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 Robert Gereau, PhD; and in the Division of Clinical and Translational Research under the direction of Michael Avidan, MBBCh.

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, MBBCh, or Ben Palanca, MD, PhD.

Faculty

Department Chair
Michael Avidan, MBChB, 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.

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Professor of Pediatrics
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PHD Georgia Tech 2008
BS Carnegie Mellon University 2001
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Assistant Professor of Emergency Medicine in Medicine (PEFA)
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MD Univ Texas Health Sci San Anto 2012
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MD Madurai Kamaraj University 1979  
MD1 Northrhein Westfalen Medical 1985  

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Assistant Professor of Surgery (Cardiothoracic Surgery)  
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BA University of Minnesota 1981  
MA University of Pennsylvania 1983  

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MBBS Srimanchandra Medical College 2000
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Ashley Brooke Weinhold, MD
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 anesthesia 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.