



Washington Hospital Healthcare System

2016 ANNUAL REPORT
**NEUROSCIENCE INNOVATION
BROUGHT TO LIFE**

TAYLOR McADAM BELL
NEUROSCIENCE INSTITUTE 

WASHINGTON HOSPITAL HEALTHCARE SYSTEM

TAYLOR McADAM BELL NEUROSCIENCE INSTITUTE

Moses Taghioff, MD

In 2008, the Taylor McAdam Bell Neuroscience Institute at Washington Hospital opened its doors and has since become one of the finest neurosurgery programs in the country. The Institute was created and grew to prominence largely through the vision and leadership of one of our area's pioneering neurosurgeons, Moses Taghioff, MD.

Dr. Taghioff was instrumental in developing our Hospital's Neurosurgery Department and putting together a medical team with some of the top neurosurgeons in the field. He also helped the Hospital secure the first Gamma Knife Perfexion® to be released in the U.S.

Dr. Taghioff's groundbreaking, highly acclaimed career continues to this day. We thank him for his many contributions to Washington Hospital and the people we serve.



The Taylor McAdam Bell Neuroscience Institute is named in honor of former Washington Hospital general counsel Taylor McAdam Bell, who lost his courageous battle with brain cancer in June 2006 at the age of 43. A kind, selfless person who was known for his incredible intellect and wonderful sense of humor, Mr. Bell had a significant impact within the Washington Township Health Care District, as well as the wider community.

For more about the Taylor McAdam Bell Neuroscience Institute, visit www.whhs.com/neuroscience.



Dear Colleague,

Welcome to the 2016 Annual Report of the Taylor McAdam Bell Neuroscience Institute at Washington Hospital. This report will update you on important, powerful advances in the care of neurological disorders now available to you and your patients through our comprehensive, leading edge programs.

Our world-class physicians and surgeons utilize sophisticated technologies and some of the most effective, least invasive techniques to treat a wide range of neurological disorders, including many highly complex neurovascular conditions. Through our program, your patients will also benefit from expert, specialized nursing care in the comforting environment of a small, conveniently located community hospital. Washington Hospital has some of the best, most qualified nurses in the country, as evidenced by its recent Magnet® redesignation — the highest recognition for quality of nursing care.

All of this means we have the depth of expertise and breadth of resources to provide optimal treatment specifically for your patient's diagnosis. We achieve outcomes rivaling some of the finest academic medical centers in the country.

We are also excited to tell you about the 2018 opening of Washington Hospital's new and expanded Morris Hyman Critical Care Pavilion, including a larger, more advanced Emergency Department and state-of-the-art ICU with dedicated neuro beds.

The uniqueness and success of our Institute is evidenced by our continuous growth and the relatively high volume of patients we treat. Today, an increasing number of patients are being referred to us from around the greater Bay Area and beyond. Some come to us in emergent, life-threatening situations. Whatever the scenario, as the referring physician, you are part of our team until the patient returns fully to your care or the care of their personal physician.

We hope you find this report a useful resource for your practice, your patients and your colleagues, and we welcome your inquiries at any time.

A handwritten signature in black ink, appearing to read 'Sandeep Kunwar'.

Sandeep Kunwar, MD

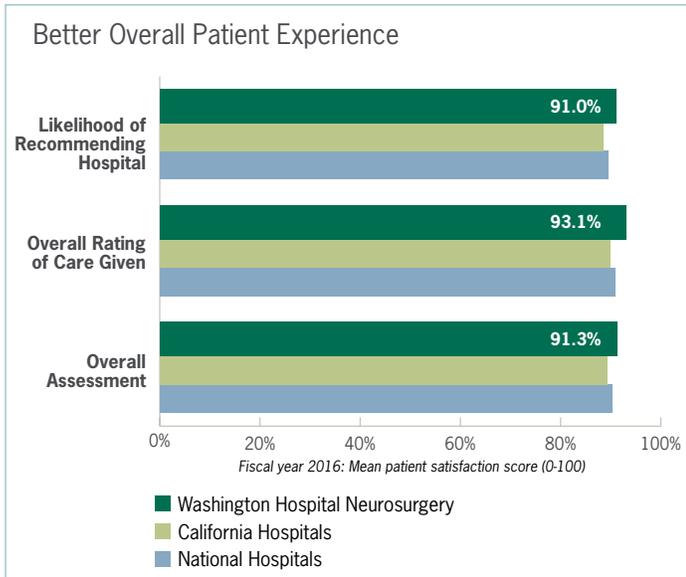
Medical Co-director, Washington Gamma Knife Program

On the Cover

Washington Hospital's "OR1" integrates state-of-the-art equipment, including a portable, 32-slice CT scanner with real-time imaging and a radiolucent operating table. In our innovative OR suite, surgical teams can perform even complex neurological procedures with the greatest possible safety and precision.

ABOUT THE INSTITUTE

Skilled people. Advanced technology. Superior outcomes. Better patient experience.



Guided by our Hospital's Patient First Ethic, our multidisciplinary patient care teams are committed to giving patients safe, high-quality care and the best possible experience. We believe the patient is an important member of their own care team. This patient-centric approach is a major reason we receive high ratings on independent satisfaction surveys of our neurology and neurosurgical patients.

Comprehensive, High-Quality Care

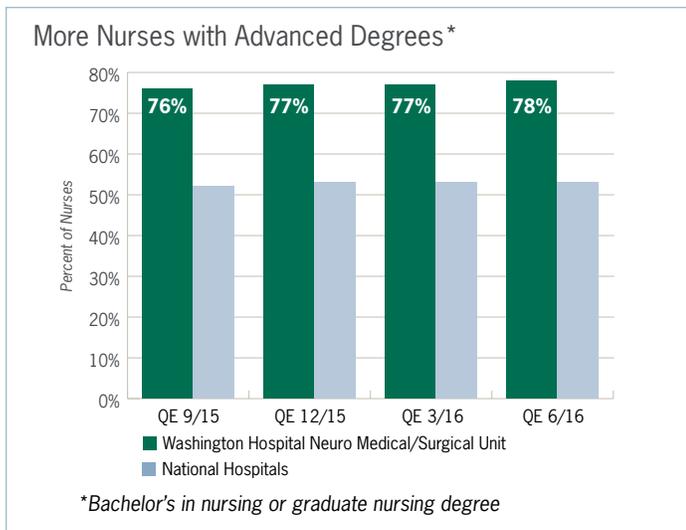
- More treatment options, less invasive approaches
- Fewer complications; faster, less painful recovery
- Improved function; quicker return to a normal lifestyle

Good Marks for Overall Patient Experience

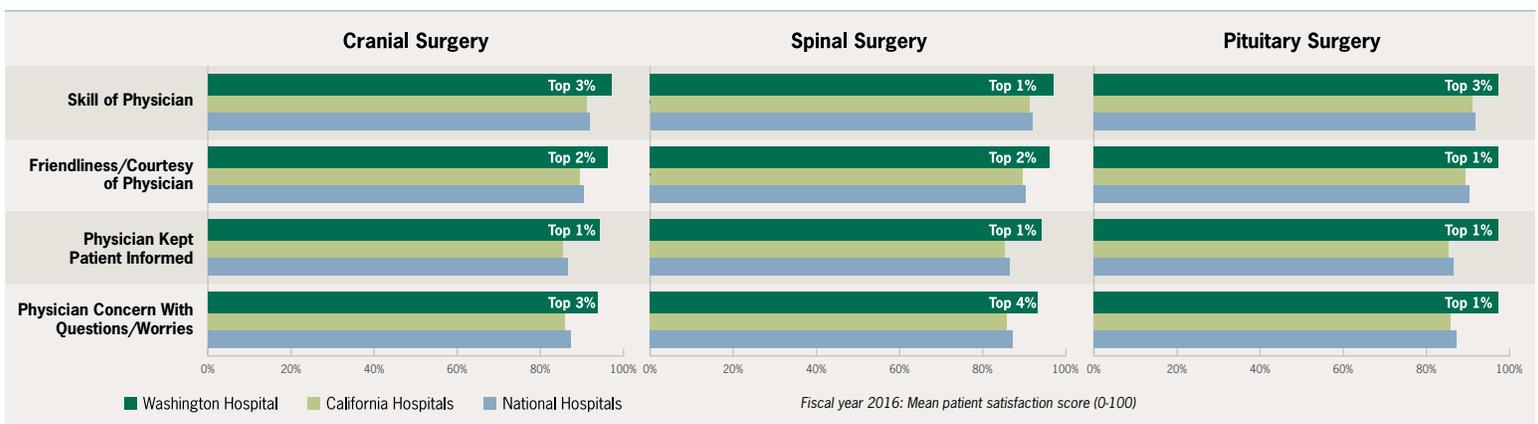
- Patients invited to visit unit before admission
- Nurses join physicians in patient rounding
- Strong focus on patient education
- Nurses call patients after discharge

Commended for Physician Expertise and Communication Skills

- Widely respected doctors are also good listeners
- Friendly, personable, in-tune with patients
- Excellent collaborators with nurses and other staff



Our Neurosurgeons Rank in the Top 1% to 4% Nationally for Every Rated Patient Experience Category



Patient experience data measured by Press Ganey: Fiscal year 2016

STROKE PROGRAM

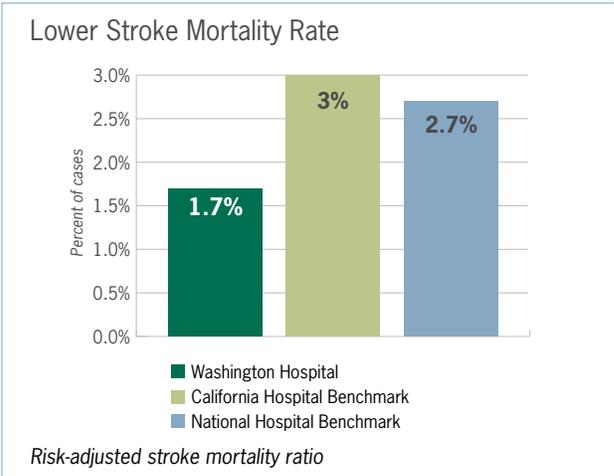
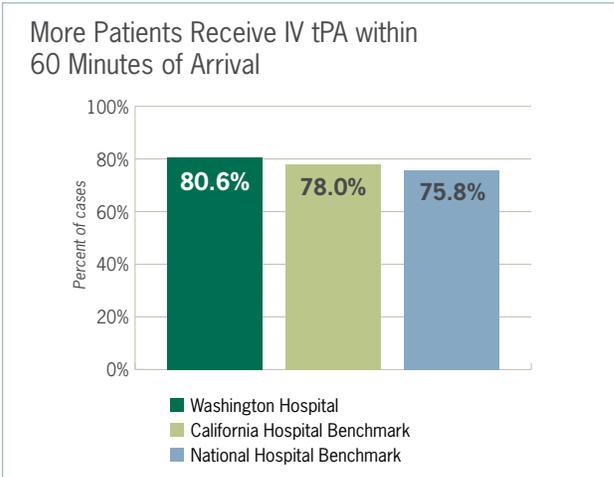
Fast, effective response to acute stroke and management of all aspects of stroke for optimal patient recovery and secondary prevention.

Washington Hospital's award-winning Stroke Program is one of the country's most comprehensive, innovative and effective services for the treatment of acute stroke. Our world-class Stroke Team is committed to aggressive management of stroke to improve patient outcomes. They work continuously to shorten the target time to intervention with tPA and to achieve the fastest possible door-to-balloon time. As a result, more of our patients are surviving, becoming functional and returning to normal daily life. We also focus on identifying the cause of a stroke to help prevent recurrence.



Expert Treatment and Intervention for TIA, Ischemic and Hemorrhagic Stroke, and Carotid Disease

- Primary Stroke Center and Designated Stroke Receiving Center for Alameda County
- Leading edge treatment options aided by the latest in imaging technology
- Expert, 24/7 neurointensive care and dedicated, specially trained stroke nurses



Get With the Guidelines Performance	GWTG Goal: 85%
Five-point stroke education	99%
Clot busting tPA within one hour, for patients arriving <2 hours	94%
Treatment of blood clots by second day	99%
Aspirin within two days	100%
Aspirin at discharge	100%
Smoking counseling at discharge	100%
Cholesterol reducing drug at discharge	97%
Blood thinners for irregular heart rate	98%
Difficult swallowing assessed	99%
Assessed for rehab	99%

Washington Hospital Stroke Program performance compared to Get With the Guidelines Goal: fiscal year 2016

CEREBROVASCULAR AND NEUROINTERVENTIONAL NEUROSURGERY

Ready access to leading edge interventional radiology and surgical treatments for complex cerebrovascular brain lesions.

Vascular Neurosurgery for Aneurysms, AVMs and Stroke

- Fast access to microsurgical and neurointerventional techniques by same neurosurgeon
- Direct referring MD-to-surgeon communication and expeditious surgery seven days a week
- Our average time from admission to OR is 12 hours (vs. national standard of 72 hours)
- 24/7 neurointensive care led by expert neurointensivist and cardiovascular specialist

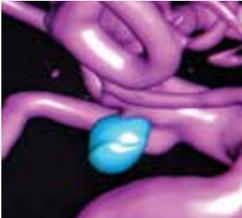
NEUROSURGICAL INTERVENTION FOR CEREBRAL ANEURYSM



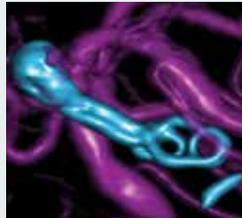
Untreated aneurysm



Clipped aneurysm



Coiled aneurysm



Clipped and coiled aneurysm

Microsurgical clipping is performed using an operating microscope at the base of the brain, after a craniotomy is performed. Once the aneurysm is isolated after tracing its parent blood vessel, a titanium clip is applied to exclude the aneurysm from the normal circulation, which is preserved.

In **coil embolization**, the aneurysm is excluded from the normal circulation by the deposition of platinum microcoils within the brain aneurysm delivered through a microcatheter entering the body from the groin. No incision is made on the head.

Endovascular and microsurgical techniques can be combined effectively for optimal treatment of complex conditions. Jeffrey Thomas, MD, is one of just a small percentage of U.S. neurosurgeons who regularly perform both techniques. If needed, he has the ability to perform coiling and clipping consecutively on the same patient to achieve the best possible outcome.

Regional “Code Brain” Pathway

1

Transport to Nearest Hospital



CT Scan

2

For Emergency and Urgent Cerebrovascular Matters



Call 1-844-CLIPCOIL (254-7264)

3

Emergency Physician and Jeffrey Thomas, MD, Assess Patient

If Patient Requires Surgery, Transport to Washington Hospital (Air or Ground)



4

Washington Hospital Intensivist to Greet and Initiate Care



5



To OR for Clipping, Coiling or Both

Patients close to Washington Hospital go directly to the Hospital's Emergency Department for CT scan and assessment.

40% More Surgeries Over 3 Years



2016: 74

2015: 52

2014: 53

Zero Intraoperative Injuries

AHRQ Benchmark — 0.2% of Cases

Zero Postoperative Deep Vein Thrombosis or Pulmonary Embolism

AHRQ Benchmark — 0.4% of Cases

Neurovascular cranial surgeries fiscal years 2014 – 2016
AHRQ — Agency for Healthcare Research and Quality

ENDOSCOPIC SKULL BASE, PITUITARY AND BRAIN TUMOR CENTER

World-class treatment for malignant and benign brain tumors and other conditions.

In our comprehensive neuro-oncology and radiosurgery program, experienced neurosurgeons use a range of powerful, leading edge technologies and minimally invasive techniques to offer patients faster, easier care and the best possible outcomes. We provide effective treatment for a wide array of malignant and benign lesions, ranging from pituitary to pineal tumors.

Full Range of Powerful Treatment Options

- Skilled, experienced surgeons perform more than 200 tumor operations annually
- Skull base procedures, standard craniotomies
- One of the world's most experienced pituitary tumor surgeons
- Specialized treatment for rare, complicated lesions, such as pineal tumors

70% of Patients Discharged Home with Home Health Care

Skilled Nursing Facility	18%
Rehabilitation Facility	12%

Neuro-Oncology cranial surgeries fiscal years 2014 – 2016

100% of Pituitary Surgery Patients Discharged Home

With Home Health Care 12%

Average Length of Stay 1.9 Days

Pituitary surgeries fiscal years 2014 – 2016

Zero Intraoperative Injuries

AHRQ Benchmark — 0.2% of Cases

Zero Postoperative Deep Vein Thrombosis or Pulmonary Embolism

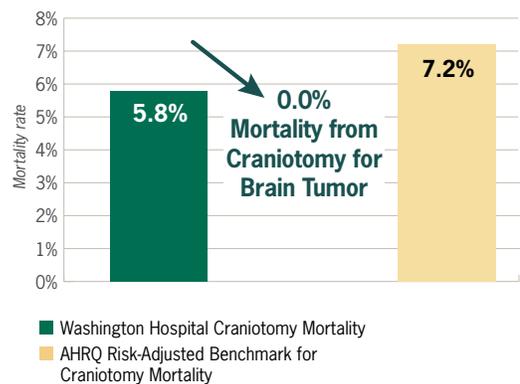
AHRQ Benchmark — 0.4% of Cases

Neuro-Oncology cranial surgeries fiscal years 2014 – 2016
AHRQ — Agency for Healthcare Research and Quality

Gamma Knife Perfexion® Stereotactic Radiosurgery

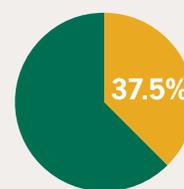
Our world-renowned team uses the latest generation Gamma Knife Perfexion® to safely, effectively and noninvasively treat small benign or metastatic brain tumors, acoustic neuromas, painful trigeminal neuralgia and other conditions. The powerful, precise Gamma Knife is a viable alternative to fractionated, daily radiation therapy or surgery. Treatment is usually completed in one visit, with patients able to return to normal activities that same day.

Craniotomy — Lower Mortality Rate



Craniotomies, fiscal year 2016

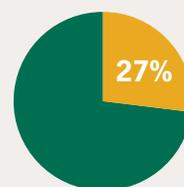
More than 1/3 of Pituitary Tumor Surgery Patients Travel:



From Outside Our Service Area* 37.5%
From Inside Our Service Area 62.5%

*Traveling from as far away as Southern California and New Mexico
fiscal year 2016

More than 1/4 of Gamma Knife Patients Travel:



From Outside Our Service Area* 27%
From Inside Our Service Area 73%

*Traveling from as far away as Kansas
fiscal year 2016

A wide range of advanced resources for the optimal treatment outcome.

At the Institute, we offer a rare combination of world-class expertise and a depth and breadth of resources not usually found in a community hospital setting. With such an extensive range of advanced options available, you and your patient will have access to the most effective solution for their specific diagnosis and individual needs.

Contemporary Management of Pineal Tumors

For example, our surgeons utilize three different therapeutic strategies to manage complex pineal region tumors.

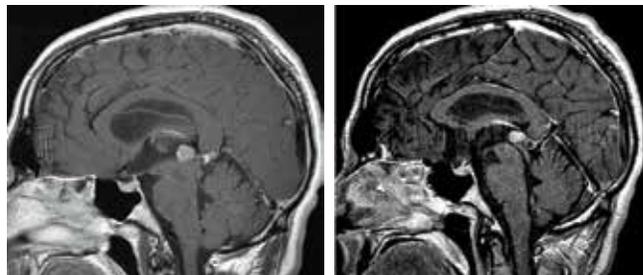
Pineal region tumors are challenging to diagnose and treat because they are located in one of the most complex areas of the intracranial cavity. Certain pathologies (pineocytoma, pineoblastoma) require surgical resection while others (germ cell tumors, lymphoma, some gliomas) are best treated by radiotherapy and chemotherapy.

The intricate arrangement of the anatomical structures in this area makes surgical excision a challenging task. A full understanding of the radiographic and clinical presentation is paramount in developing the ideal treatment strategy. In all cases, treatment of hydrocephalus and obtaining a definitive diagnosis is imperative.

Microsurgical excision is still the mainstay in managing most pineal region tumors, but endoscopic tumor biopsy with simultaneous endoscopic third ventriculostomy (ETV) has emerged as a minimally invasive and highly effective strategy for initial management. This addresses the issue of tissue diagnosis and offers a solution for the associated hydrocephalus.

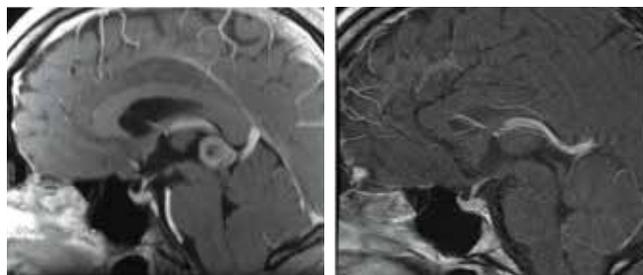
PATIENT 1

A 50-year-old male with pineal region mass. Evidence of slow growth with development of hydrocephalus. Treatment: **ETV with endoscopic biopsy of tumor**. Pathology showed low-grade glioma. Subsequently treated with Gamma Knife radiosurgery. Outcome: decrease in tumor size after 3 years.



PATIENT 2

A 37-year-old patient with pineal mass seen on imaging. Staging workup and CSF unremarkable. Due to size of lesion, underwent **suboccipital transtentorial approach with complete resection of tumor**. Pathology showed pineocytoma.



PATIENT 3

An 18-year-old male with headaches and nausea. CSF analysis negative for markers and cytology. Underwent **ETV with endoscopic biopsy** showing germinoma. Subsequently underwent **chemotherapy**.



V = ventriculostomy
MB = mammillary bodies
AS = aqueduct of Sylvius

SPINE CENTER

Comprehensive range of advanced treatments for painful, debilitating back and neck conditions.

Skilled surgeons in our program use the latest minimally invasive techniques to give patients relief from painful, debilitating back and neck problems. We also offer a full range of other treatment options, including reconstructive spinal surgery. Our focus on high-quality care enables us to achieve excellent patient outcomes with all of our treatment options.

Wide Array of Minimally Invasive Treatment Options

- Range of advanced treatments for lumbar back problems, depending on symptoms and findings
- Cervical disc arthroplasty with same-day discharge; faster, easier healing
- Interventional radiology, including vertebral body height restoration and image-guided injections, for painful compression fractures
- New surgical suite with leading edge surgical and intraoperative imaging technology

Fewer Intraoperative and Postsurgical Complications

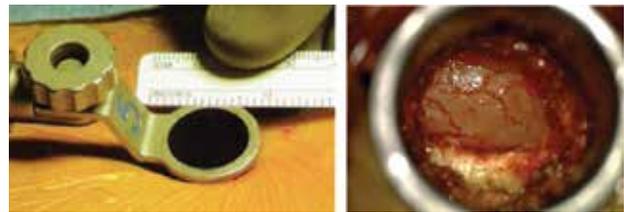
- Excellent outcomes despite more complicated patients
- Full range of clinical resources and advanced technologies to support safety and precision
- Magnet-designated, specialized postsurgical nursing care

99% of Patients Did Not Require Blood Transfusion

All spine surgeries fiscal years 2014 – 2016

Minimally Invasive Spine Surgery: Laminotomy/Interlaminar Decompression

- Incision 1 inch or smaller
- No muscles cut, minimal scarring
- Ligaments and native bony structure preserved
- Minimal blood loss (less than 33 cc)
- Less postoperative pain
- Low infection rate (less than 1% of cases)
- Same-day discharge (majority of cases)
- Quick recovery (4 – 6 weeks)



When performing minimally invasive spinal decompressions and fusions, our surgeons work through an 18 mm tubular retractor.

Zero Intraoperative Injuries

AHRQ Benchmark — 0.2% of Cases

Zero Postoperative Deep Vein Thrombosis or Pulmonary Embolism

AHRQ Benchmark — 0.4% of Cases

*Minimally invasive spine surgeries fiscal years 2014 – 2016
AHRQ — Agency for Healthcare Research and Quality*

SPINE CENTER (continued)

The right therapeutic approach for each patient.

Whether your patient is a candidate for percutaneous microsurgery or traditional open surgery, our physicians perform the most effective and appropriate procedure based on the patient's symptoms, condition and needs. With either approach, we have an excellent record of helping patients achieve effective pain relief and optimal functionality.

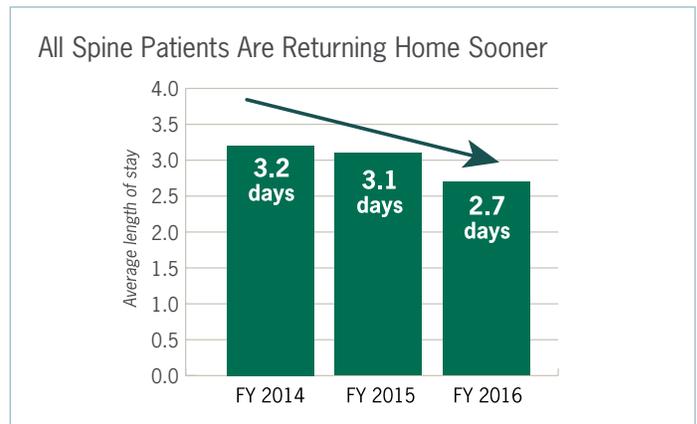
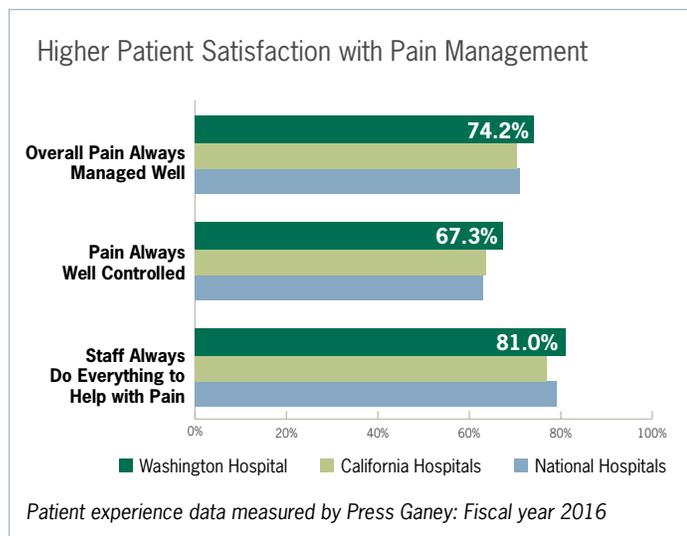
In addition to our spine surgery patients experiencing fewer intra- and postoperative complications, they also tend to benefit from a shorter hospital stay and faster, less painful recovery.

Superior Outcomes with All Treatment Approaches

- Shorter hospital stays
- Effective pain management
- Ongoing collaborative relationship with referring physician
- You are part of our treatment team until patient returns fully to your care



Eldan Eichbaum, MD, and other spine surgeons in our program use leading edge surgical and imaging technology in OR1, our state-of-the-art surgical suite.



87% of Patients Discharged Home

Average Length of Stay 3 Days

With Home Health Care	87%
Skilled Nursing Facility	13%

Minimally invasive spine surgeries fiscal years 2014 – 2016

MOVEMENT DISORDERS CARE/COMPLEX NEUROLOGICAL CARE

Evaluation, monitoring, and treatment of movement disorders and other conditions.

Our accomplished neurological specialists use the Hospital's advanced technological capabilities to provide expert assessment and treatment for a range of chronic, disabling neurological conditions, such as Parkinson's disease, seizure disorders and migraine headaches. For example, we have revolutionary deep brain stimulation technology to help achieve dramatic results for patients with uncontrollable tremors.

Disorders We Diagnose and Treat

- Parkinson's disease
- Essential tremors
- Migraine headaches
- Epilepsy and other seizure disorders
- Peripheral myoclonus, such as hemifacial spasm
- Focal dystonias, including spasmodic torticollis and writer's cramp
- Alzheimer's disease and other types of dementia
- Multiple sclerosis
- Vestibulitis (dizziness)
- Brain tumors
- Concussion
- Spasticity due to stroke, spinal cord injury, multiple sclerosis or cerebral palsy

Collaborative Relationships with Referring Physicians and Patients

With many chronic neurological conditions, our goals are to help patients improve their quality of life, return to performing activities of daily living, and maintain their independence. Physical therapy or lifestyle changes may also improve symptoms. Long-term treatment and symptom management may require ongoing collaboration involving neurologist, referring physician and patient.

OUR RANGE OF ADVANCED DIAGNOSTIC AND TREATMENT OPTIONS

Electroencephalogram (EEG): Accessible daily to evaluate epilepsy and other seizure disorders. In the ICU, 24-hour monitoring for seizures or alteration of consciousness.

Transcranial Doppler Ultrasound: Evaluate patients for dizziness, vertigo, emboli, stenosis, subarachnoid hemorrhage, ischemic cerebrovascular disease, arteriovenous malformations, and cerebral circulatory arrest.

Deep Brain Stimulation: Transmits mild electrical currents that intercept and block the brain signals producing uncontrollable tremors.

Botox Injections: Management of dystonias, torticollis, hemifacial spasm, chronic migraines, post stroke spasticity.

PET Scan: Evaluate for Alzheimer's (amyloid plaque).

Concussion Testing: Use of EYE-SYNC® virtual reality goggles to diagnose concussion and monitor recovery.

Gamma Knife® Stereotactic Radiosurgery: Alternative treatment options may also be available.

POWERFUL, LEADING EDGE TREATMENT

Meeting your patient's need for excellent, personalized care.

Our comprehensive, multidisciplinary programs bring together expert neurosurgeons, neurointerventionists and neurologists, as well as specially trained nurses, who use the most advanced, effective treatment approaches to achieve the best possible results for your patients.

High Standard of Care — Expert Care Teams

- Skilled physicians, dedicated, highly qualified staff
- Experienced nurses with advanced degrees and certifications
- Safe, high-quality, personalized care

Magnet® Designated Nursing Excellence

- Hourly nurse rounding at the bedside
- Bar coding for medication safety (CalNOC* participant)
- Patient ambulation always supervised
- Patient education with all discharges

As Referring Physician, You Are Part of the Team

- Faster, easier access to a wide range of advanced, effective treatment options
- Treatment dictated by your patient's diagnosis
- Ready access to and communication with treating specialist

* Collaborative Alliance for Nursing Outcomes

10% More Patients Treated in 3 Years

Fiscal years 2014 – 2016

Zero Pressure Ulcers¹ and Zero Falls² in 4 Years

Neurosurgical patients fiscal years 2012 – 2016

¹Stage II and above

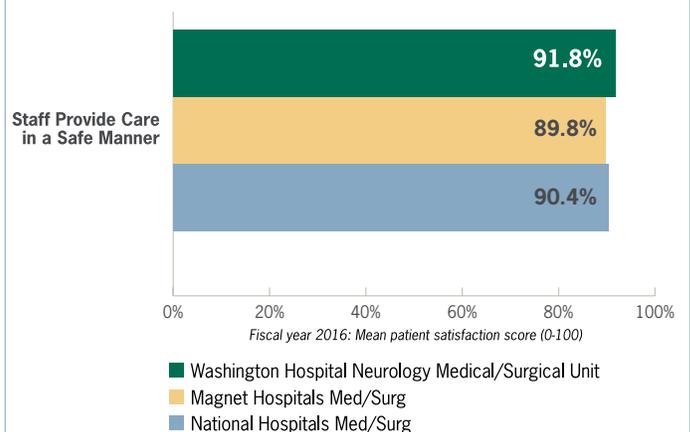
²With moderate or greater injury

Fewer Surgical Site Infections



Neurosurgical patients fiscal years 2014 – 2016

Higher Satisfaction with Nursing Safety



4 of 5 Patients Discharged Home

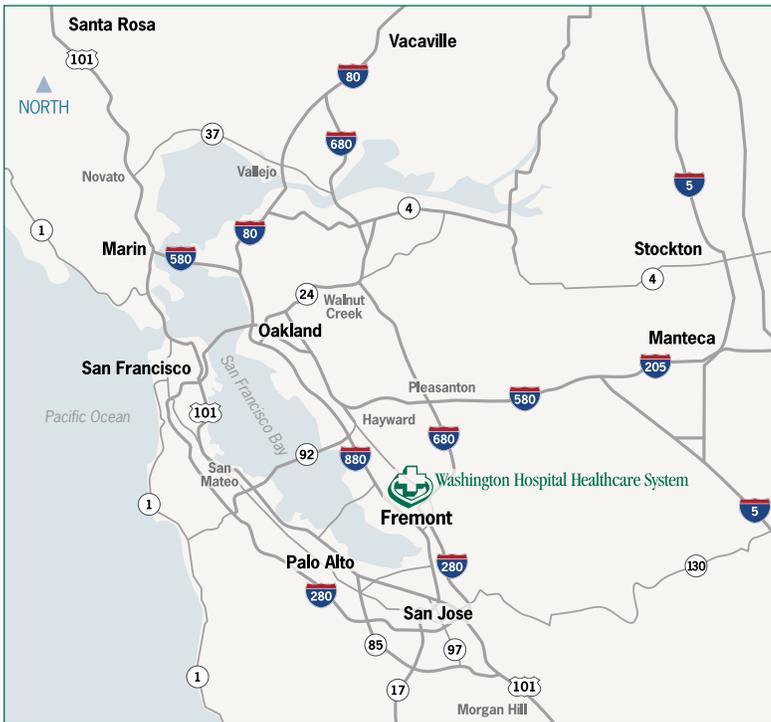
With Home Health Care	79%
Skilled Nursing Facility	14%
Rehabilitation Facility	3%
Expired	2%
Other	2%

Neurosurgical patients fiscal year 2016



Washington Hospital Healthcare System

**For Emergent/Urgent Cerebrovascular Matters
Call Toll-free 1-844-CLIPCOIL (254-7264)**



*We serve patients from throughout the Bay Area,
as well as Central and Northern California and beyond.*

The Taylor McAdam Bell Neuroscience Institute Annual Report is published annually as a service to our friends and neighbors by Washington Hospital Healthcare System. Materials in this report are obtained from medical scientists and health care authorities. Please consult with your personal physician regarding specific questions about your health care.

Nancy Farber, *Chief Executive Officer*
Gisela Hernandez, *Executive Editor*

Volume 1

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