



# **VALUE-BASED NEUROSURGERY** 2015–2016 CLINICAL OUTCOMES REPORT



# MESSAGE FROM THE CHAIR ···

The faculty and staff of the UCLA Department of Neurosurgery are delighted to present this update on our Quality Program. The Quality Program in Neurosurgery has continued to develop and thrive, and includes neurosurgeons, neurologists, hospitalists, and neuroanesthesiologists, along with our colleagues in the OR, ICU, and medical/surgical nursing. The team also includes physical therapists, pharmacists, case managers, social workers, and departmental administrative staff. We have continued to engage and learn from our Neurosurgery Patient and Family Advisory Council (NPFAC), whose active partnership has helped us

focus on how to best serve our patients. The Quality Program has been coordinated with and supported by the leadership and administrative teams of UCLA Health, the Ronald Reagan and Santa Monica UCLA Medical Centers, and the Faculty Practice Group.

Our previous reports largely described the structure of our quality initiatives, process and technological innovations, and some of the early improvements in department-wide quantitative measurements. In addition to this, we now focus on specific programs and diagnoses within Neurosurgery (neurovascular, brain tumors, movement disorders, epilepsy, spinal disorders, peripheral nerve and pediatrics) and report on quantitative outcome measures that are relevant to patients with these diagnoses. We offer a wide breadth and depth of neurosurgical care at UCLA; and we hope that the systematic measurement and continual re-evaluation of our clinical outcomes in each of our areas of excellence will allow us to continue to evolve and improve our ability to provide the best state-of-the-art care for our patients.

We thank the UCLA Health System, the Office of the President of the University of California, and our visionary philanthropists for their generous support of our Quality Improvement Program. Without this support and the dedicated efforts of our entire team, the Quality Program would not have been successful. I want to acknowledge all the talented and dedicated participants in this program – the dedicated physicians, nurses, staff and administrators with whom I have the pleasure to work with day after day. But, most importantly, I want to thank our patients and their families, who have entrusted us with their healthcare.

Finally, I would like to acknowledge Dr. Neil Martin for his leadership of UCLA Neurosurgery for the past 15 years and for laying the groundwork for our neurosurgical Quality Program for many years to come.

Sincerely,

Linda M. Lian

Linda M. Liau, MD, PhD, MBA Interim Chair in Neurosurgery David Geffen School of Medicine at UCLA

# ••• DEPARTMENT OF NEUROSURGERY ••• 2015–2016 CLINICAL OUTCOMES REPORT: Focus on Team and Culture

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# ··· MISSION STATEMENT ···

To provide exemplary patient care while creating permanent solutions to neurological illness through pioneering scientific research and to foster an outstanding and diverse training environment for neurological surgeons of the future.

# The Neurosurgery Department at UCLA has experienced tremendous advancements, improvements, and expansion over the past year.

The UCLA Department of Neurosurgery has pioneered numerous safety and quality initiatives that have subsequently been implemented throughout the UCLA Campus and the University of California Health System.

In recent years, the concept of value of care has become the overarching framework guiding care delivery. In addition to delivering the best outcome and achieving a perfect patient experience, care needs to be delivered in a cost-conscious way.

#### **Faculty Growth: 5 New Faculty Members**

Over the past year, we have expanded our faculty by recruiting some of the most qualified rising stars in neurosurgery with specializations in brain tumor, spine, pediatrics, neurovascular, and functional neurosurgery.

#### Santa Monica Expansion

UCLA neurosurgery now provides comprehensive cranial, in addition to spinal, neurosurgical care at UCLA Medical Center, Santa Monica, including management of primary brain tumors, metastases, hydrocephalus, stroke, and mild traumatic brain injury.

# TOTAL CLINIC VISITS 8165 8626 9329 2014 2015 2016

UCLA HEALTH CLINIC CASE VOLUME (Fiscal Years 2014-2016)



Source: Epic Clarity Database



# ··· CULTURE AND TEAM OF NEUROSURGERY: FACULTY



Patient safety is reinforced as a priority for neurosurgery.







In neurosurgery we discuss ways to prevent errors from happening again. 5.00 4.60 4.50 4.00 4.38 4.30 4.17 3.00 2.00 1.00 2012 2013 2014 2015 2016

A survey is distributed yearly to Neurosurgery faculty and residents. The results are based on a Likert scale, with 5 representing *strongly agree* and 1 *strongly disagree*.

HIGHER IS BETTER

-

# CULTURE AND TEAM OF NEUROSURGERY: RESIDENTS ····







Patients are aware of our focus on quality and safety. 5.00 4.00 4.18 4.00 3.79 3.43 3.00 3.31 2.00 1.00 2012 2013 2014 2015 2016



# HIGHER IS BETTER

# ··· INNOVATIONS



#### **NERVS: Comprehensive Care Redesign**

The Department of Neurosurgery is leading a comprehensive care redesign initiative called NERVS (Neurosurgery Enhanced Recovery after Surgery, Value, and Safety).

#### **GOAL:** DELIVER DATA-DRIVEN, COST-EFFICIENT, PATIENT SAFETY-CONSCIOUS, AND RISK MANAGEMENT -MINDFUL CARE TO ALL ELECTIVE NEUROSURGICAL PATIENTS.



In June 2014, Neurosurgery began the implementation of redesigned care for the top 4 care items:

- **1. COMMUNICATION BETWEEN CARE PROVIDERS**
- 2. PAIN MANAGEMENT
- **3. PATIENT EDUCATION**
- 4. PHYSICAL EXERCISE AND MOBILIZATION

#### KEY TO CONTINUOUS HIGH PERFORMANCE IN DELIVERING REDESIGNED CARE INCLUDED:

- · Support by leadership
- Real-time auditing
- Bimonthly data review by the core NERVS team over 1000 NERVS patients reviewed!
- Continuous education

We engage patients early on regarding their recovery, informing them before and during their hospitalization what to expect after surgery for each post-operative day (POD). Standardized discharge information is now provided, preparing patients and families for their return home.





#### PATIENT EDUCATION (n=1010)

#### We aim to have at least 90% of NERVS patients satisfy their education goals on time!

GOAL 1: Patient received education related to PODO: Road to Recovery on PODO

**GOAL 2:** Patient received education related to POD1: Road to Recovery and POD1 discharge information on POD1

**GOAL 3:** Patient received education related to POD2: Road to Recovery and POD2 discharge information on POD2

#### EARLY MOBILIZATION (n=1010)

#### We aim to have at least 70% of NERVS patients pass their mobilization goals on time!

GOAL 1: Sit upright at bedside for 5 minutes by 10pm POD0GOAL 2: Ambulate 5 feet to chair and sit in chair for 5 minutes by 9am POD1GOAL 3: Ambulate 50 feet with RN assistance by 12pm POD1

# INNOVATIONS ···

# $\cdots$ NEUROSURGERY PATIENT AND FAMILY ADVISORY COUNCIL (NPFAC) $\cdots$

The Department of Neurosurgery values the voice of our patients and their families. The **Neurosurgery Patient and Family Advisory Council (NPFAC)** was launched in 2012. It is one of the first PFACs formed within UCLA Health. The council was formed in order to facilitate collaboration between the Neurosurgery physicians, staff, patients and families. Wendy Tucker, the wife of a former patient, and Steve Cohen, the Chief Administrative Officer for the department, co-chair the NPFAC. The group consists of a number of former patients and family members (spouses and parents) treated for a variety of conditions as well as members of the Department of Neurosurgery, including several nurse practitioners and the Director of Quality Analytics.



The mission of the Neurosurgery PFAC is to create an **active partnership** based on **mutual respect** between physicians, nurses, staff, patients and families to enhance the patient and family experience.

#### Significant achievements in 2015-2016 include:

- Developed and implemented a Peer Support Program, including a training program, tracking system, and communication plan
- · Conducted in-services with the Neurosurgery clinical team about the Peer Support Program
- Many of the PFAC members completed the Health System volunteer training program in order to participate as Peer Support advisors
- Updated the patient-oriented UCLA Neurosurgery app to include Virtual Reality tours of many of the neurosurgical conditions treated at UCLA
- Provided feedback on the use of telemedicine for post-operative clinical evaluation
- Revised standardized discharge education provided to patients
- Updated and improved the "Patient Story" section of the Neurosurgery website
- Meditation and Mindfulness project

# ···· INNOVATIONS

#### TECHNOLOGY AND QUALITY IMPROVEMENTS •••



#### Telehealth

In 2015, the Department of Neurosurgery has continued its pursuit of technological innovation with the implementation of Telehealth visits for post-operative visits among neurosurgery patients. We are in the interim of a prospective and retro-spective study demonstrating there was no difference in the quality of patient care. This option enables patients and providers to take part in a face-to-face video session within the comfort of their home or office avoiding long distance travel and financial burden. We have obtained 100% patient satisfaction.

#### Patient Reported Outcomes Measures (PROMs)

We successfully implemented a "Pilot Feasibility" project in selected neurosurgery clinics\* to evaluate patient reported outcomes measures (PROMs). PROMs are typically defined as tools to evaluate a person's health condition, health behavior, or experience with healthcare using information that comes directly from the patient, without interpretation of the patient's response by a clinician or provider.

\*Vascular clinic - Dr. Neil Martin; Functional clinic - Dr. Nader Pouratian; Neurofibromatosis Type 2 (NF2) clinic

#### **VIRTUAL REALITY: True Individualized Medicine**

Our team is currently developing virtual reality technologies for the education of patients and residents through the utilization of 3-dimensional medical imagery. The opportunity to visualize 3-dimensional anatomy can improve the quality of care by providing personalized, individual surgical planning based on the actual anatomical reconstructions. This technology will jointly benefit several departments including close fostering collaboration between ENT, Otolaryngology, Neurosurgery, and Facial Plastic Surgery.





#### **UCLA Neurosurgery App**

The Department of Neurosurgery developed an app to provide our patients and their family members with a step-by-step education on the surgical process as well as reminders of how to prepare for surgery at different intervals leading up to the surgical date. The app also includes information on the care team, medical conditions, and hospital and local amenities. Since the original launch, the app has been updated with Virtual Reality video tours of many of the neurosurgical conditions treated at UCLA. These stereoscopic videos can be viewed with Google cardboard viewers, or similar virtual reality viewers.



# INNOVATIONS ····

#### **RESIDENT LED INITIATIVES ···**

#### **Management Guidelines for Transverse Process Fractures**



Daniel Nagasawa, MD

Our team has thus far conducted a systematic review of all transverse process (TP) fractures cited in the literature, and submitted a paper to Journal of Neurosurgery: Spine, summarizing these findings. From this data, we have constructed a new protocol regarding the management of TP fractures, stating that in all TP fractures (aside from pediatric cervical and any TP fracture involving the transverse foramen), no neurosurgical or orthopedic consult is necessary, and that these injuries should be managed conservatively. We are currently in the process of reviewing the UCLA data on TP fractures at all levels, and in all age groups. This clinical guideline has been presented to various service lines within the hospital and was met with a positive response, and all teams involved were notified that we have officially initiated this protocol.

"In one year following this starting point, I will review all TP fractures for outcomes, management strategies, and any consults that were still conducted with Neurosurgery/Orthopedics."

#### **Mild Traumatic Brain Injury**

This project is aimed to change the management of patients with isolated intracranial hemorrhage in the setting of mild traumatic brain injury. A literature review was performed to assist in safety assessment and prediction of neurological decline in this patient cohort as it relates to level of care and need for repeat intracranial imaging. Within this observational, longitudinal study, we will be able to assess the relationship between our current process and patient outcome; and hopefully expand a modified management strategy to other University of California hospitals and beyond.

"Transparent assessment of our interventions will be paramount to raising the quality and lowering the cost of future health care. By assessing our current practices through clinically and statistically rigorous research methods, neurosurgeons will continue to raise the bar."



Jos'lyn Woodard, MD



Joel Beckett, MD, MHS

#### The "July Effect"

July 1st marks the transition to the next year of residency. Infamously known as the "July effect", this period is perceived to have an increased risk of medical errors and surgical complications. Despite having some of the nation's strongest residents, the transition into junior residency for the UCLA neurosurgical intern is a shock to the system. We seek to ease the transition of July for our residents. With a multi-pronged approach of resident driven education and on-the-job mentoring we aim to maintain high clinical standards and resident performance year-round.

#### ···· INNOVATIONS

#### NURSING LED INITIATIVES ··· RONALD REAGAN UCLA MEDICAL CENTER, 6th Floor ICU

#### **Implementation of Bowel Care Protocol**

With a patient population often facing a rapid decrease in mobility, alteration in nutrition, and requirement for antiepileptic, sedative, narcotic, and paralytic medications, the protocol sought to establish a stepwise guide for the administration of prophylactic drugs. The following project aimed to investigate the effectiveness of this protocol in minimizing incidences of bowel dysfunction via constipation. In partnership with the unit practitioners and pharmacists, the Neuro/ Trauma ICU Bowel Management Protocol was developed and the flow sheet was placed in nursing stations and used as a guide for medication selection.





#### Can visually engaging & accessible reference cards for standard order sets prevent errors of omission in the ICU?

Over the past year, the most common neurological ICU diagnoses were chosen and a bundle of cards were created presenting each diagnosis with its associated goals, medications, time-sensitive priorities, and nursing interventions. The reference cards were placed in each nursing alcove, and 100% of the RNs ported reading the order sets during downtime, and helped them become familiar with protocols and necessary orders to obtain during admissions.

#### Reducing Catheter - Associated Urinary Tract Infections (CAUTI)

CAUTI is the most common type of healthcare-associated infection, accounting for more than 30% of acute care hospital infections. The NeuroCritical Care Team participated by discussing Foley necessity during daily rounds, and updating order practice and indication for urine cultures. Our CAUTI rates have gradually improved, dropping from 3.91 in 2013, to 3.88 in 2014, 3.06 in 2015, and 1.25 YTD in 2016 (# of infections per 1000 foley days).



# NURSING LED INITIATIVES ··· RONALD REAGAN UCLA MEDICAL CENTER, 6th Floor North

#### **Hand Washing Compliance**

The Infection Prevention (IP) Leaders on 6 North conducted a hand hygiene project to improve hand washing compliance and reduce hospital acquired infections. Up to 80% of infections are transmitted by touch, thus, the use of alcohol-based foam sanitizer, or a 15 second cleansing with soap and water, should be a 100% occurrence before entering and after exiting a patient's room.

# Clean hands healthier U



Clean your hands with alcohol-based hand rub or with soap and water for at least 15 seconds

UCLA Health it begins with U

# Hand Washing Compliance Rates

#### The project includes:

- · New signage outside the door of all patient rooms
- Pre-test and post-test to measure staff knowledge of hand hygiene and the spread of infection
- "Clean Hands are Caring Hands" buttons
- · Poster presentation at the hospital IP meeting
- · Direct observation audits to measure staff compliance



6 North nurses presented their new graduate residency project, "Aspiration Video Education for Clinical Care Partners" at the 2016 Western Institute of Nursing Annual Conference. Mortality rates for aspiration pneumonia range from 20-65%.

#### The project includes:

- Surveys to test the knowledge among the 6 North Care Partners via pre-test
- Collected self-assessment data from Care Partners regarding comfort level with high-risk patients
- Created education video based on aspiration prevention best practices
- · Administered post-test to Care Partners to evaluate effectiveness of video



Of the Care Partners that filled out the survey **75%** stated that felt **very comfortable** (10/10 on a scale of 0-10) with:

- Setting up the room for a patient with aspiration precautions
- Working with patients on aspiration precautions
- Identifying signs of aspiration that need to be reported to the RN

#### The average score of the pre-test was 40%

The same pre-test and post-test was administered to measure Care Partners' comprehension of aspiration prevention and precautions outlined in the video.

#### The average score of the post-test was 67%

**2/3** of those who took the test received an **80%** of higher.

# ··· DEPARTMENT-WIDE METRICS

# **PATIENT SATISFACTION**

Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CGCAHPS)



Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)



# **MORTALITY REDUCTION (FISCAL YEARS 2014-2016)**



MORTALITY INDEX BY HOSPITAL - MOST RECENT QUARTER (APRIL-JUNE 2016) US News and World Report Top Neurology/Neurosurgery Hospitals 0.22 1 0.23 2 3 0.30 0.44 4 0.46 **RRUMC #5** 5 0.54 6 0.55 7 0.56 8 0.58 9 0.80 10 0.82 11 0.84 12 0.90 13 14 0.9E 15 0.99 0.99 16 1.00 17 18 1.19 19 1.21 0.00 0.20 0.40 0.60 0.80 1.00 1.20 1.40

Source: UHC Clinical Data Base/Resource Manager™. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016.

# ··· DEPARTMENT-WIDE METRICS

## CODE BRAIN INITIATIVE: EMERGENCY NEUROSCIENCES COMMITTEE

THE **GOAL** OF THE **CODE BRAIN INITIATIVE** IS TO REDUCE MORTALITY BY RAPIDLY IDENTIFYING AND MANAGING CRITICALLY ILL NEUROLOGIC PATIENTS WHO DO NOT HAVE ACUTE FOCAL DEFICITS.

# This is a multidisciplinary interdepartmental collaborative to:

- Obtain rapid CT imaging and radiology interpretation for patients with non-focal stupor or coma, traumatic brain injury, or status epilepticus
- Initiate emergency neurologic treatment in a timely fashion
- Initiate Immediate reversal of any coagulopathy identified in patients with non-focal presentations of hemorrhage
- Improve the timeliness and coordination of care for patients with a primary neurologic etiology for their condition requiring ICU level of care
- Expedite the admission of patients requiring ICU level of care to the Neuro ICU

#### Minutes from ED Arrival to Initial MD Contact



#### Minutes from ED Arrival to Neuroimaging



#### Hours from ED Arrival to NeuroICU Arrival



Source: Ursa Health - Value Analytics Report



#### **READMISSION REDUCTION** (FISCAL YEARS 2014-2016)



#### CASE MIX INDEX (FISCAL YEARS 2014-2016)



--- US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

Source: UHC Clinical Data Base/Resource Manager™. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016.

# ··· DEPARTMENT-WIDE METRICS

# LENGTH OF STAY (FISCAL YEARS 2014-2016)



LOS INDEX BY HOSPITAL- MOST RECENT QUARTER (APRIL- JUNE 2016)



Source: UHC Clinical Data Base/Resource Manager™. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016.

#### **REDUCING ED VISITS**



#### Source: Ursa Health - Value Analytics Report

### LAB SAFETY

UCLA Neurosurgery labs have been actively involved in the university's efforts to increase safety education and minimize injuries. Departmental safety officers, Mayumi Prins, PhD, and Daniel Lu, MD, PhD, have increased communication with the department basic science and clinical labs to ensure that all are aware of the safety regulations, are properly certified and that injury-education is provided. Incidences of injuries within the department's labs have decreased with this effort and remained consistently low over the last several years.



Source: David Geffen School of Medicine Research Safety Office

In addition to safety, quality control of laboratory data is also a priority for the Department of Neurosurgery. Currently, the Brain Injury Research Center (BIRC) Laboratories are initiating a digital laboratory movement to centralize experimental data entry to minimize errors, improve online security of data and incorporate reminders to researchers. These changes will improve data quality and accessibility and help share data with other researchers, National Institutes of Health (NIH), and the Department of Defense (DOD).

# ···· PROGRAM OUTCOMES: STROKE & OTHER NEUROVASCULAR DISORDERS

# ISCHEMIC STROKE (FISCAL YEARS 2014-2016)





LENGTH OF STAY INDEX 1.20 1.05 1.00 0.97 1.00 0.80 LOWER IS BETTER 0.60 1.05 0.96 0.90 0.40 0.20 0.00 2014 2015 2016

**30-DAY READMISSION RATES: % ALL CAUSE** 



UCLA

---- US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

#### Stroke Mortality Index - Most Recent Quarter (April-June 2016)



Source: UHC Clinical Data Base/Resource Manager TM. Los Angeles, CA: UHC 2012. https://www.ubc.edu. Accessed 10/3/2016. ICD 9: 433.01, 433.10, 433.11, 433.21, 433.31, 433.81, 433.91, 434, 434.01, 434.11, 434.91, 436; ICD 10: I63.02, I63.00, I63.011, I63.012, I63.019, I63.031, I63.032, I63.039, I63.09, I63.10, I63.111, I63.112, I63.122, I63.231, I63.232, I63.239, I63.29, I63.30, I63.211, I63.312, I63.321, I63.322, I63.222, I63.232, I63.239, I63.29, I63.30, I63.311, I63.312, I63.319, I63.321, I63.322, I63.329, I63.331, I63.332, I63.339, I63.341, I63.342, I63.349, I63.349, I63.341, I63.412, I63.412, I63.419, I63.422, I63.429, I63.431, I63.432, I63.439, I63.441, I63.442, I63.449, I63.49, I63.50, I63.511, I63.542, I63.549, I63.521, I63.522, I63.529, I65.231, I65.522, I65.23, I66.29, I66.01, I66.02, I66.03, I66.09, I66.11, I66.12, I66.13, I66.19, I65.21, I65.22, I65.23, I66.29, I66.31, I67.91

# PROGRAM OUTCOMES: STROKE & OTHER NEUROVASCULAR DISORDERS ····

#### **INTRACEREBRAL HEMORRHAGE** (FISCAL YEARS 2014-2016)











UCLA

--- US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

Source: UHC Clinical Data Base/Resource Manager TM. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016. ICD 9: 431; ICD 10: I61.0, I61.1, I61.2, I61.3, I61.4, I61.5, I61.6, I61.8, I61.9

# •••• PROGRAM OUTCOMES: STROKE & OTHER NEUROVASCULAR DISORDERS

#### SUBARACHNOID HEMORRHAGE (FISCAL YEARS 2014-2016)









#### UCLA

• US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

Source: UHC Clinical Data Base/Resource Manager TM. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016. ICD 9: 430; ICD 10: I60.00, I60.01, I60.02, I60.10, I60.11, I60.12, I60.20, I60.21, I60.22, I60.30, I60.31, I60.32, I60.4, I60.50, I60.51, I60.52, I60.6, I60.7, I60.8, I60.9.

# PROGRAM OUTCOMES: BRAIN TUMOR ···

#### BRAIN TUMOR (FISCAL YEARS 2014-2016)

The UCLA Brain Tumor Center is one of the world's leading centers for research, diagnosis and treatment of brain tumors. Our clinicians and scientists are world-renowned leaders in their fields, as indicated by UCLA Health's continuously high ranking in *US News and World Report's* top programs in cancer, neurosurgery and neurology. An integral part of the care provided at our center is the patient-focused care coordination and navigation team. Navigators and coordinators anticipate patient needs and help guide them at each stage of their care journey, ensuring a smooth and positive experience for patients and families.



Our patient satisfaction scores have significantly improved since we implemented our Brain Tumor Center nurse navigator and clinical coordinator.







30-DAY READMISSION RATES: % ALL CAUSE



#### UCLA

 US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

#### Median Survival Rates for Glioblastoma



Reference: Stupp R, Mason WP, van den Bent MJ, Weller M, Fisher B, Taphoorn MJ, Belanger K, Brandes AA, Marosi C, Bogdahn U, Curschmann J, Janzer RC, Ludwin SK, Gorlia T, Allgeier A, Lacombe D, Cairncross JG, Eisenhauer E, Mirimanoff RO (2005) European Organisation for R, Treatment of Cancer Brain T, Radiotherapy G, National Cancer Institute of Canada Clinical Trials G: radiotherapy plus concomitant and adjuvant temozolomide for glioblastoma. N Engl J Med 352:987–996.

Source: UHC Clinical Data Base/Resource Manager TM. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016. ICD 9: 191.0, 191.1, 191.2, 191.3, 191.4, 191.5, 191.6, 191.7, 191.8, 191.9, 192.1, 198.3, 198.4, 225.0, 225.2, 225.3, 225.4, 225.8, 225.9, 237.5, 237.6; ICD 10: C71.0, C71.1, C71.2, C71.3, C71.4, C71.5, C71.6, C71.7, C71.8, C71.9, C70.0, C70.9, C79.31, C79.32, C79.40, C79.49, D33.0, D33.1, D33.2, D32.0, D32.9, D33.4, D32.1, D33.7, D33.9, D43.0, D43.1, D43.2, D43.4, D42.0, D42.1, D42.9.

# ··· PROGRAM OUTCOMES: PITUITARY TUMOR

# PITUITARY TUMOR (FISCAL YEARS 2014-2016)











#### UCLA

#### --- US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

Source: UHC Clinical Data Base/Resource Manager TM. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016. ICD 9: 194.3, 227.3, 237.2, 237.2, 237.3, 237.4, 237.7, 237.71, 237.72, 237.73, 237.7, 237.71, 237.72, 237.73, 237.9, 242.80, 242.81, 253.0, 253.1, 253.2, 253.3, 253.4, 253.5, 253.6, 253.7, 253.8, 253.9, 255.0, 170.6; ICD 10: C75.1, C75.2, D35.2, D35.3, D44.3, D44.4, D44.5, D44.10, D44.11, D44.12, D44.6, D44.7, D44.0, D44.2, D44.9, Q85.00, Q85.01, Q85.02, Q85.03, Q85.09, D43.3, D43.8, D43.9, E05.40, E05.80, E05.41, E05.81, E22.0, E34.4, E22.1, E22.8, E22.9, E23.0, E23.6, E23.2, E22.2, E23.1, E89.3, E23.6, E24.1, E23.3, E23.7, E24.0, E24.2, E24.3, E24.9, C41.4.

# PROGRAM OUTCOMES: DEEP BRAIN STIMULATION ····

#### **DBS** (FISCAL YEARS 2014-2016)



**30-DAY READMISSION RATES: % ALL CAUSE** 



UCLA

US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

#### **Seizure Rates**



Reference: Coley E, Farhadi R, Lewis S, Whittle IR.

The incidence of seizures following Deep Brain Stimulating electrode implantation for movement disorders, pain and psychiatric conditions. Br J Neurosurg 23:179–183, 2009.



**INFECTION RATES** 





Reference for Infection Rate: Bhatia R, Dalton A, Richards M, Hopkins C, Aziz T, Nandi D. The incidence of deep brain stimulator hardware infection: the effect of change in antibiotic prophylaxis regimen and review of the literature. Br J Neurosurg. 2011 Oct;25(5):625-31. doi: 10.3109/02688697.2011.566384. Epub 2011 Apr 18. References for Hemorrhage Rates: Sansur CA, Frysinger RC, Pouratian N, Fu KM, Bittl M, Oskouian RJ, Laws ER, Elias WJ. Incidence of symptomatic hemorrhage after stereotactic electrode placement. J Neurosurg. 2007 Nov; 107(5):998-1003. Binder DK, Rau GM, Starr PA. Risk factors for hemorrhage during microelectrode-guided deep brain stimulator implantation for movement disorders. Neurosurgery. 2005 Apr;56(4):722-32; discussion 722-32. Odekerken VJ, van Laar T, Staal MJ, Mosch A, Hoffmann CF, Nijssen PC, Beute GN, van Vugt JP, Lenders MW, Contarino MF, Mink MS, Bour LJ, van den Munckhof P, Schmand BA, de Haan RJ, Schuurman PR, de Bie RM. Subthalamic nucleus versus globus pallidus bilateral deep brain stimulation for advanced Parkinson'sdisease (NSTAPS study): a randomised controlled trial. Lancet Neurol. 2013 Jan;12(1):37-44. doi: 10.1016/S1474-4422(12)70264-8. Epub 2012 Nov 16.

# ··· PROGRAM OUTCOMES: PERIPHERAL NERVE

# PERIPHERAL NERVE (FISCAL YEARS 2014-2016)







#### **30-DAY READMISSION RATES: % ALL CAUSE**



#### UCLA

#### ----US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

Source: UHC Clinical Data Base/Resource Manager TM. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016.

ICD 9: 354.0, 355.79, 355.1, 355.79, 354.0, 355.3, 354.3, 355.0, 354.3, 355.0, 354.9, 354.2, 955.0, 953.4, 956.1, 955.1, 955.7, 956.5, 956.3, 955.3, 956.0, 951.2, 854.00, 955.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2, 215.2,



#### Superior Semicircular Canal Dehiscence Syndrome

The case volumes for Superior Semicircular Canal Dehiscence (SSCD) repairs have tripled over the past year.



The average surgery length has decreased dramatically over the past two years. Beginning November 2014, the surgical technique was modified to a minimally invasive keyhole procedure by making the craniotomy flap 50% smaller to the size of a dime.

#### Most Common Symptoms to Resolve Following Surgical Repair

Symptoms	Percentage
Aural fullness	86%
Autophony	80%
Vertigo	76%

#### **Before**



After



# ··· PROGRAM OUTCOMES: SPINAL DISORDERS

### **SPINAL DISORDERS** (FISCAL YEARS 2014-2016)



#### **30-DAY READMISSION RATES: ALL CAUSE**



#### UCLA

--- US News and World Report Top Neurology/Neurosurgery Hospitals (average value for group)

Source: UHC Clinical Data Base/Resource Manager<sup>TM</sup>. Los Angeles, CA: UHC 2012. https://www.uhc.edu. Accessed 10/3/2016.



#### **PATIENT SATISFACTION**

Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)

During this hospital stay, how often did doctors treat you with courtesy and respect?



# PROGRAM OUTCOMES: SPINAL DISORDERS ····





# Pain Relief Outcomes Following Lumbar Surgery: Outcomes at Baseline, 3 Months and 12 Months for Patients with 12 Month Follow-Up (Mean ± SD) (April–June 2016)

	UCLA Baseline	UCLA 3 month	UCLA 12 month	QOD Baseline	QOD 3month	QOD 12 month
Back Pain (Visual Analog Scale (VAS)) 0: No pain, to 10: Worst pain	6.9 <u>+</u> 2.2	1.5 <u>+</u> 1.8	1.4 <u>+</u> 2.2	6.5 <u>+</u> 2.8	2.9 <u>+</u> 2.7	3.1 <u>+</u> 2.9
Leg Pain (VAS) 0: No pain, to 10: Worst pain	7.7 <u>+</u> 2.2	1.6 <u>+</u> 1.6	0.7 <u>+</u> 1.5	6.9 <u>+</u> 2.7	2.4 <u>+</u> 2.9	2.5 <u>+</u> 3.0
ODI Score: Higher score indicates higher level of disability	45.9 <u>+</u> 16.4	15.8 <u>+</u> 15.3	11.2 <u>+</u> 13.9	48.5 <u>+</u> 16.6	24.8 <u>+</u> 19.4	22.8 <u>+</u> 20.4
Eq5D score: Higher score indicates better patient rated health state	0.61 <u>+</u> 0.19	0.89 <u>+</u> 0.11	0.90 <u>+</u> 0.12	0.54 <u>+</u> 0.22	0.78 <u>+</u> 0.20	0.78 <u>+</u> 0.21
Patient Satisfaction (Expectations Met)		94.1%	97.1%		68.0%	63.9%

Source: The National Neurosurgery Quality and Outcomes Database (N<sup>2</sup>QOD)

#### **EPILEPSY**

The UCLA comprehensive Epilepsy Program has recently implemented new surgical therapies. The availability of these procedures expands the treatment options available for patients with severe, refractory epilepsy and offers greater optimism for seizure control and enhanced quality of life. Our focus is on maintaining high quality of care and communicating advances to the professional and lay public. Tracking outcome data is important for tracing patient responses to therapy and published outcome data is central to enhancing the scientific knowledge base of the field.

#### **Advances in Epilepsy**

- MRI Guided Laser Ablation: Visualase
  - MRI Guided Laser Ablation is a minimally-invasive FDA-approved procedure that is used to address focal lesions in brain regions that are difficult to access with surgery.
  - > This is a very effective therapy showing 86% seizure-free outcome in recent case series of Hypothalamic Hamartomas.
- Neuropace-Responsive Neurostimulator (RNS) for Refractory Epilepsy
  - > The RNS can be thought of as a pace maker for the brain. It responds to epileptogenic brain wave patterns by recognizing seizures and delivering a small electrical pulse that stops seizures at their point of origin. Our first implant was placed in July, 2014.
  - > This is an important treatment option for patients who are not candidates for removal of brain tissue. Active participation of patient the and medical team are essential to successful therapy. Since the device records continuously, a detailed record of brainwave activity is stored and used to guide therapy.





\* 2014: New procedures offered beginning July, 2014 \*\* 2015: Volume impacted by transition of new neurosurgeon Source: Epic Clarity Database

#### **PEDIATRICS** (FISCAL YEARS 2014-2016)

The Division of Pediatric Neurosurgery at Mattel Children's Hospital offers state of the art surgical management of various disorders of the nervous system. We treat the full range of pediatric neurosurgical disorders including epilepsy, brain tumors, congenital malformations, hydrocephalus, craniosynostosis, scoliosis, vascular disease and trauma.



Source: Epic Clarity Database

Our pediatric neurosurgeons are actively engaged in large multi-center global collaborative studies. We are leading a global multi-center study dedicated to creating and validating a predictive tool for children undergoing a hemispherectomy for medically intractable epilepsy. This study is called HOPS (Hemispherectomy Outcome Prediction Scale).

Additionally, our pediatric brain tumor team participates in multinational collaborative research efforts among the top academic institutions in the world, working together to address what is now the deadliest of cancers in children. We are a founding member of the Pacific Pediatric Neuro-Oncology Consortium, which received mention in Vice President Joe Biden's recent announcement regarding the Cancer Moonshot program.





UCLA pediatric neurosurgeons are now utilizing the most advanced medical virtual reality technology to make our operations as safe and as accurate as possible for our patients. In order to achieve the best outcomes, we engage our patients and families to fully understand their diagnosis and treatment, and also prepare and rehearse for surgery.

# **NEUROSURGERY TEAM**



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# ··· KEY ACHIEVEMENTS











Ronald Reagan UCLA Medical Center designated National Magnet Hospital

UCLA Medical Center, Santa Monica designated National Magnet Hospital





#### U.S.News & World Report Best Hospitals

Nationally Ranked Hospital in 15 Adult Specialties 10 Children's Specialties

Regionally Ranked Hospital #1 in California #1 in Los Angeles metro area

Rated High Performing in 9 Adult Procedures/Conditions



National Institute of Neurological Disorders and Stroke





American Heart Association American Stroke Association C E R T I F I C A T I O N Meets standards for Comprehensive Stroke Center







For more information on the Neurosurgery Clinical Quality and Value Program, please contact:

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