Department of Anesthesiology

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

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 to 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:

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 in the clinical evaluation and management of patients, and in 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, or 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

Alex S. Evers, MD

Department Vice Chair

Ellen M. Lockhart, MD

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

A

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M PH University of Pittsburgh 2007

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MBBS Liaquat Medical College 1969
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BS Moscow State University 1991
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PHD University of Surrey 2009

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MD Ankara University 1993
MED Ankara University 2000

Umeshkumar Athiraman, MD
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MD M.G.R. Medical University 2013

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MD University of MO Kansas City 2008
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Professor of Surgery (Cardiothoracic Surgery)
MBBCH University of the Witwatersra 1991

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

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PHD University of MO St Louis 2012

Suresh Basnet
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MD Free University of Berlin 1988

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PHD Washington Univ in St. Louis 2011

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PHD University of Chicago 1998
MD University of Chicago 2000
BS California Institute Technolo 1993

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Professor of Surgery (General Surgery)
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BS University of CA San Francisco 1974

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Associate Professor of Neuroscience
Associate Professor of Psychiatry
PHD Creighton University 2004

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Professor of Developmental Biology
Professor of Psychiatry
BS Wuhan University 1983
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MS School Not Listed 1987

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PHD Peking University 2001

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BS Wheaton College 2005
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MD University of MO St Louis 1999

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BA Washington Univ in St. Louis 1980  
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MD Baylor University 1977

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PHD Northwestern University 2012

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MD New York Medical College 2012  
BA New York University 2008

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MD University of Virginia 1985  
BA Johns Hopkins University 1981

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MD University of Massachusetts 1994  
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MD University of Washington 2012

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MD BJ Medical College 1984  
MD1 University of Toledo 1997

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MD University of Tenn Memphis 1969

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Professor of Surgery (Cardiothoracic Surgery)  
MBCHB University of Pretoria 1990

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BS Carleton College 2007  
MD Rush University 2012

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MD Washington Univ in St. Louis 2006

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BS Pennsylvania State University 2006  
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BS St Xavier University 1995  
DOSt Midwestern University 2001

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MD Universidad Central del Ecuador 2002

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Assistant Professor of Surgery (Cardiothoracic Surgery)  
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Head of the Department of Anesthesiology  
Professor of Developmental Biology  
Professor of Medicine  
BS Yale University 1974  
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Professor of Pediatrics  
MD Davenport University 1988  
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MD University of MO Columbia 1982  
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MD University of Connecticut 2004

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PHD University of Bombay 1985
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MD University of London 1986

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H

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MD Davenport University 1977
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Simon Haroutounian, MA, PHD
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MA Hebrew University 2005
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MD University of Maryland 1992
MA Yale University 1988
BA Yale University 1986

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MD Wayne State University 2007

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PHD Vanderbilt University 2013
Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)
MD Columbia University 2013

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MD A T Still University 2007
BS Truman State University 2004

Gary E Hirshberg, MD
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BA Princeton University 1968
MD Hahnemann University 1972

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Professor of Developmental Biology
Professor of Medicine
Professor of Surgery (General Surgery)
MD University of Virginia 1976

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BS King's College London 2001

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MD Northwestern University Med 1984
PHD Northwestern University Med 1983

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BA Vanderbilt University 1985

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BA School Not Listed 1993
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MD1 University of Kansas 1997

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MD Medical University Graz 2008
PHD Paracelsus Medical University 2015

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MD University of Zagreb 1996

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BS Loyola University Chicago 1977
MD Hahnemann University 1991
DDENT Loyola University Chicago 1982

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BA Rutgers University 1982

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MD Hahnemann University 2000

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PHD Beijing Medical University 1991
MD Hubel Medical University 1985

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Professor of Neuroscience
BS University of Oregon 1972
PHD University of Oregon 1979

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MD Nanjing Medical University 1983
PHD Saint Louis University 1997

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Assistant Professor of Ophthalmology and Visual Sciences
PHD Chinese Academy of Sciences 2004
BS Wuhan University 1998

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Professor of Anesthesiology (primary appointment)
Vice Chairman of Anesthesiology
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MD Saint Louis University 1984
BS Saint Louis University 1980

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

BA Howard University 1976

Paolo Masetti, MD
Instructor in Clinical Anesthesiology (primary appointment)
MD University of Bologna 1985

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Instructor in Anesthesiology (primary appointment)
PHD Universite Paul Sabatier 2012

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Professor of Anesthesiology (primary appointment)
Professor of Pediatrics
BS University of Manitoba 1982
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Jordan Gary McCall, PHD
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PHD Washington Univ in St. Louis 2014

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MD University of MO Columbia 1987

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Adjunct Instructor in Anesthesiology (primary appointment)
MBBS University of Leipzig 1998

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Instructor in Anesthesiology (primary appointment)
BS Howard University 2008
MD Univ Texas Health Sci San Anto 2012

Durga Prasanna Mohapatra, PHD
Associate Professor of Anesthesiology (primary appointment)
PHD University of Erlangen 2011

David Thomas Monks, MD
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MD Birmingham Medical School 2018

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Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)
BA University of Virginia 2003
MD Washington Univ in St. Louis 2012

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Assistant Professor of Anesthesiology (primary appointment)
MD Washington Univ in St. Louis 2004

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Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Neuroscience
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

David J Murray, MD  
Carol B. and Jerome T. Loeb Professor of Anesthesiology (primary appointment)  
BS University of Saskatchewan 1973  
MD University of Saskatchewan 1978

Guido Musch, MD  
Professor of Anesthesiology (primary appointment)  
MD University of Milan 1993

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

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

Aaron John Norris, PhD, MD  
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PhD Washington Univ in St. Louis 2012  
BS Colorado St University 2001  
MD Washington Univ in St. Louis 2012

Sydney Marie Nykiel-Bailey, MD  
Assistant Professor of Anesthesiology (primary appointment)  
BS Saint Louis University 2001  
MD University of MO Kansas City 2005

Patrick Ross O'Neill, PhD  
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PhD University of California 2010  
BS University of California 2004

Folasade Oladapo, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD U Medical-Dental Of New Jersey 2008

Lawrence Osei  
Instructor in Clinical Anesthesiology (primary appointment)

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

Arvind Palanisamy, MD, PhD  
Assistant Professor of Anesthesiology (primary appointment)  
MD Tamilnadu Medical University 2000  
PHD All-India Inst of Medical Sci 2003

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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  
Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)  
PhD University of MO Columbia 2013

Pooja Patil, MD  
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MD Shai Medical College 2006

Patricia A. Penkoske, MD  
Instructor in Anesthesiology (primary appointment)  
MD Washington Univ in St. Louis 1974  
BS Lindenwood University 1969

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MD Kent St University 1987

Adrienne Rae Poe, PhD  
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PhD Washington St University 2011

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BS Vanderbilt University 1978  
MME University of MO Columbia 1982  
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Carlos Angel Puyo, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD Juan N Corpas School of Medici 1989

Lesley Kathryn Rao, MD  
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MD Saint Louis University 2006

Rashmi R Rathor, MD  
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MD University of Illinois 2007

Jebadurai Ratnaraj, MD1, MD  
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MD1 Northrhein Westfalen Medical 1985  
MD Madurai Kamaraj University 1979

Eduardo Reina, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD University of Illinois Chicago 2011

Micheal Todd Rice, MD  
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MD Univ of Texas San Antonio 2002

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Assistant Professor of Surgery (Cardiothoracic Surgery)
MD Washington Univ in St. Louis 2008
BA Columbia College of Phy & Surg 2002

Pedro Rios-Morales, MD
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MD University of Puerto Rico 2010
BS University of Puerto Rico 2005

Stephen L. Ristvedt, PHD, MA
Associate Professor of Anesthesiology
Associate Professor of Psychiatry
PHD University of Pennsylvania 1989
MA University of Pennsylvania 1983
BA University of Minnesota 1981

Evan Ward Roller, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Cincinnati 2010

S

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Assistant Professor of Surgery (Cardiothoracic Surgery)
BS State Univ of NY Buffalo 1996
MD Royal College of Surgeons 2001

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Assistant Professor of Anesthesiology (primary appointment)
BS Simpson College 2004
MD University of MO Columbia 2008

Monica Sala-Rabanal, PHD
Instructor in Anesthesiology (primary appointment)
Instructor in Cell Biology and Physiology
BS University of Barcelona 1997
PHD University of Barcelona 2003

Vijaya K Samineni, PHD
Instructor in Anesthesiology (primary appointment)
PHD Southern Illinois University 2013

Charles R Schrock, MD
Associate Professor of Anesthesiology (primary appointment)
MD University of MO Columbia 1991
BS University of Notre Dame 1986

Anne Stella Sebastiani, MD
Instructor in Anesthesiology (primary appointment)
MD Johannes Gutenberg University 2008

Karen Seibert, MA, PHD
Professor of Anesthesiology (primary appointment)
Professor of Genetics
Professor of Pathology and Immunology
BS Northwestern University 1981

MA University of Toledo 1983
PHD Vanderbilt University 1987

James Serot, MD
Assistant Professor of Anesthesiology (primary appointment)
MD Loyola University Chicago 2006

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

Anshuman Sharma, MD
Professor of Anesthesiology (primary appointment)
MD Institute of Medical Science 1990
BA Government Medical College 1987

Andrew John Shepherd, PHD
Instructor in Anesthesiology (primary appointment)
PHD University of Manchester 2006

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 (Pending Executive Faculty Approval) (primary appointment)
MD Christian Medical College 1994

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

Martha Zorko Szabo, MD
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MD Medical College of Ohio 1990

T

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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

Douglas Royce Thompson, MD
Associate Professor of Anesthesiology (primary appointment)
MD University of CA San Diego 2003
BS University of CA San Diego 1998
Courses

M10 Anesth 805 Anesthesiology
This clinical elective is designed to familiarize the student with basic aspects of anesthesia practice. The primary teaching method is patient care in a clinical setting (one-on-one). The student will learn the basics of preoperative evaluation of surgical patients, the use of intraoperative monitoring in patient management and postoperative care. 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 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. Note: Presence and participation in the three Friday Simulator Sessions and the Presentation on the last day of the rotation are required to receive a grade. If there is a conflict with attendance, prior arrangements can be made to accommodate the student.

M10 Anesth 811 Cardiothoracic Anesthesiology
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 anesthesiology 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 Anesthesia
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 four weeks 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 will also have an opportunity to learn the management of some common medical emergencies in the Clinical Simulation Center.

M10 Anesth 819 Cardiothoracic Critical Care
This clinical elective offers practical experience in the postoperative management of cardiothoracic patients. The student will be fully integrated into the intensive care team 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 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 well as ventilator management. Students will also see and help manage patients with unique physiology such as those patients on ventricular assist devices, and on ECMO. We also have a very busy heart and lung transplantation program at the hospital — 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 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. Students will be required to present on any topic of their choice relevant to the cardiothoracic ICU during the block.

M10 Anesth 820 Critical Care
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 821B Pain Management - Missouri Baptist Medical Center
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 Missouri Baptist Medical Center with focus adjusted to meet student’s interest and career plans.

M10 Anesth 822 Anesthesia for Neurosurgery
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 Anesthesia
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.