The strong neurosurgery program at UCSF makes the neuroanesthesia rotation an excellent clinical experience. Each year there are over 2,000 neurosurgical cases and 600 neurointerventional cases that require anesthesia. There is an abundance of craniotomies for tumor, with patients both asleep and awake. There is a busy neurovascular service, incorporating both the surgical approach and interventional radiology procedures to manage cerebral aneurysms and arteriovenous malformations. Additionally, there are surgical procedures for transsphenoidal resection of pituitary tumors, seizure disorders, and movement disorders. A large number of cases also involve the spinal cord and the spinal column, and a large portion of the neurosurgical cases involve neurophysiologic monitoring. Assignments to the neuroanesthesia rotation are usually in the CA-1 or CA-2 year. Residents are provided a neuroanesthesia handbook prior to the rotation. They are expected to read the entire handbook during the rotation. In addition to the clinical rotation, the residents are given several lectures throughout the residency covering the basics of neuroanesthesia. The department has a neuroanesthesia website which outlines the most common anesthetic techniques for the most common neurosurgical procedures.

GOALS

- Gain a basic knowledge of the principles of neurophysiology and neuropharmacology, and should understand the interaction of anesthetic and adjuvant drugs with CNS physiology.
- Develop and be able to apply the skills necessary to manipulate and control CNS physiology with particular reference to cerebral hemodynamics, intracranial pressure, and brain protection
- Gain experience delivering anesthesia to patients undergoing craniotomy for excision of tumors, neurovascular abnormalities, pituitary tumors, movement disorders and various shunting procedures
- Gain experience in supratentorial procedures and those in the middle and posterior fossae, and skull base
- Be familiar with techniques for intraoperative monitoring of motor and speech function, EEG, SEPs, and cranial nerve function
- Be competent in and comfortable with preoperative evaluation and intra-operative management of neurosurgical patients, using the most current medical knowledge
- Be able to communicate with patients and their families, work effectively as part of the surgical health care team, and demonstrate high ethical standards.

OBJECTIVES
Interpersonal Communication Skills _____

- Communicate effectively with other healthcare professionals.
- Demonstrate professionalism and interpersonal/communication skills with patients, families and children
- Communicate with patients and their families in easily understood and culture-

sensitive language.
- � Work effectively as a member of the neuroanesthesia team
- � Maintain comprehensive, timely, and legible medical records.

Professionalism

- � Demonstrate respect, compassion and integrity.
- � Demonstrate a commitment to excellence and on-going professional development.
- � Demonstrate a commitment to ethical principles pertaining to confidentiality of patient information, informed consent, and resource utilization.
- � Demonstrate sensitivity and responsiveness to patients� culture, age, gender, and disabilities.
- � Demonstrate organizational skills to care for patients in a competent and efficient manner.

Medical Knowledge

- � Describe and diagram basic neuroanatomy
- � Describe cerebral and spinal cord physiology including cerebral blood flow and metabolism, and CSF dynamics.
- � Summarize the etiology, pathophysiology and treatment of intracranial hypertension and cerebral edema.
- � Summarize the etiology, pathophysiology and treatment of subarachnoid hemorrhage and vasospasm.
- � Explain pharmacology of anesthetic agents and other drugs used during perioperative period and their effects on cerebral physiology.
- � Describe the etiology, pathophysiology and treatment of venous air embolism.
- � Explain the effect of anticonvulsants on the pharmacokinetincs and pharmocodynamics of perioperatively used drugs.
- � Describe the pathophysiology of pituitary tumors.
- � Explain basic neurophysiologic monitoring and effects of anesthetics on neurophysiologic monitoring.

Patient Care

- � Demonstrate implementation of neuroanesthesia techniques to reduce intracranial pressure/volume.
- � Demonstrate implementation of neuroanesthesia techniques to detect and treat venous air embolism.
- � Demonstrate implementation of neuroanesthesia techniques to prevent perioperative aneurysm rupture.
- � Demonstrate implementation of neuroanesthesia techniques to optimize neurophysiologic monitoring.
- � Demonstrate implementation of preoperative plan and management of anesthesia for supratentorial tumors, pituitary tumors, intracranial aneurysms,

vasospam, and venous air embolism
- ❖ Demonstrate implementation of preoperative plan and management of anesthesia for patients with seizure disorders
- ❖ Demonstrate skills to manage issues with anesthesia involved in the prone, sitting and lateral positions.

Practice-based Learning and Improvement _____

- ❖ Analyze practice experience and perform practice-based improvement activities using a systematic methodology.
- ❖ Apply knowledge of study designs and statistical methods to critique the literature on anesthesia for neurosurgery.
- ❖ Present a case for discussion and/or a lecture related to neurosurgery and neuroanesthesia at a conference.
- ❖ Facilitate the learning of students, residents, and other health care professionals on the neuroanesthesia team.

Systems-based Practice _____

- ❖ Practice cost-effective, evidence-based health care and resource allocation that does not compromise quality of care in neurosurgery patients.
- ❖ Advocate for quality of patient care and assist patients in dealing with the effects from neurosurgery.