Department of Anesthesiology

Anesthesiology is a medical specialty encompassing a broad range of medical and scientific activities. The clinical practice of anesthesiology includes the following:

1. Assessment of, consultation for and preparation of patients for anesthesia and surgery;
2. Provision of insensibility to pain during surgical, obstetric, therapeutic and diagnostic procedures;
3. Monitoring and restoration of physiologic homeostasis during the perioperative period as well as homeostasis in the critically ill or seriously injured patient;
4. Diagnosis and treatment of painful syndromes; and
5. Clinical management and teaching of cardiopulmonary resuscitation (CPR).

The realm of scientific investigation in anesthesiology also spans a broad range. Scientific efforts at the cellular and molecular levels are directed toward understanding the molecular mechanisms of anesthesia and analgesia. Clinical research in anesthesiology includes broad epidemiological approaches to identifying indicators of outcome as well as prospective clinical studies examining new technologies, anesthetic agents and methods.

The Department of Anesthesiology (http://anest.wustl.edu) presents the student with the opportunity to do the following:

1. Acquire and apply pharmacologic knowledge related to anesthetic, narcotic, paralytic and sedative drugs and to drugs affecting the autonomic nervous system;
2. Understand and apply the basic principles of airway management and mechanical ventilation;
3. Understand and apply the principles of cardiopulmonary resuscitation;
4. Understand and apply the technical skills and anatomic and pharmacologic knowledge used in performing regional nerve blocks;
5. Learn and apply the fundamental principles of acute and chronic pain management; and
6. Learn and apply the basic principles of critical care medicine.

Anesthesiology bridges the gap between basic science and clinical medicine. It provides experience with the clinical evaluation and management of patients as well as with applied physiology and pharmacology. The Department of Anesthesiology offers student experiences in the operating room, the intensive care unit, the pain clinic and the laboratory.

Website: http://anest.wustl.edu

Degrees & Requirements

While the Department of Anesthesiology does not offer its own degree, some of the department's courses are open to students in the MD and MSTP (MD/PhD) programs. Further information about the MD and MSTP degrees can be found in the Degrees & Programs Offered (http://bulletin.wustl.edu/medicine/degrees) section of this Bulletin.

Research

Research Electives in Anesthesiology

Special electives in basic science research as it applies to anesthesiology can be arranged with the principal investigators in the Department of Anesthesiology (http://anest.wustl.edu); in the Anesthesiology Research Unit and the Washington University Pain Center under the direction of Rob Gereau, PhD; and in the Division of Clinical and Translational Research under the direction of Michael Avidan, MBBCCh.

These laboratories focus on various aspects of molecular neurobiology, including ion channel structure and function; G-protein molecular biology; molecular mechanisms of anesthetic action; genetics of anesthetic responsiveness; and the molecular, cellular and genetic basis of acute and chronic pain and itch. Arrangements for these special electives are made through the specific investigators: Walter A. Boyle III, MD; Zhou-Feng Chen, PhD; Alex S. Evers, MD; Narasimhan Gautam, PhD; Richard S. Hotchkiss, MD; Christopher J. Lingle, PhD; Gustav Akk, PhD; Michael Bruchas, PhD; Yu-Qing Cao, PhD; Robert W. Gereau, PhD; DP Mohapatra, PhD; or Jose Moron-Concepcion, PhD. In addition, opportunities exist for clinical research under the direction of Michael Avidan, MBBCCh, or Ben Palanca, MD, PhD.

Faculty

Department Chair

Michael Avidan, MBBCCh, FCA SA

Department Vice Chair

Ellen M. Lockhart, MD

Department Associate Vice Chair

Courtney Hardy, MD

Visit our website for more information about our faculty (http://anest.wustl.edu/about/faculty) and their appointments.

A

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Assistant Professor of Medicine
PHD Pennsylvania State University 2010
BS SRM Easwari Engineering Colleg 2001
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MBBS Liaquat Medical College 1969

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PHD State Univ of NY Buffalo 1997
BS Moscow State University 1991

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PHD University of Surrey 2009

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MED Ankara University 2000
MD Ankara University 1993

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MD University of MO Kansas City 2008

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Head of the Department of Anesthesiology
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MBBCH University of the Witwatersra 1991

B

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BS Tirunelveli Medical College 1992
PHD College of Anesthesiology 2008
MD All-India Inst of Medical Sci 1998

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MBBS Nepal Medical College 2013

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BA Texas A&M University 2009

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PHD1 Florida State University 1993

C

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PHD Washington Univ in St. Louis 2012
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MD University of MO St Louis 1999
James Close, MD
Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Medicine
MD Washington Univ in St. Louis 1984
BA Washington Univ in St. Louis 1980
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Assistant Professor of Anesthesiology (primary appointment)
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Instructor in Anesthesiology (primary appointment)
PHD Northwestern University 2012
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BA New York University 2008
MD New York Medical College 2012
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BA Johns Hopkins University 1981
MD University of Virginia 1985
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Assistant Professor of Neuroscience
Assistant Professor of Psychiatry
PHD University of Toronto 2012
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BS Tufts University 1988
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MD University of Washington 2012
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Professor of Developmental Biology
Professor of Medicine
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BS Yale University 1974
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MD University of Connecticut 2004
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MD Saint Louis University 2013
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BS University of Kansas 1981
MD University of Kansas 1985

G

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Professor of Genetics
MS School Not Listed 1979
PHD University of Bombay 1985
BS School Not Listed 1977

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BS University of Notre Dame 1980
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H

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MD Davenport University 1977
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MA Davenport University 1973

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MS Emory University 1993
MD Taipei Medical University 1983

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BS University of Miami 2009  
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PHD University of Khartoum 1996  
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MD1 School Not Listed 1998  

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MD Hahnemann University 1991  

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BA Rutgers University 1982  
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PHD University of Oregon 1979  
BS University of Oregon 1972

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PHD Saint Louis University 1997  
MD Nanjing Medical University 1983

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Associate Professor of Neuroscience  
Associate Professor of Ophthalmology and Visual Sciences  
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MD Univ Autonoma de Guadalajara 1987

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BA Howard University 1976  
MA Meharry Med College 1980  
MBA John Hopkins University 2010  
MD Meharry Med College 1984

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MD University of Bologna 1985

Nicolas Massaly, PhD  
Instructor in Anesthesiology (primary appointment)  
PHD Universite Paul Sabatier 2012

John D McAllister, MD  
Professor of Anesthesiology (primary appointment)  
Professor of Pediatrics  
BS University of Manitoba 1982  
MD University of Manitoba 1980

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PHD Washington Univ in St. Louis 2014

Molly Ann McCormick, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD University of MO Columbia 1987

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Instructor in Anesthesiology (primary appointment)  
BS Rhodes College 2010  
MD Univ of Texas Med Sch Houston 2014

Kathleen Williams Meacham, MD, PhD  
Assistant Professor of Anesthesiology (primary appointment)  
BS Carnegie Mellon University 2001  
MD Emory University 2008  
PHD Georgia Tech 2008

Jesse L Mecham, MD  
Assistant Professor of Anesthesiology (PEFA) (primary appointment)  
Assistant Professor of Emergency Medicine in Medicine (PEFA)  
MD University of Cincinnati 2010

Allison Denise Mitchell, MD  
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BS Howard University 2008  
MD Univ Texas Health Sci San Anto 2012

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Assistant Professor of Anesthesiology (primary appointment)  
MD Birmingham Medical School 2018

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Assistant Professor of Anesthesiology (primary appointment)  
BA University of Virginia 2003  
MD Washington Univ in St. Louis 2012

Robert Paul Moore, MD  
Associate Professor of Anesthesiology (primary appointment)  
MD Washington Univ in St. Louis 2004

Jose Moron-Concepcion, PHD  
Professor of Anesthesiology (primary appointment)  
Professor of Neuroscience  
Professor of Psychiatry  
PHD University of Barcelona 1998

Jeremiah J Morrissey, PHD  
Professor of Anesthesiology (primary appointment)  
PHD Saint Louis University 1974  
BA Macmurray College 1969

Jimmy Lewis Moss, MD
Instructor in Clinical Anesthesiology (primary appointment)
BS Florida State University 2010
MD Florida State University 2015

Amjad Issam Musleh, MD
Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
BS University of New Mexico 2008
MD University of New Mexico 2013

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BS University of Wisconsin 2018

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Associate Professor of Anesthesiology (primary appointment)
BA University of MO Kansas City 1982
MD University of MO Columbia 1982

Daniel C Nieva, MD
Associate Professor of Anesthesiology (primary appointment)
MD University of Iowa 2003
BS University of Iowa 1998

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MD University of MO Kansas City 2005

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MD University of Nigeria 1998
MS Pennsylvania State University 2010

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MD U Medical-Dental Of New Jersey 2008

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MD University of Science & Techn 1996
BS University of Science & Techn 1994

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Assistant Professor of Anesthesiology (primary appointment)
BS University of Washington 1997
MD Washington Univ in St. Louis 2005

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Assistant Professor of Anesthesiology (primary appointment)
Assistant Professor of Emergency Medicine in Medicine
MD SUNY - Empire State College 2008

BS Virginia Tech 2004

Kyle Edward Parker, PHD
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PHD University of MO Columbia 2013

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BS Lindenwood University 1969
MD Washington Univ in St. Louis 1974

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BS Vanderbilt University 1978

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MD1 Northrhein Westfalen Medical 1985

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MD Illinois Wesleyan University 2010
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MD Royal College of Surgeons 2001  
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BS Simpson College 2004  
MD University of MO Columbia 2008

Monica Sala-Rabanal, PHD  
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Instructor in Cell Biology and Physiology  
PHD University of Barcelona 2003  
BS University of Barcelona 1997

Vijaya K Samineni, PHD  
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PHD Southern Illinois University 2013

Charles R Schrock, MD  
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MD University of MO Columbia 1991  
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Karen Seibert, PHD, MA  
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Professor of Genetics  
Professor of Pathology and Immunology  
BS Northwestern University 1981  
PHD Vanderbilt University 1987  
MA University of Toledo 1983

Rajiv K Shah, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD University of Rochester 2010

Ravitha Sheolal, MD  
Instructor in Anesthesiology (primary appointment)  
MD Natal Medical School 1997

Preet Mohinder Singh, MBBS, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MBBS Dayanand Medical College 2007  
MD All-India Inst of Medical Sci 2010

Sarah Kendall Smith, MD, PHD  
Assistant Professor of Anesthesiology (primary appointment)  
MD University of Kansas Medical 2013  
PHD University of Kansas Medical 2011  
BS University of Kansas 2004

John Charles Spitler, MD  
Assistant Professor of Anesthesiology (primary appointment)  
BS University of MO Columbia 1998  
MD University of MO Columbia 2003

Tracey Wagner Stevens, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD Washington Univ in St. Louis 2008

Sanjay Subramanian, MD  
Associate Professor of Anesthesiology (primary appointment)  
Associate Professor of Medicine  
MD Christian Medical College 1994

Robert A Swarm, MD  
Professor of Anesthesiology (primary appointment)  
MD Washington Univ in St. Louis 1983  
BA Oberlin College 1978

Martha Zorko Szabo, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD Medical College of Ohio 1990

Rene Tempelhoff, MD  
Professor of Anesthesiology (primary appointment)  
Professor of Neurological Surgery  
MD University of Lyon 1974

Raghu P Terkonda, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD University of MO Columbia 1987  
BS University of MO Columbia 1983

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MD University of CA San Diego 2003  
BS University of CA San Diego 1998

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MD University of Virginia 2015

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Associate Professor of Anesthesiology (primary appointment)  
MBBS Andhra University 1989

Anandhalakshmi Varadharajan, MBBS, MD  
Instructor in Clinical Anesthesiology (primary appointment)  
MBBS Sri Ramachandra Medical College 2000  
MD St. Lukes 2007

Gershon Ram Volotzky, MD  
Associate Professor of Anesthesiology (primary appointment)  
MD Tel-Aviv University 1979

Coridalia Wald Chen, MD  
Instructor in Anesthesiology (primary appointment)  
MD University of Panama 2006

Ashley Brooke Weinhold, MD  
Assistant Professor of Anesthesiology (primary appointment)
Courses


M10 Anesth 805 Anesthesiology
This clinical elective is designed to familiarize the student with basic aspects of anesthesiology practice. The primary teaching method is patient care in a clinical setting (one-on-one). The student will learn the basics of the preoperative evaluation of surgical patients, the use of intraoperative monitoring in patient management, and postoperative care. In addition to perioperative care, the student will be exposed to other clinical areas, which include our pain management clinic, regional anesthesia/acute pain management, cardiothoracic intensive care unit, labor and delivery, pediatric anesthesia, and the Center for Preoperative Assessment and Planning. During the four-week rotation, the student will learn airway management skills, practical perioperative fluid, and electrolyte therapy, along with general and regional anesthetic techniques. As an integral part of the anesthesia care team, the student will participate actively in the anesthetic management of surgical patients. The student’s specific requests to be assigned to certain types of cases will be honored as time and availability dictate. The rotation will include three clinical simulator sessions using a simulator mannequin for the practical management of airway problems, resuscitation, and trauma emergencies. By the end of the rotation, the student should be able to independently (under supervision) provide anesthesia for uncomplicated surgical procedures.

M10 Anesth 811 Cardiothoracic Anesthesiology
Subinternship
This clinical elective offers practical experience in the perioperative assessment and management of surgical patients undergoing cardiothoracic procedures. The student, as an integral part of the cardiothoracic anesthesia team that is composed of faculty members, fellows and residents, will learn basic principles of airway management and lung ventilation, essential aspects of pharmacologic treatment of hemodynamic abnormalities and cardiac dysrhythmias, and management of intraoperative coagulation disturbances. Emphasis will be placed on the interpretation of intraoperative hemodynamic data, echocardiographic finding (TEE), and laboratory results. During this rotation, the student will also gain practical experience in endotracheal intubation as well as the placement of intravenous lines and invasive monitoring lines, including radial artery and pulmonary artery catheters. Students will learn how to use these parameters in clinical decision making during anesthesia. At the conclusion of the rotation, the student will have a better understanding of invasive monitoring and data interpretation, as well as a more systematic approach to the management of intra- and postoperative hemodynamic, pulmonary and coagulation abnormalities. The students are expected to attend the didactic sessions of CTA and the Department of Anesthesiology. A presentation will be assigned.

M10 Anesth 812 Pediatric Anesthesiology
This clinical elective is designed to teach the theory and practice of pediatric anesthesiology and pain management. It features individualized instruction with faculty who specialize in the perioperative care of pediatric patients. The elective consists of active participation with pediatric anesthesiologists at St. Louis Children's Hospital and St. Louis Shriners Hospital.
learning pre-anesthetic assessment, the performance of routine anesthetics (which includes instruction and practice in pediatric airway skills), learning other technical skills such as intravenous line placement and the management of post-anesthesia care and pain therapies. The final week may be tailored to meet the student’s individual interests, needs and career goals. Possibilities include exposure to sedation and anesthesia for procedures outside of the operating rooms, and to subspecialties including cardiovascular anesthesia, neurosurgical anesthesia, and acute and chronic pediatric pain management. Students also will have an opportunity to learn the management of some common medical emergencies in the Clinical Simulation Center.

M10 Anesth 819 Cardiothoracic Critical Care Subinternship
This clinical elective offers practical experience in the postoperative management of cardiothoracic patients. The student will be fully integrated into one of the intensive care teams and have the opportunity to contribute to the management of critically ill patients. Students will have the opportunity to follow specific patients over the course of their stay in the ICU, during which time they will gain insight into the holistic management of patients with multi-organ dysfunction. The CTICU environment is both challenging and exciting. Students will gain unique insight into cardiorespiratory physiology and pharmacology, which will be demonstrated at the patients’ bedside, an invaluable and unforgettable learning experience. Students will have opportunities to learn and sometimes assist with procedures, such as central lines, chest tubes, bronchoscopy, and pulmonary artery catheter insertion as well as bedside ultrasound, including TTE and TEE. Principles of management and resuscitation of hemodynamically unstable patients following surgery will be emphasized, as will ventilator management. Students will also see and help manage patients with unique physiology, such as patients on ventricular assist devices and patients on ECMO. We also have a very busy and heart and lung transplantation program at the hospital, and all of these patients are cared for in the CTICU. At the conclusion of the rotation, the student will have a better understanding of shock, sepsis, multi-organ failure, organ system support, and the compassionate withdrawal of life support. In addition to bedside teaching, there will be informal teaching sessions on a wide variety of topics as well as teaching on interpreting hemodynamic data and waveforms and cardiac echo exams. Students will be encouraged to present on their patient at morning rounds, during which constructive feedback and interactive teaching will occur. Medical students will be asked to present a short discussion on a topic of their choice. This should be a 20- to 30-minute presentation followed by a discussion of the topic, which will be moderated by the attending. The time and topic of choice will be discussed with the attending of service.

M10 Anesth 820 Critical Care Subinternship
Students on this rotation are integral members of the multidisciplinary intensivist-led critical care team in the Surgical Intensive Care Unit (SICU). Students learn an organ systems-based approach for evaluation and management of critically ill and injured patients, and application of evidence-based principles in delivery of state-of-the-art critical care. Emphasis is placed on critical care knowledge and techniques used at the bedside in the clinical management of serious traumatic and surgical conditions. Students become familiar with resuscitation and cardiopulmonary support, including methods for non-invasive and invasive hemodynamic monitoring, and techniques for airway management and pulmonary support in respiratory failure. Basic knowledge and skills in the management of blunt and penetrating trauma, neurologic injuries, multi-system organ failure, and life-threatening infections in the surgical patient are also taught, as is the importance of treatments to alleviate anxiety and pain, maintain fluid and electrolyte balance, and providing adequate nutrition. Practical experience is gained in placement of vascular access devices, airway equipment, ultrasonography and its applications, interpretation of imaging and laboratory data, and use of guidelines, protocols and quality assurance tools in the management of critically ill patients.

M10 Anesth 821 Pain Management
Acute pain is the most common symptom of medical illness and is ubiquitous after major surgery. Chronic pain is the leading cause of worker disability. Severe pain afflicts most people with advanced cancer. Learning the fundamentals of pharmacologic, interventional, and multidisciplinary pain management is important for all areas of clinical medicine. Rotation is based at Barnes-Jewish Hospital with focus adjusted to meet student’s interest and career plans.

M10 Anesth 822 Anesthesiology for Neurosurgery Subinternship
Students will help care for patients having challenging neurosurgical procedures. Students will become familiar with complex procedures, brain monitoring, cardiovascular support and airway management and will be exposed to all kinds of neurosurgical pathology. Student must be prepared to participate in the intricate anesthetic management of patients undergoing surgery in our novel intraoperative MRI rooms. For those interested, clinical research projects are ongoing and student participation is encouraged.

M10 Anesth 823 Obstetrical Anesthesiology Subinternship
The medical students will learn the different analgesia/anesthetic options for the labor patient. They will also learn how the physiological adaptations of pregnancy influence anesthetic management. They will be actively involved in the parturient’s management, i.e., starting an IV, placement of spinal, epidural or CSE (combined spinal epidural) anesthetics. They will also attend the OB anesthesia conferences and interview patients in labor (with an OB anesthesia attending).

M10 Anesth 900 Research Elective — Anesthesiology
Research opportunities may be available. If interested, please contact the Department of Anesthesiology.