>
<td>25</td>
<td>26 (23 points national average)</td>
<td>28 (30 points national average)</td>
</tr>
<tr>
<td>Therapy Minutes Per Patient Day</td>
<td>149</td>
<td>146 (139 national average)</td>
<td>146 (139 national average)</td>
</tr>
</tbody>
</table>

### Functional Scoring Comparison: Functional Abilities
2021 Patient Experience – Press Ganey

<table>
<thead>
<tr>
<th>Overall Care</th>
<th>Likelihood to Recommend</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>87.22%</strong></td>
<td><strong>93.20%</strong></td>
</tr>
<tr>
<td>TOP BOX SCORE</td>
<td>TOP BOX SCORE</td>
</tr>
<tr>
<td><strong>92th</strong></td>
<td><strong>94th</strong></td>
</tr>
<tr>
<td>PERCENTILE RANK</td>
<td>PERCENTILE RANK</td>
</tr>
</tbody>
</table>

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 accounted for 25% 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
- 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

Team

Keyvan Esmaeili, MD, is the Medical Director of the Fudge Family Acute Rehabilitation Center. 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.
Overview

Hoag Rehabilitation Services are available for patients across the full continuum of care, from acute hospitalization to the inpatient rehabilitation facility to the outpatient setting, and, launched in 2021, the 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 therapy 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 practice 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
- Wheelchair evaluation
- Comprehensive Parkinson’s disease program including PWR! Principles
- Neuromuscular electrical stimulation gait training with Walkaide®
**Occupational Therapy**

Hoag occupational therapists and assistants support individuals who are experiencing performance deficits in daily life skills as a result of injury or disease such as:

- Stroke
- Traumatic brain injury
- Brain tumor
- Parkinson’s disease and other movement disorders
- Multiple sclerosis and other degenerative neurological diseases
- Fracture, dislocation, and subluxation of fingers, hand, wrist, and elbow
- Tendon and ligamentous injuries of the wrist and hand
- Upper extremity peripheral neuropathy
- Cumulative trauma disorder/repetitive strain injury
- Cancer

Individual patient needs may include:

- Upper extremity exercises to improve strength and dexterity
- Provision of orthotics and splinting
- Edema management
- Computerized strengthening equipment
- Training in self-care and activities of daily living
- Instruction in use of adaptive equipment
- Environmental modifications and fall prevention strategies
- Cognitive training – attention, memory, concept formation, time management, problem solving, and thinking skills
- Perceptual 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
- Vocational simulation
- Patient, family, and caregiver education
- Driving assessment and training
- Comprehensive Parkinson’s disease program including PWRI Principles

**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.

**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: modified barium swallow studies and fiberoptic endoscopic evaluation of swallowing; 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 can be safely swallowed
- Provision of recommendations for optimal swallowing safety
- Development 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. Initial assessment may include a modified barium swallow study, which is a videofluoroscopic X-ray assessment of the swallowing mechanism or fiberoptic endoscopic evaluation of swallowing (FEES). These exams enable the clinicians to identify the disorder and help guide the appropriate treatment program. 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 the Hoag Health Center Newport Beach. Each participant has already successfully completed their individualized, one-on-one rehabilitation. It enables the patients to continue activities in a supervised group setting while at Hoag. Some classes were modified, limited, or postponed due to Covid-19 limitations.

Independent Gym Exercise Class

This class continues the exercise program that was prescribed by their therapist in a supervised setting utilizing the Hoag Rehabilitation gym and equipment. 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 at 12 p.m.

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 that 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, starting at 12 p.m.

Balance Mobility Exercise Class

This class focuses on balance and mobility. It will build on the principles introduced in previous 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 twice each week (Tuesdays and 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 60-80% heart rate maximum. The classes are taught by a licensed therapist. This class meets three times each week (Monday, Wednesday and Friday) at 12 p.m. 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 will 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 at 10:15 a.m. on Wednesdays and the beginner class meets on Thursdays at 1:30 p.m. 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 either virtually or in person on Fridays from 1:15 p.m. to 2:30 p.m. There is also a corresponding caregiver support group that meets concurrently and is supported by a licensed social worker once a month.

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 Avenue, Suite 100, and can be reached at 949-764-5645. The Irvine office is located at 16300 Sand Canyon Avenue, 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, DPT, NCS, 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, OTR/L. The inpatient and outpatient Speech-Language Pathology program is led by Tracy Thomas, MS, CCC-SLP. The Fudge Family Acute Rehabilitation Center is led by Keyvan Esmaeili, MD; Hadi Rasul, RN, BSN, MBA, CRRN; Brian Boone, PT, DPT; and Lisa Fahey, MSN, RN, CRRN.

The clinical team includes board-certified clinical specialists in geriatrics, oncology, orthopedics, and neurology. Also included are certifications in lymphedema care, vestibular rehabilitation, hand therapy, wound care, clinical expertise in use of fiberoptic endoscopic evaluation of swallowing (FEES), and clinical specialization in critical care management of the adult and neonate.
Outcomes
Based on functional outcome measures, the following outcomes were achieved in clients:

- Patients report statistically significant improvement in self-reported outcome measures and objective tests and measures (see top graph).
- Patient satisfaction scores have achieved 89th percentile in Overall Assessment in the outpatient settings.

Patient Satisfaction – Overall Assessment of the Outpatient Experience (mean score)

The mean score of 96.9 corresponds to 89th percentile rank for 2021.
Memory & Cognitive Health
Patient and community education classes are held with informative discussions on the basics of mild cognitive impairment and dementia due to Alzheimer’s disease and related disorders (ADRD), including causes, course, risk factors, and prevention strategies. Presented by Lauren Bennett, PhD, clinical neuropsychologist, Hoag Memory & Cognitive Disorders. Classes are offered regularly.

Virtual Behavioral Sleep Medicine Course
Hoag Sleep Health Program is offering a six-week course to help with insomnia. Designed to break the pattern of insomnia through cognitive-behavioral therapy, this online class teaches participants techniques to alleviate insomnia and improve quality of life. Benefits include:

- Increase total sleep time
- Decrease time needed to fall asleep
- Reduce frequencies of awakening after falling asleep
- Learn helpful relaxation techniques
- Receive weekly feedback and support

Mental Health of Adolescents and Teens
Learn the signs for concern related to teen behavior, differences between normal adolescent rebellion and potentially harmful behavior.

Presented by Prema Rao, LMFT. Classes are offered two times a year.

Parkinson’s Educational Series
This series is appropriate for patients and caregivers dealing with the diagnosis of Parkinson’s disease. Classes are held periodically. Topics include: Parkinson’s disease and treatment overview, rehab therapies for Parkinson’s disease, speech therapy, and surgical intervention.

Class Registration: 800-400-HOAG (4624)
Overview

A new diagnosis may often leave patients asking, “Where do I go from here?” At Pickup Family Neurosciences Institute, we provide answers and much more through experienced clinical navigators. Hoag’s clinical navigators provide assistance to patients and their families, to help them access and then chart a course through the health care system.

During the Covid-19 pandemic, the role of the clinical navigator has become even more vital. Due to restricted visitation policies, family members are not at the bedside for daily interaction with the health care team. We are helping families understand their loved one’s diagnosis and hospital course through frequent telephone communication.

Clinical Support

• Improves patient access to care by navigating through health care barriers
• Provides quicker access to diagnostic testing
• Once diagnosed, reviews disease/condition and discusses treatment options with patient
• Provides guidance on selecting a specialty physician or surgeon, if needed
• Aids patients in scheduling surgery or making pre- and post-treatment appointments
• Assesses complex psychosocial needs, including emotional and situational support of the patient and their family, and appropriately coordinates resources
• Uses evidence-based best practices in the care and management of patients through research dissemination
• Visits patient while in hospital/recovery, follows up after discharge if needed and may follow the patient in support groups for many years to come

Education

• Assists patients and their family in understanding the diagnosis, treatment options, and resources available using evidence-based guidelines
• May provide community education to aid in prevention diagnosis and early treatment
• Designs and evaluates innovative educational programs and tools for patients, families and groups
• In collaboration with physicians, improves prevention and early detection efforts by participating in community education forums and screenings
• Educates eligible patients about appropriate clinical research studies

Belinda Stewart-Burger, MSN, RN, CRRN, CNRN, SCRN
Movement Disorders
Sheena Dhiman, RN
Epilepsy
Audrey Johns, MSN, RN
Multiple Sclerosis
Victoria Tomczak, RN
Stroke

Navigator Program: 949-764-6066
The Pickup Family Neurosciences Institute (PFNI) is committed to innovation through clinical research development. This is driven by the PFNI’s philosophy: Compassionate Care, Clinical Excellence and Creative Intelligence.

Leveraging research expertise and infrastructure available at Hoag Center for Research and Education,* our institute 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.

Clinical Trials

**ALZHEIMER’S DISEASE**

Biogen. 251AD201 TANGO. A Phase 3, randomized, double-blind, placebo-controlled, parallel-group study to assess the safety, tolerability, and efficacy of BIB002 in subjects with mild cognitive impairment due to Alzheimer’s Disease or with mild Alzheimer’s Disease.

Principal Investigator: Dr. William Shankle

Coaching for Cognition in Alzheimer’s (COCOA)

Principal Investigator: Dr. William Shankle

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. Gustavo Alva

Eli Lilly. Phase 3. A Study of Donanemab (LY3002B13) in participants with early Alzheimer’s Disease (TRAILBLAZER-ALZ 2).

Principal Investigator: Dr. Gustavo Alva

**STROKE**

NIH/StrokeNet. Phase 3 anticoagulation in intracerebral hemorrhage (ICH) survivors for stroke prevention and recovery (ASPIRE).

Principal Investigator: Dr. David Brown

**EPILEPSY**

MedtronicNeuro. Stereotactic Laser Ablation for Temporal Lobe Epilepsy (SLATE)

Principal Investigator: Dr. Vivek Mehta

Zogenix International Limited, Inc. Phase 3. A study to investigate the efficacy and safety of ZX008 (Fenfluramine Hydrochloride) as an adjunctive therapy in children and adults With Lennox-Gastaut Syndrome.

Principal Investigator: Dr. David Millet

**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

For more information on clinical research: Adrienne Swietlikowski
949-764-6797
adrienne.swietlikowski@hoag.org

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* 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.
Hoag Neurology Annual Symposium
This conference is an annual event designed for all practitioners in Southern California. This event was cancelled in 2021 due to the pandemic.

Hoag Neurology Nursing Symposium
This conference is an annual event specifically geared for nurses who have an interest in neurosciences. This event was cancelled in 2021 due to the pandemic.

Neurology Case Conference
This is held the third Tuesday of the month at 12 p.m. in the 2 North Conference Room at Hoag Hospital Newport Beach.

Neuro-Oncology Tumor Board
This is held every Friday at 12:00 p.m. at the Patty & George Hoag Cancer Center in Newport Beach and via video conferencing at Hoag Cancer Center Irvine. In addition to in person, we have moved our Tumor Board virtually for all multidisciplinary staff to attend.

Spine Grand Grounds
This is held the second Wednesday bi-monthly (opposite months of Spine Case Conference) at 7:30 a.m. in the First Floor Grand Room.

Spine Case Conference
This is held the second Wednesday bi-monthly (opposite months of Spine Grand Rounds) at 7:30 a.m. in the First Floor Grand Room.

Stroke Case Conference
This is held virtually the first Wednesday of each month at 7:30 a.m.

Movement Disorders Case Conference
This is held the second Friday of the month at 7:30 a.m. at 520 Superior Ave. in Newport Beach.

Epilepsy Case Conference
This is held each Wednesday at 8 a.m. at Hoag Hospital Newport Beach.

Hoag Neurobehavioral Addiction Symposium
This conference is an annual educational event directed towards treatment and recovery strategies for substance abuse and addiction. This event was cancelled in 2021 due to the pandemic.
**Brain Aneurysm/AVM**

This support group is held the first Wednesday of every other month from 6 to 7 p.m. via Zoom. A link to the meeting can be obtained by visiting hoag.org/community-education-classes/neurosciences/ and register for the Brain Aneurysm/AVM Virtual Support Group. For more information, please call 949-764-1450.

**Brain Tumor**

This group meets virtually on the third Wednesday of each month from 3 to 5 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, please call 949-7-CANCER (722-6237).

**Epilepsy**

The PFNI Epilepsy Program at Hoag offers an interactive support group for all adolescent and adult epilepsy patients. Join us for group discussions to help you better understand and cope with epilepsy. This group meets on the first Wednesday of every month from 6:30 to 7:30 p.m. via Zoom. For more information, please call 949-764-6066.

The Women’s Surgical Epilepsy Support provides mutual support and information for women who have epilepsy and have undergone or are considering surgical intervention. The group is facilitated by clinical psychology doctoral externs under the supervision of a licensed clinical psychologist. The group is a chance to meet other women struggling with similar issues, make friends, and gain support and insight from the experience of others. This support group is held on the second Tuesday of each month from 5:30 to 6:30 p.m. via Zoom.

**Parkinson's/Movement Disorders**

Weekly support groups and seminars are offered for patients with Parkinson's, their families, caregivers, and medical professionals. For more information, please call 949-764-6277.

**Stroke**

The Stroke support group is held on the fourth Thursday of every month from 2 to 3 p.m. via Zoom. A link to the meeting can be obtained by visiting hoag.org/community-education-classes/neurosciences/ and register for the Stroke Virtual Support Group. For more information, please call 949-764-1450.
PHILANTHROPY

Philanthropy is the foundation of the Pickup Family Neurosciences Institute’s (PFNI’s) continued growth and innovation. It allows us to dream big and do things that most other hospitals cannot. Many of the programs and services highlighted in this report are made possible by the generous support of the community. The Covid-19 pandemic provided many challenges, but throughout, the community rallied around PFNI and provided support in unimaginable ways. Because of this generous support, PFNI remains in the top one percent in the nation, an accolade that would not be possible without our dedicated supporters.

SUPPORT FOR PFNI REMAINS STRONG AMID PANDEMIC

When the pandemic began, few foresaw the impact or longevity of this novel virus and the impact it would have on health care. Hoag is immensely grateful to every donor who has supported PFNI over the years, including Donna and Dick Pickup, Sandi and Ron Simon, Gary Fudge, Nancy and Bill Thompson, Jeri and Daniel McKenna, Marilyn and Bill Robbins, Ginger and Tony Allen, and many others, including those mentioned below. We are humbled by all the support we have received and would like to share how these gifts helped promote programmatic excellence, research, and innovation in the field of neurosciences during the Covid-19 pandemic.

PHILANTHROPIC IMPACT: SELECTED HIGHLIGHTS

• The Curci family helped create the Lucy Curci Neurosciences Specialty Clinic during the pandemic with a transformative gift to support an array of neuroscience specialties. Each department within the clinic has grown exponentially, and the vision is to continue expanding to meet the growing demand. Several programs also received significant gifts, supporting groundbreaking research, leading-edge technology, facilities, and vital educational resources.

• Thanks to a naming gift from Marilyn and Glenn Salsbury, the Salsbury Family Movement Disorders Program now has four specialty-trained movement disorder neurologists, three functional neurosurgeons, a dedicated nurse navigator, and several additional specialists and therapists who provide a comprehensive approach to treatment. Through the leadership of our specialists, Hoag continues exploring novel therapeutics to keep delivering world-class care to our Parkinson’s disease patients and those with similar disorders.

• Ania and Christopher Gibbs made a significant contribution to support the work of the epilepsy program in honor of David Millett, MD. This gift, the largest unrestricted gift to date toward the epilepsy program, has allowed Dr. Millett and the epilepsy team to explore innovative diagnostic tools and surgical methods to assist patients suffering from medication-resistant epilepsy. It has also helped Hoag maintain our Level 4 Epilepsy Center status, the highest designation. Hoag continues to be the only non-university center with this accolade in Southern California.
Hoag recruited Yasir Jassam, MD, to expand our Multiple Sclerosis and Neuroimmunology Program after recognizing a gap in care for patients here in Orange County. Thanks to support from the Hausman Family Foundation, the first contributors to this innovative program, Dr. Jassam is leading the development of a center for people with multiple sclerosis and other related disorders. This space will serve as a centralized area for these patients to gather as a community for support, education, group exercise, and therapy. This center will also feature specialists from a variety of modalities, including dieticians and physical therapists, to address the unique needs of these patients.

The Center for Advanced Visualization and Immersive Therapeutics was launched and continues to pioneer the use of virtual reality and 3D imaging for advanced surgical planning, bedside interactions, and optimization of outcomes. Generous supporters, including Ieva and Amir Neshat, Susan and Richard Johnson, Tusdi Vopat and Stuart McClure, and Donna and Ernest Schroeder, have helped Hoag develop new therapeutics that will be used during live surgeries to improve procedures, once approved by the FDA.

Our Fudge Family Acute Rehabilitation Center has remained at capacity throughout most of the pandemic. The need for specialized acute rehabilitation services remained high, showcasing the amazing foresight of our PFNI leadership. Support from the Neshat family, Joanne Trempala, and many others has given this cornerstone of clinical care the opportunity to not only enhance the amazing services and clinical teams, but to also open the door for the Center to expand into a suite of new beds opening within the next year.

Another area of PFNI that has experienced a significant spike in demand is our Spine Program. To meet this need, it has been expanded to a Spine Center and we are developing a vision for a stand-alone institute in the coming years. Thanks to gifts from Lavon and James DeGraw and Carol and Kent Wilken, there are added resources that will help make the center a reality, including a new nurse navigator to assist patients in their health care journey, and Twistle, a tool for measuring patient outcomes that will be instrumental in meeting the needs of our aging population.

During the pandemic, the Orange County Vital Brain Program faced challenges but charged forward in its mission to facilitate testing for early detection of memory and cognitive impairment, foster research, and expedite intervention for patients found to be impaired. Gifts from Elisabeth and Claude Koeberle, Lynn and Jerry Pharris, Richard and Slavenka Vezich, and Mohindar and Harriet Sandhu have helped maintain the clinical excellence within the program and kept it working toward the future of comprehensive senior brain health services and programs.

Our neurobehavioral health programs, such as ASPIRE and Hoag Addiction Treatment Centers, have continued to expand thanks to continued philanthropic support. Thanks to philanthropy, there will soon be a crisis intervention team equipped to help staff respond to challenging situations within the hospital.

Many families have generously supported multiple areas of PFNI to enhance collegiality and partnership within the Institute. Thanks to major gifts from Kylette and Brendan Welch, Shari and Paul Preston, Mary and Richard Godber, and support from thousands of additional donors, the Pickup Family Neurosciences Institute will continue to be an innovator in the field of neurosciences.

The generous support of donors allows Hoag to seize new opportunities for advanced patient care and stay at the forefront of innovation, sponsoring novel technological developments, empowering transformative research, and caring for our world-class team of physicians, nurses, clinical teams, and staff, especially during a global pandemic.

For more information about philanthropic support for the Pickup Family Neurosciences Institute, contact Taylor Terca, director of development, Hoag Hospital Foundation, at 949-764-1818 or Taylor.Terca@hoag.org.
Nationally Ranked top 10% for Neurology & Neurosurgery