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, MBCH. 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, MBCH; Evan Kharasch, MD, PhD; Peter Nagele, MD; 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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Assistant Professor of Anesthesiology (primary appointment)
Assistant Professor of Emergency Medicine in Medicine
MD University of Pittsburgh 2007
M PH University of Pittsburgh 2007

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MBBS Liaquat Medical College 1969
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PHD University of Surrey 2009

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BS Rutgers University 2008  
BS1 Rutgers University 2008

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Professor of Anesthesiology (primary appointment)  
Professor of Surgery (Cardiothoracic Surgery)  
MBBCH University of the Witwatersra 1991

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MD Ain Shams University 1977

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MD Washington Univ in St. Louis 2006

Walter A Boyle III, MD  
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Assistant Professor of Developmental Biology  
Professor of Surgery (General Surgery)  
MD University of CA San Francisco 1977  
BS University of CA San Francisco 1974

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Associate Professor of Neuroscience  
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Zhoufeng Chen, PHD, MS  
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Professor of Developmental Biology  
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Ziwei Chen, PHD, MBBS, MS  
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MD New York University 1978
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MD Southern Illinois University 2006
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Professor of Anesthesiology (primary appointment)
MD University of London 1986

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MD Loyola University Chicago 1985
BS University of Notre Dame 1980

Judith P Golden, MA, PHD
Assistant Professor of Anesthesiology (primary appointment)
BS Hofstra University 1984
MA Hofstra University 1986
<table>
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<tr>
<th>Name</th>
<th>Title</th>
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<tr>
<td>Vivian Maria Gonzalez-Perez, PHD</td>
<td>Instructor in Anesthesiology (primary appointment)</td>
<td>PHD Saint Louis University 1994</td>
</tr>
<tr>
<td>Thomas J Graetz, MD</td>
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<td>MD Saint Louis University 2005</td>
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<tr>
<td>Stephen H Gregory, MD</td>
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<td>MD Saint Louis University 2012</td>
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<tr>
<td>Russell J.I. Groener, MBCHB</td>
<td>Associate Professor of Anesthesiology (primary appointment)</td>
<td>MBCHB University of Cape Town 1983</td>
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<tr>
<td>Anthony Herbert Guarino, MD, MA</td>
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<td>MD University of Maryland 1992 BA Yale University 1986 MA Yale University 1988</td>
</tr>
<tr>
<td>Ryan C Guffey, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Wayne State University 2007</td>
</tr>
<tr>
<td>Charles B Hantler, MD, MA</td>
<td>Professor of Anesthesiology (primary appointment)</td>
<td>BS Davenport University 1971 MD Davenport University 1977 MA Davenport University 1973</td>
</tr>
<tr>
<td>Courtney Alan Hardy, MD</td>
<td>Associate Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)</td>
<td>MD Loyola University Chicago 2000</td>
</tr>
<tr>
<td>Simon Haroutounian, PHD, MA</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>PHD Hebrew University 2011 MA Hebrew University 2005</td>
</tr>
<tr>
<td>Daniel Luke Helsten, MD</td>
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</tr>
<tr>
<td>Mohammad Anas Helwani, MD</td>
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<td>MD Damascus University 1998</td>
</tr>
<tr>
<td>Robert E Herold, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Washington Univ in St. Louis 1974</td>
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<tr>
<td>Omokhaye M Higo, MBBS</td>
<td>Associate Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)</td>
<td>BS University of Ibadan 1984 MBBS University of Ilorin 1990</td>
</tr>
<tr>
<td>Gary E Hirschberg, MD</td>
<td>Professor Emeritus of Anesthesiology (primary appointment)</td>
<td>MD Hahnemann University 1972 BA Princeton University 1968</td>
</tr>
<tr>
<td>Richard S Hotchkiss, MD</td>
<td>Professor of Anesthesiology (primary appointment)</td>
<td>MD University of Virginia 1976</td>
</tr>
<tr>
<td>Hawpeng Stephen Hsu, MD, MS</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Taipei Medical University 1983 BA Georgia St University 1991 MS Emory University 1993</td>
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<tr>
<td>Hongzhen Hu, PHD</td>
<td>Associate Professor of Anesthesiology (primary appointment)</td>
<td>MD Ohio State University 2004</td>
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<tr>
<td>Rocco Hueneke, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Martin-Luther-University 1996</td>
</tr>
<tr>
<td>Catherine Ifune, MD, PHD</td>
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<td>BS California Institute Technolo 1985 MD Washington Univ in St. Louis 1997 PHD Washington Univ in St. Louis 1990</td>
</tr>
<tr>
<td>Selma E.h.o. Ishag, PHD, MD</td>
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<td>PHD University of Khartoum 1996 MD University of Khartoum 1987</td>
</tr>
<tr>
<td>Daniel Thomas Kane, MD</td>
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<td>MD Washington Univ in St. Louis 1989</td>
</tr>
<tr>
<td>Ivan M Kangrca, MD, PHD</td>
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</tr>
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<td>MD1 School Not Listed 1998</td>
</tr>
</tbody>
</table>
MD Athens University Med School 1988

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Assistant Professor of Emergency Medicine in Medicine
MD Loyola University Chicago 2006

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BA Vanderbilt University 1985
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MBBS Bangalore University 1994

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Professor of Neuroscience
PHD University of Oregon 1979
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Assistant Professor of Ophthalmology and Visual Sciences
PHD Chinese Academy of Sciences 2004
BS Wuhan University 1998

Ellen M Lockhart, MD
Professor of Anesthesiology (primary appointment)
Vice Chairman of Anesthesiology
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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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Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
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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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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Durga Prasanna Mohapatra, PHD  
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MD Washington Univ in St. Louis 2012  
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BA Macmurray College 1969  
PHD Saint Louis University 1974  

David J Murray, MD  
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BS University of Saskatchewan 1973  
MD University of Saskatchewan 1978  

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

Peter Nagele, MD  
Associate Professor of Anesthesiology (primary appointment)  
Associate Professor of Genetics  
MD Univ. of Innsbruck - Medical 1995  

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MD University of MO Columbia 1982  
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MD University of Iowa 2003  
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MD U Medical-Dental Of New Jersey 2008  

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MD Tamilnadu Medical University 2000  
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Patricia A. Penkoske, MD  
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MD Saint Louis University 1987  
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MME University of MO Columbia 1982  

Carlos Angel Puyo, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD Juan N Corpas School of Medici 1989  

Lesley Kathryn Rao, MD  
Assistant Professor of Anesthesiology (primary appointment)
<table>
<thead>
<tr>
<th>Name</th>
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<th>Institution/Year</th>
</tr>
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<tr>
<td>Rashmi R Rathor, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD University of Illinois 2007</td>
</tr>
<tr>
<td>Jebadurai Ratnaraj, MD1, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Northrhine Westfalen Medical 1985 MD Madurai Kamaraj University 1979</td>
</tr>
<tr>
<td>Eduardo Reina, MD</td>
<td>Instructor in Anesthesiology (primary appointment)</td>
<td>MD University of Illinois Chicago 2011</td>
</tr>
<tr>
<td>Micheal Todd Rice, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Univ of Texas San Antonio 2002</td>
</tr>
<tr>
<td>Clare H Ridley, MD</td>
<td>Assistant Professor of Surgery (Cardiothoracic Surgery)</td>
<td>BA Columbia College of Phy &amp; Surg 2002 MD Washington Univ in St. Louis 2008</td>
</tr>
<tr>
<td>Stephen L. Ristvedt, PHD, MA</td>
<td>Associate Professor of Anesthesiology</td>
<td>Associate Professor of Psychiatry PHD University of Pennsylvania 1989 MA University of Pennsylvania 1983 BA University of Minnesota 1981</td>
</tr>
<tr>
<td>Evan Ward Roller, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD University of Cincinnati 2010</td>
</tr>
<tr>
<td>Anadn Sadiq, MD</td>
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<td>Assistant Professor of Surgery (Cardiothoracic Surgery) MD Royal College of Surgeons 2001 BS State Univ of NY Buffalo 1996</td>
</tr>
<tr>
<td>Angela K Saettele, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>BS Simpson College 2004 MD University of MO Columbia 2008</td>
</tr>
<tr>
<td>Charles R Schrock, MD</td>
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</tr>
<tr>
<td>Karen Seibert, PHD, MA</td>
<td>Professor of Anesthesiology (primary appointment) Professor of Genetics Professor of Pathology and Immunology PHD Vanderbilt University 1987 MA University of Toledo 1983</td>
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<tr>
<td>James Serot, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Loyola University Chicago 2006</td>
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<tr>
<td>Rajiv K Shah, MD</td>
<td>Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)</td>
<td>MD University of Rochester 2010</td>
</tr>
<tr>
<td>Sonia Malhotra Shahrawat, MD</td>
<td>Instructor in Anesthesiology (primary appointment)</td>
<td>MD Bharati Vidyapeeth Med College 2000 BS Tufts University 2001</td>
</tr>
<tr>
<td>Anshuman Sharma, MD</td>
<td>Professor of Anesthesiology (primary appointment)</td>
<td>MD Institute of Medical Science 1990 BA Government Medical College 1987</td>
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<tr>
<td>Andrew John Shepherd, PhD</td>
<td>Instructor in Anesthesiology (primary appointment)</td>
<td>PHD University of Manchester 2006</td>
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<tr>
<td>John Charles Spittler, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>BS University of MO Columbia 1998 MD University of MO Columbia 2003</td>
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<tr>
<td>Tracey Wagner Stevens, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Washington Univ in St. Louis 2008</td>
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<td>Sanjay Subramanian, MD</td>
<td>Associate Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)</td>
<td>MD Christian Medical College 1994</td>
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<tr>
<td>Robert A Swarm, MD</td>
<td>Professor of Anesthesiology (primary appointment)</td>
<td>BA Oberlin College 1978 MD Washington Univ in St. Louis 1983</td>
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<tr>
<td>Martha Zorko Szabo, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>MD Medical College of Ohio 1990</td>
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<tr>
<td>Rene Tempelhoff, MD</td>
<td>Professor of Anesthesiology (primary appointment) Professor of Neurological Surgery</td>
<td>MD University of Lyon 1974</td>
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<tr>
<td>Raghu P Terkonda, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>BS University of MO Columbia 1983 MD University of MO Columbia 1987</td>
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<tr>
<td>Douglas Royce Thompson, MD</td>
<td>Assistant Professor of Anesthesiology (primary appointment)</td>
<td>BS Northwestern University 1981</td>
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</table>
Associate Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
BS University of CA San Diego 1998
MD University of CA San Diego 2003

V

Swarup Varaday, MBBS
Assistant Professor of Anesthesiology (primary appointment)
MBBS Andhra University 1989

Molly Rose Vila, MD
Instructor in Anesthesiology (primary appointment)
MD U Medical-Dental Of New Jersey 2011

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

W

Ashley Brooke Weinhold, MD
Instructor in Anesthesiology (primary appointment)
MD University of Arkansas 2011

Timothy P Welch, MD
Assistant Professor of Anesthesiology (primary appointment)
Assistant Professor of Pediatrics
MD University of Cincinnati 2004

Brian T Wessman, MD
Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Emergency Medicine in Medicine
MD Commonwealth College 2005
BS College of William and Mary 2000

Troy S Wildes, MD
Associate Professor of Anesthesiology (primary appointment)
MD Washington Univ in St. Louis 2002
BS Illinois Wesleyan University 1998

Brett D Wolff, MD
Associate Professor of Anesthesiology (primary appointment)
BA Indiana University Bloomington 1981
MD Indiana University Bloomington 1985

X

Xiaoming Xia, MS, PHD
Assistant Professor of Anesthesiology (primary appointment)
BS Fudan University 1984
MS Shanghai Jiao Tong University 1987
PHD Vollum Institute OHSU 1998

Y

Branden Edward Yee, MD
Assistant Professor of Anesthesiology (primary appointment)
MD Tufts University 2008
BS Tufts University 2004

Xiaobin Yi, MD

Associate Professor of Anesthesiology (primary appointment)
MD Hunan Medical University 1985

Alexander H Young, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Arkansas 1990
BA University of Mississippi 1986

Anna Rebecca Young, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Kentucky 2008
BS Asbury College 2004

Z

Jessica Ann Zenga, MD
Assistant Professor of Anesthesiology (primary appointment)
MD Saint Louis University 2006

Yu Zhou, PHD, MS
Instructor in Anesthesiology (primary appointment)
BS Wuhan University 1996
PHD State Univ of NY Buffalo 2005
MS Zhejiang Medical University 1999

Jonathan Kramer Zoller, MD
Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)
MD Tulane University 2009

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 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 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 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 preanesthetic 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
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 be afforded the opportunity to follow specific patients over the course of their stay on 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. Cardiorespiratory physiology and pharmacology will be demonstrated at the patients’ bedside, an invaluable and unforgettable learning experience. Students will have numerous opportunities to learn and sometimes assist with procedures, such as central lines, chest tubes, bronchoscopy and pulmonary artery catheter insertion. Principles of management and resuscitation of hemodynamically unstable patients following surgery will be emphasized. Students will also see and help manage patients on ventricular assist devices, ECMO, and following heart and lung transplantation. 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 cardiac echo exams. Students will be encouraged to present on their patient at morning ward rounds, during which constructive feedback and interactive teaching will occur. Students will present on a topic related to one of their patients at the end of 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 noninvasive and invasive hemodynamic monitoring, and techniques for airway management and pulmonary support in respiratory failure. Basic knowledge and skills in the management of neurologic injuries, liver and/or renal 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 provide adequate nutrition. Practical experience is gained in placement of vascular access devices, interpretation of 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.