

**UNIVERSITY OF TEXAS MEDICAL BRANCH
AT GALVESTON**

CURRICULUM VITAE

NAME: **Donald Sanderson Prough, M.D.** DATE: July 13, 2011

PRESENT POSITION AND ADDRESS: Professor and Chairman
Rebecca Terry White Distinguished Chair
Department of Anesthesiology
The University of Texas Medical Branch at Galveston
Galveston, Texas 77555-0591
Telephone: (409) 772-2965
FAX: (409) 772-4166
E-Mail: dsprough@utmb.edu

Scientific Staff, Courtesy Clinical Staff
Shriners Burns Institute
Galveston, Texas 77550-2778

BIOGRAPHICAL:

BIRTHPLACE: Huntingdon, Pennsylvania
BIRTH DATE: March 21, 1947
CITIZENSHIP: United States of America
HOME ADDRESS: 2602 Avenue O
Galveston, Texas 77550
(409) 763-8552

EDUCATION:

06/1973 Milton S. Hershey Medical Center
Pennsylvania State University
Hershey, Pennsylvania
M.D.

06/1969 Lafayette College
Easton, Pennsylvania
B.A. (English)

Postdoctoral training:

06/1976–08/1976 Fellowship, Cardiac Anesthesia
University of Alabama (Birmingham, Alabama)
09/1976–08/1977 Fellowship, Critical Care Medicine, National Naval Medical Center (Bethesda, MD)
07/1974–06/1976 Anesthesiology Residency, National Naval Medical Center (Bethesda, MD)
07/1973–06/1974 Anesthesiology Internship
National Naval Medical Center (Bethesda, MD)

PROFESSIONAL AND TEACHING EXPERIENCE:

The University of Texas Medical Branch, Galveston, TX:

01/1992-Present Professor and Chairman
Rebecca Terry White Distinguished Chair
Department of Anesthesiology
Professor of Neurology
Professor of Pathology
Professor of Respiratory Care (School of Allied Health Sciences)

Medical Director, Respiratory Care Program, School of Allied Health Sciences
Assistant Director for Clinical Research (Center for Biomedical Engineering)
Associate Medical Director of Respiratory Care

Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, North Carolina:

1985-1992 Medical Director, Regional Cerebral Blood Flow Laboratory
1991-1992 Professor of Anesthesiology-Critical Care
1991-1992 Professor of Neurology
1985-1991 Associate Professor of Anesthesia and Neurology
1984-1991 Head, Section on Critical Care, Department of Anesthesia
1980-1985 Assistant Professor of Anesthesia and Neurology

North Carolina Baptist Hospital, Winston-Salem, North Carolina:

1987-1992 Co-Director, ICU Laboratory
1987-1992 Co-Director, Respiratory Care
1986-1992 Associate Chief of Professional Services
1980-1981; Co-Director, Intensive Care Unit
1986-1992
1988-1991 Adjunct Associate Professor, School of Nursing, University of North Carolina at Greensboro
1981-1987 Medical Director, ICU Laboratory
1981-1987 Medical Director, Respiratory Care
1981-1986 Medical Director, Intensive Care Unit

National Naval Medical Center, Bethesda, Maryland:

1978-1980 Assistant Professor, Uniformed Services University of Health Sciences
1980 Head, Cardiac Anesthesia
1977-1980 Head, Intensive Care Unit
1977-1979 Staff Cardiac Anesthesiologist
1977-1979 Head, Recovery Room

RESEARCH ACTIVITIES:

Grants:

- 2011 – 2013 “Rapid and Safe Assessment of Circulatory Shock with a Novel Noninvasive Technique”
Dept. of the Army, Military Medical Research and Development. (Principal Investigator).
Total Cost: \$1,197,249.
- 2010 – 2013 “Non-invasive Monitoring of Cerebral Venous Saturation in Patients with Traumatic Brain Injury.” Dept. of the Army, Military Medical Research and Development. Role: Principal Investigator. Total cost: \$ 2,160,487.
- 2009- 2010 “Noninvasive Hemoglobin Monitor for Neonates.” Texas Emerging Technology Fund. Role: Co-Principal Investigator. Total cost: \$80,000.
- 2008-2013 “Mission Connect Mild TBI Translational Research Consortium, Subproject 3.6: the use of stem cell-released neurotrophic factor, GDNF, to improve cognitive recovery after TBI.” Co-investigator with Ping Wu, PhD, Partnering PI of subproject 3.6. Total Cost: \$1,359,000.
- 2005-2006 “Strategies to Improve Neurologic Function After Traumatic Brain Injury.” (Equipment Grant). Co-Principal Investigator with Helen Hellmich, PhD. Supported by Moody Endowment. Total Cost: \$183,000.
- 2005-2006 Strategies to Improve Neurologic Function After Traumatic Brain Injury.” Co-Principal Investigator with Helen Hellmich, PhD. Supported by Mission Connect. Total Cost: \$326,000.
- 2004-2007 “Continuous Glucose Monitoring in Critically Ill Patients.” Co-Investigator. Supported by National Institutes of Health (NIBIB). R01 EB01467-01A1. (Principal Investigator – Rinat Esenaliev, PhD). Annual Direct Costs: \$202,500.

- 2003-2006 "Optoacoustic Monitoring of Cerebral Blood Oxygenation." Co-Investigator. Supported by NINDS, #R01 NS044345. (Principal Investigator – Rinat Esenaliev, PhD).
- 2002-2007 "Zinc Neurotoxicity in Traumatic Brain Injury." Supported by National Institutes of Health. Principal Investigator. #1 R01 NS042849-01A1. Annual Direct Costs: \$250,000.
- 2002-2005 "Novel Sensor for Measurement of Blood Oxygenation." Co-Investigator. Supported by: National Institutes of Health (NIBIB). R01 EB00763. (Principal Investigator – Rinat Esenaliev, PhD).
- 2002-2004 "Optoacoustic, Noninvasive, Real-time, Continuous Monitoring of Cerebral Blood Oxygenation." Co-Investigator. Supported by NMTB. #2001-71-UTMB. (Principal Investigator-Rinat Esenaliev, PhD).
- 2002-2004 "Does Nitric Oxide Control Synaptic Zinc Release?" Co-Investigator. Supported by: National Institutes of Health/NINDS. 1 R21 NS42882-01. (Principal Investigator – Christopher Frederickson, PhD).
- 2002-2002 "Traumatic Brain Injury, Aging and Zinc Neurotoxicity." Supported by UTMB Pilot Grants in the Neurosciences. PRN Proposal No. 4008-02. \$50,000.00.
- 2000-2003 "Titrated Resuscitation of Hemorrhage Shock." Co-Investigator. Supported by Office of Naval Research. N00014-00-1-0362. (Principal Investigator – George Kramer, PhD).
- 2000-2003 "Small Volume Resuscitation After Traumatic Brain Injury and Hemorrhage Hypotension." Co-Investigator. Supported by the Office of Naval Research. N00014-01-0135. (Principal Investigator – Douglas S. DeWitt, PhD).
- 2000-2003 "Optoacoustic Monitoring of Cerebral Blood Oxygenation." Co-Investigator. Supported by National Institutes of Health. R21 NS 40531. (Principal Investigator – Rinat Esenaliev, PhD)
- 2000-2002 "Optoacoustic Monitoring of Cerebral Blood Oxygenation." Supported by: Department of Health and Human Services Public Health Service. R-21, Neurosciences Technology Development. Co-Investigator, 5% effort. (Principal Investigator - Rinat Esenaliev, PhD)
- 2000-2002 "Titrated Resuscitation of Hemorrhagic Shock." Supported by: Office of Naval Research. Co-Investigator, 10% effort. (Principal Investigator, George Kramer- PhD). Annual Direct costs: \$135,346.
- 2000-2001 "NIRS Guided Resuscitation of Hemorrhagic Shock." Supported by: National Medical Technology Testbed. Consultant, 5%effort. (Principal Investigator - George Kramer, PhD) Annual Direct Costs: \$164,819.
- 2000-2001 "Novel Optoacoustic Monitoring System for Non-Invasive Measurement of Blood Oxygenation in Brain." Supported by: National Medical Technology Testbed. Co-Investigator, 5% effort. (Principal Investigator - Rinat Esenaliev, PhD). Annual Direct Costs: \$89,245.
- 1996-1999 "Superoxide and Nitric Oxide Mechanisms in Traumatic Brain Injury and Hemorrhagic Hypotension." Co-Investigator, 5% effort. Supported by: US Army Medical Research and Material Command. Annual Direct Costs: \$557,947. DAMD 17-97-1-7008. (Principal Investigator - Douglas DeWitt, PhD.)
- 1992-1996 "Vascular Effects of Eicosanoids & O₂ Radicals in Trauma." Co-Investigator, 10% effort. Supported by: National Institute of Neurological Disorders and Stroke. Annual Direct Costs: \$118,400, NS19355. (Principal Investigator - Douglas DeWitt, Ph.D.)

- 1991-1996 "Cardiac Surgery and Cerebrovascular Complications." Program Director (at Bowman Gray School of Medicine), 25%. Supported by: National Institute of Neurologic Disorders and Stroke. Annual Direct Costs: \$502,678. 1 P01 NS27500-01A2. (Resigned as Program Director to accept Chair at UTMB, January 1992; the Program was funded through 1996 at Bowman Gray School of Medicine).
- 1991-1992 "Dose-ranging Study of PEG-Superoxide Dismutase Effects on Neurologic Outcome Following Cardiac Surgery." Principal Investigator. Supported by: Sterling Drug, Inc. Total Direct Costs: \$817,200.
- 1988-1991 "Determinants of Cognitive Function in COPD." Co-Investigator, A/R. Supported by: National Institute of Neurology and Communicative Disorders and Stroke. Annual Direct Costs: \$125,912. #1 RO1 NS26351-01. (Principal Investigator - David Bowton, M.D.)
- 1986-1989 "Regional Brain Blood Flow During Cardiopulmonary Bypass." Principal Investigator. Supported by: National Institutes of Health, Department of Health and Human Services. Annual Direct Costs: \$124,204 #HL33869-01A1.
- 1986-1988 "Hypertonic/Hyperoncotic Resuscitation from Shock: Reduced Volume Requirement and Lower Intracranial Pressure." Principal Investigator. Supported by: U.S. Army Medical Research Acquisition Agency. Annual Direct Costs: \$123,996. DAMD 17-86-C-6181.
- 1986-1987 "Cerebral Protection by U-50, 488E, a Kappa Opioid Agonist." Co-Investigator. Supported by: American Heart Association, \$14,950, #1986-1987-A-41. (Principal Investigator - Patricia Petrozza, M.D.)
- 1986-1987 "Cerebrovascular Responses to Shock and Resuscitation." Principal Investigator. Supported by: Department of Defense, \$179,975. #DAAL03-86-60140.

PATENTS:

- 2002 # 6,498,942 B1 "Optoacoustic Monitoring of Blood Oxygenation," Dr. Rinat Esenaliev, Dr. Massoud Motamedi, Dr. Donald Prough, Dr. Alexander Oraevsky
- 2004 # 6,751,490 "Continuous optoacoustic monitoring of hemoglobin concentration and hematocrit," Dr. Rinat Esenaliev, Dr. Massoud Motamedi, Dr. Donald Prough.
- 2008 #7,430,445 "Noninvasive blood analysis by optical probing of the veins under the tongue," Dr. Rinat Esenaliev, Dr. Donald Prough.
- 2007 Co-founder, Noninvasix, Inc. (with Dr. Rinat Esenaliev and The University of Texas Medical Branch)

PENDING:

- 2007 "Noninvasive glucose sensing methods and systems," Dr. Rinat Esenaliev, Dr. Donald Prough. #0255141
- 2007 "Continuous, noninvasive glucose monitoring in diabetic, non-diabetic, and critically ill patients," Dr. Donald Prough, Dr. Rinat Esenaliev, Dr. Massoud Motamedi. #0232872
- 2007 "Noninvasive, accurate glucose monitoring with OCT by using tissue warming and temperature control," Dr. Rinat Esenaliev, Dr. Donald Prough. #0232873
- 2008 "Optoacoustic monitoring of multiple parameters," Dr. Donald Prough, Dr. Rinat Esenaliev, Dr. Donald Deyo, Yuri Petrov, Irina Petrova

COMMITTEE RESPONSIBILITIES:

National:

2007-Present National Board for Respiratory Care (NBRC), Board of Trustees
2004-2005 Scientist Reviewer
Uniform Services University Health Science Intramural Grant Program
2004-2005 Expert Panel, Advanced First-Responder Resuscitation Fluids
Life Sciences Research Office
1998-2003 Anesthesiology and Respiratory Therapy Devices Panel of the Medical Devices Advisory
Committee, Center for Devices and Radiological Health, Food and Drug
Administration (Chair, 2002-2003)
2008-2010 FDA Advisory Committees
Anesthetic and Life Support Drugs Advisory Committee (ALSDAC)
1995-Present Specialist Site Visitor, Anesthesiology Residency Review Committee
1990-Present American Board of Anesthesiology, Associate Examiner (Senior)
1986-Present Association of University Anesthesiologists (*Elected)
2004-2005 Past President
2002-2004 President
2001-2002 President Elect
1992-1995 Councilor
1986-Present American Society of Critical Care Anesthesiologists
1999-Present Past President's Council
1987-1988 President
1986-1987 Charter Council Member
1977-Present American Society of Anesthesiologists (ASA)
2010-2012 ASA Committee on Respiratory Care
1996-2002 ASA Committee on Refresher Courses
2001 Chair
2000 Vice Chair
1988-1996 ASA Committee on Research
1984-1991 ASA Committee on Acute Medicine
1988 Chair
1986 ASA Program Committee, Subcommittee on Critical Care
1974-Present Society of Critical Care Medicine (SCCM)
1986-Present SCCM Section on Anesthesia
1987-1988 Chair
1986-1987 Secretary
2007-2010 Adult MCCKAP Committee
1996-1998 SCCM Committee on Liaison Activities
1997 SCCM Founders Grant Review Committee
1996-1997 SCCM Critical Care Self-Assessment Program
1994-1997 SCCM Council Member
1994-1997 SCCM Graduate Medical Education Committee
1994-1997 SCCM Chair, Post-Fellowship Grant Review Committee
1988-1993 SCCM Program Committee
1991-1992 Co-Chair, 1993 SCCM Annual Meeting
1992 SCCM Editorial Panel, Multidisc. Crit. Care Knowledge Assess. Prog.
1992 SCCM Critical Care Case Curriculum Committee
1980-Present International Anesthesia Research Society (IARS)
1996-2008 IARS Board of Trustees
2006-2008 Chair

1998-2001 IARS Annual Congress Program Co-Chair
1998-Present IARS Research Awards Committee
2000-2005 Chair
2002-Present American Heart Association, Fellow of the Council on Cardio-Thoracic and Vascular Surgery
(FAHA-*Elected)
1987-1999 National Institutes of Health Committees
February 25-26, 1999 Consultant, Clinical Service Center, Intramural Program
October 15-16, 1998 Ad hoc member, NSD-A Committee, NINDS
June 11-13, 1992 Ad hoc member, Program Project Site Visit Committee, NINCDS
July 7-9, 1987 Ad hoc member, Program Project Site Visit Committee, NINCDS
2000-2003 Data Safety Monitoring Board, IHAST-II Clinical Trial, NINDS
2004-Present Data Safety Monitoring Board, INO Therapeutics
1992-1996 Safety Monitoring Committee, Program Project "Cardiac Surgery and Cerebrovascular
Complications," Department of Anesthesia, Bowman Gray School of Medicine
1994-1995 Safety Committee, Burroughs Wellcome Co. - A Double-Blinded Randomized, Multicenter
Study of the Safety and Recovery Profiles of Tracrium®, Norcuron®, and Pavulon® in
Intensive Care Patients Who Require Neuromuscular Blocking Agents to Facilitate
Mechanical Ventilation
1988-1989 Eastman Program Council
1985-1986 Ninth World Congress of Anesthesiologists Committee on Critical Care

Regional:

1981-1991 Carolina/Virginia Society of Critical Care Medicine
1982-1985 Chairman, Education Committee
1983,1984 Program Chairman, Annual Educational Meeting
1987-1989 Committee on Annual Meeting
1983-1987 Executive Council
1985-1986 President
1987-1990 Piedmont Medicine Foundation, Board of Directors
1987-1991 Forsyth County Medicine/Business Coalition
1989-1990 President
1990-1991 Chairman of the Board
1995-2000 Program Advisory Committee, Galveston College
Paramedic and Emergency Medical Services
1999-2001t Emergency Medical Service Advisory Committee, Houston Community College
1992-Present Texas Society of Anesthesiologists
1992-Present Education Committee
1997-1998 Chair, Education Committee
1995-1998 District 8 delegate
1997-1998 Scientific Program Coordinator
1998-2001 District 5 delegate
1992-Present Texas Medical Association
1998-1999 *Ad hoc* Committee for Academic Physicians
2000 Subcommittee for Academic Physicians
2001-2002 Legislative Affairs Committee

The University Of Texas Medical Branch:

2006-2010 Strategic Executive Council
2006-2010 Chief Physician Executive, Faculty Group Practice
2006-2007 Peri-operative Governance Committee
2001-2002 Senior Associate Dean for Faculty Practice *ad interim*
2001-Present Research Facilities Planning Committee
1999-2002 Cardiology Service Line Board of Directors
1999-2002 School of Medicine Budget Committee
1999-2000 Chair, Mission-Based Management Steering Group
1998-2002 Institutional Conflict of Interest Committee
1998-Present Grants Review Committee, Shriner's Burns Institute, Galveston
1998-2002 UTMB Clinical Executive Committee
1999-2000 Chair

1997-2001 Credentials Committee, UTMB Healthcare Systems, Inc.
1994-1998 Chair, Day Surgery Focus Committee
1994-2000 Professional Liability Review Committee
1993-2005 Chair, Respiratory Care Services Advisory Committee
2005-Present Co-Chair
1993-Present Consultant, Acute Care Laboratory
1993-2001 GME Advisory Committee
1992-Present Intensive Care Units Advisory Committee
1992-Present Disaster Committee
1992-Present Executive Committee, Faculty of Medicine
1992-Present MSRDP (Physicians' Practice Plan) Board of Directors
1996 - 1998 Secretary
1994 - 1996 Chair
1996 -Present Billing and Finance Committee
1992-Present Executive Committee, Medical Staff
1992-2007 Chairman's Caucus
1995 Chair
1994 Secretary
1999-2001 Physician-In-Chief, UTMB Hospitals
2000 *Ad hoc* Committee on Health Care Safety
1997-Present General Clinical Research Center (GCRC) Advisory Committee
1997-1999 Cell Biology Graduate Program, Credentials Committee
1995 -1998 UT-Med Un-sponsored Care & Medicaid Committee
1995 -Present Board of Advisors, UTMB Center on Aging
1994 Chair, Ad Hoc Committee on Guidelines for Group Practice
1994-1995 Chair, Search Committee for Chair, Department of Surgery
1996-1997 Search Committee for Chair, Department of Pharmacology
2004 Vice-Chair, Search Committee for Chair, Department of Orthopaedic Surgery
1994-2000 Quality of Care Committee
1996-1998 Chair
1994-1996 Administrative Council
1994-1995 Chair, Committee for Physician's Health & Rehabilitation
1993-1995 Chair, *Ad hoc* Committee on Residents' Assistance Program
1993-1994 Resource Utilization Committee
1992-1994 Medical Director, SICU
2004-Present Medical Director, SICU
1992-1993 Medical Director, Acute Care Laboratory

North Carolina Baptist Hospital:

1989-1992 Clinical Care Committee
1989-1992 Risk and Insurance Management Advisory Council
1989-1992 Executive Council
1989-1992 Claims Review Committee
1989-1992 Chair, Risk Prevention Committee
1982-1992 Medical Director/Co-Director, Respiratory Care
1980-1992 Medical Director/Co-Director, Multidisciplinary ICU
1986-1991 Associate Chief of Professional Services
1986-1991 Capital Equipment Committee
1986-1991 Executive Committee of the Medical Staff
1986-1991 Medical Center Ethics Committee
1986-1991 Medical Staff Liaison Committee
1985-1991 Ad Hoc Ethics Committee
1981-1991 Code Blue Committee
1981-1991 Infection Control Committee
1981-1991 Intensive Care Unit Committee
1981-1985 Chair
1986-1988 Chair, Ad Hoc Nursing Task Force Committee
1981-1985 Quality Assurance Committee
1982-1983 Chair, Ad Hoc Committee on "No Code" Orders

Bowman Gray School of Medicine:

1989-1992 Clinical Faculty Advisory Council
1990-1991 General Clinical Research Center
1986-1988 Animal Care and Use Committee
1982-1984 Program Chair, "Breath of Spring" Respiratory Therapy Symposium

TEACHING RESPONSIBILITIES:

The University of Texas Medical Branch:

2001-Present Small group facilitator, Practice of Medicine
2001-Present Small group facilitator, Great Syndromes Course
2001-Present Small group facilitator, Renal, Fluids and Electrolytes Course
1998-1999 Introduction to Clinical Medicine, Examiner
1997-1999 Integrated Learning Track, Examiner
1997-1999 Integrated Curriculum Evaluation Exercise, Examiner
1992-Present Teaching Rounds, Surgical Intensive Care Unit
1992-2000 Surgical Intensive Care Unit, Lecture Topics, 2 to 5 per month
1992-Present Lectures, 4 to 6 per year, Dept. of Anesthesiology, Didactic Series
1997 Integrated Learning Track, Tutor
1992-2008 Presided, Mortality and Morbidity Conference, Dept. of Anesthesiology, 12 per year
1992-1996 Presided, Case Conference, Dept. of Anesthesiology, 20 to 25 per year

DISSERTATION COMMITTEES:

2003 Alia Shah, M.D. Master of Medical Science (Pending)
2002 Kirill Larin, Ph.D.
2001 Bryan Hains, Ph.D.
2000 Jing Wu, Ph.D.

GRADUATE STUDENTS SUPERVISED:

2004-Present Bridget Hawkins

RESEARCH MENTORSHIPS:

2006-Present Michael Kinsky, M.D. FAER Grant

PROFESSIONAL MEMBERSHIPS:

1997-Present New York Academy of Sciences
1996-Present Neurotrauma Society
1993-Present American Physiological Society
1994-Present Fellow, Cardiovascular Section
1992-Present Society of Academic Anesthesiology Chairs/Association of Anesthesiology Program Directors
2002-2005 Council Member
1992-Present Texas Medical Association
1992-Present Texas Society of Anesthesiologists
1992-Present Galveston County Medical Society
1986-Present American Society of Critical Care Anesthesiologists
1986-Present Association of University Anesthesiologists (*Elected)
1986-Present American College of Chest Physicians (Fellow, [*Elected] Council on Critical Care, Section on Respiratory Pathophysiology)
1985-Present American Heart Association, Fellow (*Elected)
1985-Present Stroke Council
1993-Present Cardio-Thoracic and Vascular Surgery Council
1984-Present Society of Neurosurgical Anesthesia and Neurological Supportive Care
1980-Present International Anesthesia Research Society
1977-Present American Society of Anesthesiologists

1977-Present Society of Cardiovascular Anesthesiologists
1977-Present Society of Critical Care Medicine
2002 Morton Society (*Elected)
2000 Optical Society of America
1986-1992 Medical Society, State of North Carolina
1981-1991 Carolina/Virginia Society of Critical Care Medicine

SPECIALTY CERTIFICATION:

2008 Recertified, American Board of Anesthesiology (#184-38-2369)
1986 ABA Certificate of Special Competency in Critical Care (#184-38-2369)
1977 Diplomate, American Board of Anesthesiology (#8466)

PROFESSIONAL LICENSURE:

1992 Texas, #J1360
1980 North Carolina, #24493 (Expired due to decision not to renew)
1977-1995 Maryland, #20096 (Expired due to decision not to renew)

HONORS:

2001 Lifetime Achievement Award (American Society of Critical Care Anesthesiologists)
1999 Distinguished Investigator Award (American College of Critical Care Medicine)
1984 B.B. Sankey Award (International Anesthesia Research Society)
1969 Phi Beta Kappa

ADDITIONAL INFORMATION:

Uniformed Service:

Branch: U.S. Naval Reserve, Medical Corps

Dates Served:

2000 Retired with 21 years service
1985-2000 Active Reserve
1990-1991 Operation Desert Storm, Naval Hospital, Charleston, SC
1973-1980 Active Duty, Naval Hospital, Bethesda, MD
1970-1973 Ensign 1915 (Early Commissioning) Program

Commission: Captain, USNR-R

1999-2000 Anesthesiologist, Fleet Hospital 21, Detachment 13
1998-1999 Medical Officer, Houston Marine Corps Reserve, 4th Marine Division, Houston, TX
1996-1998 Officer-in-Charge, PRIMUS Unit
University of Texas Medical Branch, Galveston, Texas
1985-1987 Officer-in-Charge, PRIMUS Unit,
1989-1992 Bowman Gray School of Medicine, Winston-Salem, NC

OTHER PROFESSIONAL APPOINTMENTS AND ACTIVITIES:

Editorial Boards:

2000-Present *Current Opinion in Critical Care*
1994-Present *American Journal of Critical Care*
1994-Present *Critical Care Medicine*
1997-Present Scientific Editor, *Critical Care Medicine*
1988-Present *Journal of Clinical Anesthesia*
1988-2005 *Journal of Neurosurgical Anesthesia*
1996-2001 *Problems in Anesthesia*, (Co-editor with Lee Fleisher, MD)
1988-1997 *Anesthesia and Analgesia*
1991-1997 Section Editor, Neurosurgical Anesthesia, *Anesthesia and Analgesia*
1994-1996 *New Horizons* (Periodic supplement to *Critical Care Medicine*)
2004-2007 *Anesthesiology* (Associate Editorial Board)

Ad hoc reviewer:

Journal of Intensive Care Medicine
Military Medicine

Chest
Archives of Internal Medicine
Annals of Thoracic Surgery
Circulation
Stroke
Lancet

BIBLIOGRAPHY:

Peer Reviewed Journal Articles:

1. Brauer KI, Brauer LP, Prough DS, Rodhe P, Hahn RG, Traber DL, Traber LD, Svensen CH. Hypoproteinemia does not alter plasma volume expansion in response to a 0.9% saline bolus in awake sheep. *Crit Care Med* 2010 Oct;38(10):2011-2015.
2. Li Y, Hawkins BE, DeWitt DS, Prough DS, Maret W. The relationship between transient zinc ion fluctuations and redox signaling in the pathways of secondary cellular injury: relevance to traumatic brain injury. *Brain Res* 2010 May 12;1330:131-141.
3. Svensen CH, Rodhe PM, Prough DS. Pharmacokinetic aspects of fluid therapy. *Best Pract Res Clin Anaesthesiol* 2009 Jun;23(2): 213-224.
4. Petrova IY, Petrov YY, Esenaliev RO, Deyo DJ, Cicensaite I, Prough DS. Noninvasive monitoring of cerebral blood oxygenation in ovine superior sagittal sinus with novel multi-wavelength optoacoustic system. *Opt Express* 2009 Apr 27;17(9):7285-7294.
5. Avila MA, Sell SL, Kadoi Y, Prough DS, Hellmich HL, Velasco M, DeWitt DS. L-Arginine decreases fluid-percussion injury-induced neuronal nitrotyrosine immunoreactivity in rats. *J Cereb Blood Flow & Metab.* 2008 Oct; 28(10):1733-1741.
6. Enkhbaatar P, Esechie A, Wang J, Cox RA, Nakano Y, Hamahata A, Lange M, Traber LD, Prough DS, Herndon DN, Traber DL. Combined anticoagulants ameliorate acute lung injury in sheep after burn and smoke inhalation. *Clin Sci (London)*. 2008,14(4):321-329.
7. Kinsky MP, Vaid SU, Vane LA, Prough DS, Kramer GC. Effect of esmolol on fluid therapy in normovolemia and hypovolemia. *Shock*. 2008, 30(1):55-63.
8. Kramer GC, Kinsky MP, Prough DS, Salinas J, Sondeen JL, Hazel-Scerbo ML, Mitchell CE. Closed-loop control of fluid therapy for treatment of hypovolemia. *J Trauma*. 2008, 64(4 Supple):S333-341.
9. Sell SL, Avila MA, Yu G, Vergara L, Prough DS, Grady JJ, DeWitt DS. Hypertonic resuscitation improves neuronal and behavioral outcomes after traumatic brain injury plus hemorrhage. *Anesthesiology*. 2008,108:873-881.
10. DeWitt DS, Prough DS. Blast-induced brain injury and posttraumatic hypotension and hypoxemia. *J Neurotrauma*. 2008,13(2).
11. Sapozhnikova VV, Juranov RV, Cicensaite I, Esenaliev RO, Prough DS. Effect on blood glucose monitoring of skin pressure exerted by an optical coherence tomography probe. *J Biomed Opt*. 2008,13(2):021112.
12. Avila MA, Sell SL, Kadoi Y, Prough DS, Hellmich HL, Velasco M, DeWitt DS. L-Arginine decreases fluid-percussion injury-induced neuronal nitrotyrosine immunoreactivity in rats. *J Cereb Blood Flow & Metab.* 2008,28(10):1733-1741.

13. Gandhi DS, Weiskopf RB, Jungheinrich C, Koorn R, Miller D, Shangraw RE, Prough DS, Baus D, Bepperling F, Warltier DC. Volume replacement therapy during major orthopedic surgery using Voluven (hydroxyethyl starch 130/0.4) or hetastarch. *Anesthesiology*. 2007,106(6):1120-1127.
14. Enkhbaatar P, Cox RA, Traber LD, Westphal M, Aimalohi E, Morita N, Prough DS, Herndon DN, Traber DL. Aerosolized anticoagulants ameliorate acute lung injury in sheep after exposure to burn and smoke inhalation. *Crit Care Med*. 2007,35(12):2805-2810.
15. Norberg A, Hahn RG, Li H, Olsson J, Prough DS, Borsheim E, Wolf S, Minton R. Population volume kinetics predicts retention of 0.9% saline infused in awake and isoflurane-anesthetized volunteers. *Anesthesiology*,2007,107(1):24-32.
16. Patrikeev I, Petrov YY, Petrova IY, Prough DS, Esenaliev RO. Monte Carlo modeling of optoacoustic signals from human internal jugular veins. *Applied Optics*, 2007,46(21):4820-4827.
17. Hellmich HL, Eidson KA, Capra BA, Garcia JM, Boone DR, Hawkins BE, Uchida T, DeWitt DS, Prough DS. Injured fluoro-jade-positive hippocampal neurons contain high levels of zinc after traumatic brain injury. *Brain Res.*,2007,1127(1):119-126.
18. Mathru M, Pollard V, He G, Varma TK, Ahmad M, Prough DS. Left ventricular diastolic filling characteristics are not impaired but systolic performance was augmented in the early hours of experimental endotoxemia in humans. *Shock*. 2006,25(4):338-343.
19. Hahn RG, Brauer L, Rodhe P, Svensen CH, Prough DS. Isoflurane inhibits compensatory intravascular volume expansion after hemorrhage in sheep. *Anesth Analg.*,2006,103(2):350-358.
20. Shah SA, Prough DS, Garcia JM, DeWitt DS, Hellmich HL. Molecular correlates of age-specific responses to traumatic brain injury in mice. *Exp Gerontol.*, 2006,41(11):1201-1205.
21. Kuranov RV, Sapozhnikova VV, Prough DS, Cicenaite I, Esenaliev RO. In vivo study of glucose-induced changes in skin properties assessed with optical coherence tomography. *Phys Med Biol*, 2006;51(16):3885-3900.
22. Gao J, Parsley MO, Ma L, Tarensenko YI, McAdoo DJ, Prough DS, Wu P. Transplantation of human fetal neural stem cells improves cognitive function in rats after traumatic brain injury. *Exp Neurol*.2006, Oct;201(2):281-292.
23. Prough DS, Kramer GC, Uchida T, Stephenson RT, Hellmich HL, DeWitt DS. Effects of hypertonic arginine on cerebral blood flow and intracranial pressure after traumatic brain injury combined with hemorrhagic hypotension. *Shock*, 2006,26(3):290-295.
24. Frederickson CJ, Gibling LJ, Krezel A, McAdoo DJ, Mueller RN, Zeng Y, Balaji RV, Masalha R, Thompson RB, Fierke CA, Sarvey JM, de Valdenebro M, Prough DS, Zornow MH. Concentrations of extracellular free zinc (pZn)(e) in the central nervous system during simple anesthetization, ischemia and reperfusion. *Experimental Neurol*, 2006,198(2):285-293.
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Periodicals Edited:

1. Prough DS, (guest ed). *Problems in Anesthesia. Fluids and Electrolytes*. Philadelphia: Lippincott Williams and Wilkins, 1999.
2. Arens JF, Prough DS (guest eds). *Problems in Anesthesia. Economic Issues in Current Anesthesia Practice*. Philadelphia: Lippincott Williams and Wilkins, 1998.
3. Coursin DB, Prough DS (guest eds). *Problems in Anesthesia. Controversies in Neuroanesthesia*. Philadelphia: Lippincott-Raven, 1997.
4. Chesnut RM, Prough DS, (guest eds). *Critical Care of Severe Head Injury*. Shoemaker WC, ed. *New Horizons* 3, 1995.

Books Edited:

1. Hahn RG, Prough DS, Svensen CH. *Perioperative Fluid Therapy*: Informa Healthcare, 2007.
2. Murray MJ, Coursin DB, Pearl RG, Prough DS. *Critical Care Medicine Perioperative Management, Second Edition*. Lippincott Williams and Wilkins, 2002.
3. Murray MJ, Coursin DB, Pearl RG, Prough DS. *Critical Care Medicine: Perioperative Medicine*. New York: Raven Press, 1996
4. Prough DS, Traystman RJ, eds. *Critical Care: State of the Art*. Anaheim, CA: Society of Critical Care Medicine, 1993.
5. Prough DS, (guest ed) *Critical Care Clinics: Neurologic Critical Care*. Philadelphia: W.B. Saunders Company, October, 1989.

Invited Reviews and Miscellaneous Publications:

1. Fluids and metabolic management of the neurosurgical patient. Annual Refresher Course Lecture, American Society of Anesthesiologists, October, 2008.
2. Perioperative care of the patient with acute CNS injury. Annual Refresher Course Lecture, American Society of Anesthesiologists, October, 2006.
3. Prough DS, Svensen CH. Perioperative fluid management. International Anesthesia Research Society Review Course Lecture. *Anesth Anal (Suppl)*: 84-91, 2006.
4. Prough, DS. Perioperative management of traumatic brain injury. Annual Refresher Course Lecture, American Society of Anesthesiologists, October, 2005.
5. Prough DS. Should you secede from the medical school to better meet your academic and clinical missions? *American Society of Anesthesiologists NEWSLETTER*, September, 2005.
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10. Prough DS. Association of University anesthesiologists: 50 Years and counting, American Society of Anesthesiologists NEWSLETTER, March, 2003.
11. Prough DS, Svensen C. Perioperative fluid management. International Anesthesia Research Society Review Course Lecture. *Anesth Analg (Suppl)*:84-91, 2002.
12. Prough DS. IARS wants you: Funding opportunities in anesthesiology research, American Society of Anesthesiologists Newsletter, April, 2002.
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72. Prough DS. Dialysis and Ultrafiltration. American Society of Critical Care Anesthesiologists, Refresher Course: *Crit Care Med*, 1986.

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79. Johnston WE, Royster RL, Prough DS. Recent advances in critical care pharmacology I: treatment of myocardial ischemia. *Hosp Formul* 19:550-7, 1984.
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83. Prough DS. Acute-on-chronic respiratory failure. *Ear Nose Throat J* 61:73-86, 1982.

In Press:

Scientific Exhibit:

1. Regional cerebral blood flow monitoring during surgery: a portable rapid analysis system. Stump DA, Prough DS, Entine G, Hinshelwood L, Howard G. American Society of Anesthesiologists, San Francisco, California, October 12-16, 1985.

Scientific Presentations:

1. Perioperative cerebral homeostasis in neurosurgical patients: physiology and application. 60th Annual Refresher Course, American Society of Anesthesiologists. New Orleans, LA, October 17, 2009.
2. Anesthesia for AVM, aneurysms and acute hemorrhage. Seventh Annual Resident Refresher Course. Stanford University Medical Center. Stanford, California, June 7, 2009.
3. Basic Neurophysiology. Seventh Annual Resident Refresher Course. Stanford University Medical Center. Stanford, California, June 7, 2009.
4. Severe Traumatic Brain Injury – Monitoring and Management for Today and Tomorrow. US Army Institute of Surgical Research (USAISR) and National Trauma Institute (NTI) Symposium on Automation and Decision Support System (DSS) for the ED, OR and ICU. San Antonio, Texas, June 5, 2009.
5. Panel: Playing with fluids: What's best? What fluids then in Neurosurgery? 2nd Great American Fluid Debate, Duke University School of Medicine in collaboration with University College London, England in San Diego, California, March 12, 2009.
6. Update on CNS injury. Refresher Course Lecture. Fluids and metabolic management. American Society of Anesthesiologists, Orlando, Florida, October 20, 2008.

7. Vulnerability and response of the old brain to injury. Minisymposium 1 – The Aging Brain. Society of Neurosurgical Anesthesia and Critical Care, Orlando, Florida, October 17, 2008.
8. Prevention and management of perioperative acute renal failure. New Horizons in Anesthesiology (Emory University), Vail, Colorado, September 2, 2008.
9. Perioperative management of traumatic brain injury. New Horizons in Anesthesiology (Emory University), Vail, Colorado, September 2, 2008.
10. Interpretation and management of perioperative acid base problems. New Horizons in Anesthesiology (Emory University), Vail, Colorado, September 1, 2008.
11. Perioperative fluid management. New Horizons in Anesthesiology (Emory University), Vail, Colorado, September 1, 2008.
12. Controversies in fluid management for the trauma patient. Society of Pediatric Anesthesia (SPA), San Diego, California, April 4, 2008.
13. Perioperative management of traumatic brain injury. New Mexico Society of Anesthesiologists (NMSA), Anesthesia Update: Best Practice 2007, Albuquerque, New Mexico, April 14, 2007.
14. Perioperative fluid management. Grand Rounds, Department of Anesthesiology, University of New Mexico, Albuquerque, New Mexico, April 13, 2007.
15. Acid base interpretations. Visiting Professor, Department of Anesthesiology, University of New Mexico School of Medicine, Albuquerque, New Mexico, April 12, 2007.
16. Prevention and management of perioperative acute renal failure. 16th Annual Whistler Winter Anaesthesia Refresher Course & Review, Kingston, Ontario, Canada, March 1, 2007.
17. Perioperative management of traumatic brain injury. 16th Annual Whistler Winter Anaesthesia Refresher Course & Review, Kingston, Ontario, Canada, March 1, 2007.
18. Perioperative care of the patient with acute CNS injury, Refresher Course Lecture. Fluid management in head injury. American Society of Anesthesiologists, Chicago, Illinois, October 14, 2006.
19. Debate: Should there be a pay differential for those who do academic work? Society for Education in Anesthesia, Chicago, Illinois, October 13, 2006.
20. Standard of care of perioperative fluid therapy. Via televideo, San Paulo, Brazil, September 21, 2006.
21. Perioperative fluid management, Review Course Lecture. International Anesthesia Research Society, San Francisco, California, March 28, 2006.
22. Panel: OR Management. So you think your hospital should subsidize your anesthesiology group: How do you figure out how much? International Anesthesia Research Society, San Francisco, California, March 27, 2006.
23. Management of head injury. Critical Care Grand Rounds. Columbia University, Department of Anesthesiology, New York, New York, December 15, 2005.
24. Perioperative management of traumatic brain injury. Grand Rounds, Columbia University, Department of Anesthesiology, New York, New York, December 15, 2005.
25. Medical futility and advance directives. Houston Area Health Information Management Association (HAHIMA), Houston, Texas, December 9, 2005.

26. Perioperative management of traumatic brain injury. Refresher Course Lecture. American Society of Anesthesiologists, Atlanta, Georgia, October 23, 2005.
27. Current controversies on perioperative fluid management. MD Anderson Cancer Center, Houston, Texas, October 12, 2005.
28. Perioperative management of traumatic brain injury. Baylor College of Medicine, Department of Anesthesiology, Houston, Texas, September 28, 2005.
29. Prough DS. Perioperative management of traumatic brain injury. Oregon Health & Science University, Department of Anesthesiology and Peri-operative Medicine, Portland, Oregon, July 18, 2005.
30. Prough DS. Perioperative management of traumatic brain injury. Hospital of Saint Raphael, New Haven, Connecticut, June 28, 2005.
31. Prough DS. Perioperative management of traumatic brain injury. University of Washington Department of Anesthesiology, Seattle, Washington, June 22, 2005.
32. Prough DS. Perioperative management of traumatic brain injury. Annual Meeting of Japanese Society of Anesthesiologists, Kobe, Japan, June 3, 2005.
33. Perioperative Fluid Management, Review Course Lecture. International Anesthesia Research Society, Honolulu, Hawaii, March 14, 2005.
34. Acid-Base and Electrolyte Equilibrium in the Perioperative Period. Stanford/Medical College of Wisconsin Anesthesia Update, Copper Mountain, Colorado, February 22, 2005.
35. Perioperative Management of Fluid Therapy. Stanford/Medical College of Wisconsin Anesthesia Update, Copper Mountain, Colorado, February 22, 2005.
36. Perioperative Management of Traumatic Brain Injury. Stanford/Medical College of Wisconsin Anesthesia Update, Copper Mountain, Colorado, February 21, 2005.
37. Perioperative Fluid Management. New Horizons in Anesthesiology, Steamboat Springs, Colorado, February 8, 2005.
38. Perioperative Management of Traumatic Brain Injury. New Horizons in Anesthesiology, Steamboat Springs, Colorado, February 7, 2005.
39. Diagnosis and Management of Perioperative Acid-Base Disturbances. New Horizons in Anesthesiology, Steamboat Springs, Colorado, February 7, 2005.
40. Prevention and Management of Perioperative Acute Renal Failure. New Horizons in Anesthesiology, Steamboat Springs, Colorado, February 6, 2005.
41. Panel: Tips for Taking Care of the Patient with Neurotrauma. Sub-Panel Talk: Fluid Management: Walking the Tightrope. American Society of Anesthesiologists, Las Vegas, Nevada, October 26, 2004.
42. Panel: Academic Anesthesiology Training Programs – Should You Secede From the Medical School to Better Meet your Academic and Clinical Missions? Sub-Panel Talk: Con: You Should Stay!. American Society of Anesthesiologists, Las Vegas, Nevada, October 26, 2004.
43. Perioperative Management of Traumatic Brain Injury, Refresher Course Lecture. American Society of Anesthesiologists, Las Vegas, Nevada, October 24, 2004.

44. New Paradigm in Perioperative Fluid Management: Is It Really Colloids? Panel: Perioperative Fluid Management, Texas Society of Anesthesiologists, San Antonio, Texas, September 11, 2004.
45. Panel, Co-Chair. Fluid Therapy: The future. 13th World Congress of Anaesthesiologists, Paris, France, April 22, 2004.
46. Perioperative Management of Traumatic Brain Injury. New Horizons in Anesthesiology, Emory University School of Medicine, Department of Anesthesiology, Cozumel, Mexico, April 6, 2004.
47. Prevention & Management of Perioperative Acute Renal Failure. New Horizons in Anesthesiology, Emory University School of Medicine, Department of Anesthesiology, Cozumel, Mexico, April 5, 2004.
48. Diagnosis & Management of Perioperative Acid-Base Disturbances. New Horizons in Anesthesiology, Emory University School of Medicine, Department of Anesthesiology, Cozumel, Mexico, April 5, 2004.
49. Panel: Malpractice and the Anesthesiologist. What To Do If You Are Sued. International Anesthesia Research Society, Tampa, Florida, March 30, 2004.
50. Moderator, Research Awards Session, Chair, International Anesthesia Research Society Research Awards Committee, International Anesthesia Research Society, Tampa, Florida, March 28, 2004.
51. Perioperative Fluid Management, Review Course Lecture. International Anesthesia Research Society, Tampa, Florida, March 28, 2004.
52. Zinc Neurotoxicity in Traumatic Brain Injury. Mission Connect Brain Injury Workshop, Galveston, Texas, March 19, 2004.
53. FAER Panel: Transforming the Medical Specialty of Anesthesiology: The Challenge of the 21st Century. Sub-Panel Talk: Promoting a Scholarly Milieu in Anesthesiology. American Society of Anesthesiologists, San Francisco, California, October 13, 2003.
54. Panel: Understanding the New Intraoperative Coagulation Challenges. Sub-Panel Talk: Intraoperative Fluid Therapy (Colloid Versus Crystalloid) Effect on Coagulation. American Society of Anesthesiologists, San Francisco, California, October 13, 2003.
55. Perioperative Management of Traumatic Brain Injury, Refresher Course Lecture. American Society of Anesthesiologists, San Francisco, California, October 12, 2003.
56. Anti-Inflammatory Actions of Ketamine. Advanced Technology Applications for Combat Casualty Care (ATACCC), St. Pete's Beach, Florida, August 19, 2003.
57. Perioperative Fluid Management. CSA/UCSD Annual Meeting and Anesthesiology Review Course, Anaheim, California, June 5, 2003.
58. Practical Acid-Base Interpretation. CSA/UCSD Annual Meeting and Anesthesiology Review Course, Anaheim, California, June 5, 2003.
59. Management of Acute Electrolyte Disturbances. CSA/UCSD Annual Meeting and Anesthesiology Review Course, Anaheim, California, June 5, 2003.
60. Perioperative Renal Preservation. CSA/UCSD Annual Meeting and Anesthesiology Review Course, Anaheim, California, June 5, 2003.
61. Trauma-Induced Neuronal Zinc Release and Uptake in Aging Rat Brain. ZINC Signals 2003 4th Annual International Conference, Grand Cayman Islands, May 8, 2003.
62. Perioperative Management of Traumatic Brain Injury. Review Course Lecture. International Anesthesia Research Society, New Orleans, Louisiana, March 22, 2003.

63. Hypothermia and Neurotrauma: Clinical Experience, Clinical Trials, Animal Data. In Hypothermia: The Cold Front Now and in the Future. (Panel) 28th International Stroke Conference, Phoenix, Arizona, February 14, 2003.
64. Acid-Base Effects of Intravenous Fluids. Japan Society for Clinical Anesthesia, Kofu, Yamanashi, Japan, October 31, 2002.
65. Volume Kinetics: A Tool to Improve Perioperative Fluid Administration. American-Japan Anesthesia Congress, Kofu, Yamanashi, Japan, October 30, 2002.
66. Perioperative Management of Traumatic Brain Injury. American Society of Anesthesiologists Refresher Course, Orlando, Florida, October 12, 2002.
67. Effects of Arginine Supplementation on Resuscitation from Hemorrhagic Shock. Advanced Technology Applications for Combat Casualty Care (ATACCC) Conference 2002, St. Pete Beach, Florida, September 11, 2002.
68. Perioperative Fluid Management. Department of Anesthesiology Grand Rounds, INOVA Fairfax Hospital, Falls Church, Virginia, June 5, 2002.
69. Traumatic Brain Injury. Department of Anesthesiology, College of Medicine, University of South Florida, Tampa, Florida, May 24, 2002.
70. Perioperative Fluid Therapy. Department of Anesthesiology, College of Medicine, University of South Florida, Tampa, Florida, May 23, 2002.
71. Perioperative Management of the Traumatic Brain Injury. American Academy of Anesthesiologist Assistants Conference, South Padre Island, Texas, April 16, 2002.
72. IV Fluid Therapy. American Academy of Anesthesiologist Assistants Conference, South Padre Island, Texas, April 16, 2002.
73. Panel: Neuroprotection. Perfusion, Oxygenation and Dysregulation. NHLBI, NIA and NINDS Workshop on Neurocognitive Changes Following Cardiac Surgery, Bethesda, Maryland, April 4, 2002.
74. Best of the Meeting. International Anesthesia Research Society, San Diego, California, March 20, 2002.
75. Perioperative Fluid Management, Review Course Lecture. International Anesthesia Research Society, San Diego, California, March 18, 2002.
76. Panel: Non-Clinical Challenges. Sub-Panel Talk: Role of Research in an Academic Career. International Anesthesia Research Society, San Diego, California, March 17, 2002.
77. Perioperative Management of the Patient with Traumatic Brain Injury. Indiana Society of Anesthesiologists, Indianapolis, Indiana, February 23, 2002.
78. Panel: Non-Clinical Challenges. Sub-Panel Talk: Role of Research in an Academic Career. International Anesthesia Research Society, San Diego, California, March 17, 2002.
79. Perioperative Fluid Management, Review Course Lecture. International Anesthesia Research Society, San Diego, California, March 18, 2002.
80. Best of the Meeting. International Anesthesia Research Society, San Diego, California, March 20, 2002.

81. Panel: Neuroprotection. Perfusion, Oxygenation and Dysregulation. NHLBI, NIA and NINDS Workshop on Neurocognitive Changes Following Cardiac Surgery, Bethesda, Maryland, April 4, 2002.
82. IV Fluid Therapy. American Academy of Anesthesiologist Assistants Conference, South Padre Island, Texas, April 16, 2002.
83. Perioperative Management of the Traumatic Brain Injury. American Academy of Anesthesiologist Assistants Conference, South Padre Island, Texas, April 16, 2002.
84. Perioperative Fluid Therapy. Department of Anesthesiology, College of Medicine, University of South Florida, Tampa, Florida, May 23, 2002.
85. Traumatic Brain Injury. Department of Anesthesiology, College of Medicine, University of South Florida, Tampa, Florida, May 24, 2002.
86. Perioperative Fluid Management. Department of Anesthesiology Grand Rounds, INOVA Fairfax Hospital, Falls Church, Virginia, June 5, 2002.
87. Effects of Arginine Supplementation on Resuscitation from Hemorrhagic Shock. Advanced Technology Applications for Combat Casualty Care (ATACCC) Conference 2002, St. Pete Beach, Florida, September 11, 2002.
88. Perioperative Management of Traumatic Brain Injury. American Society of Anesthesiologists Refresher Course, Orlando, Florida, October 12, 2002.
89. Volume Kinetics: A Tool to Improve Perioperative Fluid Administration. American-Japan Anesthesia Congress, Kofu, Yamanashi, Japan, October 30, 2002.
90. Acid-Base Effects of Intravenous Fluids. Japan Society for Clinical Anesthesia, Kofu, Yamanashi, Japan, October 31, 2002.
91. Current Concepts in Perioperative Fluid Management. Moderator, Review Course Lecture, International Anesthesia Research Society, Ft. Lauderdale, Florida, March 17, 2001.
92. Panel: Trauma Care – What’s New? Is Oxygen Delivery an Appropriate Endpoint for Trauma Resuscitation? International Anesthesia Research Society, Ft. Lauderdale, Florida, March 19, 2001.
93. Volume Expansion Profiles of Isotonic and Hypertonic Crystalloids, Combat Fluid Resuscitation 2001, Uniformed Services University of the Health Sciences, Bethesda, Maryland, June 19, 2001.
94. Perioperative Management of Traumatic Brain Injury, Refresher Course Lecture. American Society of Anesthesiologists, New Orleans, Louisiana, October 13, 2001.
95. Continuous Noninvasive Optoacoustic Monitoring of Superior Sagittal Sinus Saturation: In Vivo Validation in Sheep. Scientific Paper Discussion, American Society of Anesthesiologists, New Orleans, Louisiana, October 15, 2001.
96. Continuous Noninvasive Optoacoustic Monitoring of Hemoglobin Concentration: In Vitro Validation, Scientific Papers, Poster Discussions, American Society of Anesthesiologists, New Orleans, Louisiana, October 15, 2001.
97. Panel: Neuroanesthesia Clinical Forum. American Society of Anesthesiologists, New Orleans, Louisiana, October 15, 2001.
98. Panel: Resuscitation from Severe Hemorrhage. Sub-Panel Talk: Hypertonic Resuscitation Solutions: Benefits and Risks. American Society of Anesthesiologists, New Orleans, Louisiana, October 16, 2001.

99. Traumatic Brain Injury Precipitates Cerebral Zinc Translocation That is Enhanced by Subsequent Hemorrhagic Hypotension in Rats. Scientific Papers, Poster Sessions, American Society of Anesthesiologists, New Orleans, Louisiana, October 16, 2001.
100. Moderator, Neurologic Critical Care. Panel: Secondary Injury After Traumatic Brain Injury. American College of Chest Physicians Annual Meeting, Philadelphia, Pennsylvania, November 8, 2001.
101. Perioperative Management of Traumatic Brain Injury. Department of Anesthesia, University of Manitoba, Annual Resident Research Symposium, Winnipeg, Manitoba, Canada, November 28, 2001.
102. Clinical Acid-Base Interpretation. Department of Anesthesia, University of Manitoba, Annual Resident Research Symposium, Winnipeg, Manitoba, Canada, November 28, 2001.
103. Traumatic Brain Injury. Department of Anesthesiology Annual Joseph Priestley Lecture, Milton S. Hershey Medical Center College of Medicine, Hershey, Pennsylvania, November 29, 2001.
104. Careers in Academic Anesthesiology in the 21st Century. Department of Anesthesiology Annual Joseph Priestley Lecture, Milton S. Hershey Medical Center College of Medicine, Hershey, Pennsylvania, November 30, 2001.
105. Traumatic Brain Injury and Hemorrhagic Hypotension Increase Cortical and Hippocampal Zinc Translocation in Rats, Society of Critical Care Medicine, San Francisco, California, February 12, 2001. (Research citation finalist)
106. Perioperative Fluid Management. New Horizons in Anesthesiology. Emory University School of Medicine, Department of Anesthesiology, Aspen, Colorado, January 26, 2000.
107. Neurosurgical Fluid Therapy. New Horizons in Anesthesiology. Emory University School of Medicine, Department of Anesthesiology, Aspen, Colorado, January 26, 2000.
108. Head Trauma. New Horizons in Anesthesiology. Emory University School of Medicine, Department of Anesthesiology, Aspen, Colorado, January 27, 2000.
109. Acid-Base Interpretation. New Horizons in Anesthesiology. Emory University School of Medicine, Department of Anesthesiology, Aspen, Colorado, January 27, 2000.
110. Anesthetic Management of the Patient with Head Trauma, Regional Refresher Course Lecture. American Society of Anesthesiologists, San Diego, California, January 29, 2000.
111. Perioperative Fluid Therapy, Regional Refresher Course Lecture. American Society of Anesthesiologists, San Diego, California, January 29, 2000.
112. Resuscitation of the Head-Injured Patient. Current Concepts in Pediatric Critical Care. Society of Critical Care Medicine, Orlando, Florida, February 10, 2000.
113. Panel: Malpractice. International Anesthesia Research Society, Honolulu, Hawaii, March 11, 2000.
114. Perioperative Management of Head Injury. Review Course Lecture, International Anesthesia Research Society, 74th Congress, Honolulu, Hawaii, March 12, 2000.
115. Chemical Monitoring in Head Trauma. Plenary Speaker, American Association for Clinical Chemistry (Texas Section), League City, Texas, April 20, 2000.
116. Perioperative Fluid Management of Neurosurgical Patients. New York Presbyterian Hospital, Cornell University, New York, New York, May 5, 2000.

117. Acid Base Interpretation. New York Presbyterian Hospital, Cornell University, New York, New York, May 5, 2000.
118. Severe Electrolyte Disturbances. New York Presbyterian Hospital, Cornell University, New York, New York, May 6, 2000.
119. Hypertonic Fluids. World Congress of Anaesthesiologists, Montreal, Canada, June 5, 2000.
120. Concepts of Brain Herniation. World Congress of Anaesthesiologists, Montreal, Canada, June 6, 2000.
121. Traumatic Brain Injury, Subarachnoid Hemorrhage, and Stroke: Impact of "The Decade of the Brain." Current Issues in the Management of Critically Ill Patients. Keck School of Medicine of the University of Southern California, Postgraduate Division, Houston, Texas, September 23, 2000.
122. Perioperative Fluid Management, Refresher Course Lecture. American Society of Anesthesiologists, San Francisco, California, October 14, 2000.
123. Perioperative Management of the Patient with Head Trauma. Department of Anesthesiology, Wake Forest University School of Medicine, Winston-Salem, North Carolina, November 11, 2000.
124. Moderator, Neurosurgical Nightmares-Can Anesthesia Make Them a Dream? Panel: Head injury in the multiple trauma patient. Postgraduate Assembly in Anesthesiology, The New York State Society of Anesthesiologists, Inc., New York, New York, December 11, 2000.
125. Problem-Based Learning Discussion, Postgraduate Assembly in Anesthesiology, The New York State Society of Anesthesiologists, Inc., New York, New York, December 12, 2000.
126. Perioperative fluid management: basic needs, electrolytes, third spacing. The Leuven Department of Anesthesiology International Winter Symposium on Perioperative Volume and Hemoglobin Replacement, Leuven, Belgium, January 23, 1999.
127. Encouraging young investigators in critical care medicine: perspective of a clinical chair. American College of Critical Care Medicine Convocation address, Society of Critical Care Medicine 28th Educational and Scientific Symposium, San Francisco, California, January 24, 1999.
128. Sedation/analgesia in the perioperative period. Society of Critical Care Medicine 28th Educational and Scientific Symposium, San Francisco, California, January 25, 1999.
129. Evidence based monitoring parameters: what parameters best predict impending secondary brain injury. Moderator, Panel Discussion on Cerebral Monitoring: Tools for the Practitioner, Society of Critical Care Medicine 28th Educational and Scientific Symposium, San Francisco, California, January 26, 1999.
130. Recent advances in mechanical ventilation and weaning. University of Maryland, Department of Anesthesiology, Baltimore, Maryland, February 3, 1999.
131. Perioperative fluid management. University of Maryland, Department of Anesthesiology Grand Rounds, Baltimore, Maryland, February 4, 1999.
132. Things to think about if you get sued. (Panel) International Anesthesia Research Society, Los Angeles, California, March 13, 1999.
133. Economic issues. (Tutorial), International Anesthesia Research Society, Los Angeles, California, March 14, 1999.

134. Computers in your life. (Panel Chair), International Anesthesia Research Society, Los Angeles, California, March 15, 1999.
135. Perioperative management of head injury. (Tutorial), International Anesthesia Research Society, Los Angeles, California, March 15, 1999.
136. Fluid management of neurosurgical patients. University of Pittsburgh, Department of Anesthesia, Pittsburgh, Pennsylvania, April 29, 1999.
137. Perioperative management of traumatic brain injury. University of Pittsburgh, Department of Anesthesia Grand Rounds, Pittsburgh, Pennsylvania, April 29, 1999.
138. Jugular bulb oxygen saturation monitoring. College of Anaesthetists, Royal College of Surgeons in Ireland, 1st Annual Scientific Meeting, Dublin, Ireland, May 8, 1999.
139. Perioperative management of traumatic brain injury. College of Anaesthetists, Royal College of Surgeons in Ireland, 1st Annual Scientific Meeting, Dublin, Ireland, May 8, 1999.
140. Management of head trauma. Society of Anesthesiology, Sao Paulo, Brazil, May 21, 1999.
141. Sepsis and septic shock. Society of Anesthesiology, Sao Paulo, Brazil, May 21, 1999.
142. Management of head trauma. Regional Refresher Course, American Society of Anesthesiologists, Denver, Colorado, July 17, 1999.
143. Fluid management in neurosurgical cases and trauma. Regional Refresher Course, American Society of Anesthesiologists, Denver, Colorado, July 18, 1999.
144. Perioperative management of the patient with traumatic brain injury. Colombian Society of Anesthesiology, Medellin, Colombia, August 13, 1999.
145. Fluid management in the neurosurgery patient. Colombian Society of Anesthesiology, Medellin, Colombia, August 13, 1999.
146. Perioperative Management of Traumatic Brain Injury. Rush-Presbyterian-St. Luke's Medical Center, Department of Anesthesiology, Chicago, Illinois, September 29, 1999.
147. Acid-Base Concepts. Rush-Presbyterian-St. Luke's Medical Center, Department of Anesthesiology, Chicago, Illinois, September 29, 1999.
148. Current Concepts of Perioperative Fluid Management. Rush-Presbyterian-St. Luke's Medical Center, Department of Anesthesiology, Chicago, Illinois, September 30, 1999.
149. Fluid Balance and IV Complications (Adult vs. Child). American Society of Anesthesia Technologists and Technicians, Dallas, Texas, October 8, 1999.
150. Moderator, PRO/CON Debate: Management of Cerebral Perfusion in Head-Injured Patients: Keep the Pressure Up. Society of Neurosurgical Anesthesia and Critical Care, Dallas, Texas, October 8, 1999.
151. Perioperative Fluid Management, Refresher Course Lecture. American Society of Anesthesiologists, Dallas, Texas, October 10, 1999.
152. Orthopedic Injuries in Head-Injured Patients: To Fix or Not to Fix? Problem-Based Learning Discussion, American Society of Anesthesiologists, Dallas, Texas, October 11, 1999.
153. Clinical Forum Panel. General Anesthesia and Trauma. American Society of Anesthesiologists, Dallas, Texas, October 11, 1999.

154. Management of Septic Shock: Oxygen or Evil Humor Antagonist? Problem-Based Learning Discussion, American Society of Anesthesiologists, Dallas, Texas, October 12, 1999.
155. Panel: Solutions for Today's Neuroanesthesia Dilemmas. Sub-Panel Talk: Selecting the Best Fluid for Maintenance and Resuscitation During Cranial Surgery, Postgraduate Assembly, The New York Society of Anesthesiologists, Inc., New York, New York, December 13, 1999.
156. Shock resuscitation: New insights into the pathophysiology of hemorrhagic shock. Postgraduate Review Course, Society of Critical Care Medicine, San Antonio, Texas, February 4, 1998.
157. Near-infrared spectroscopy. First International Update on Neuro-Anesthesia & Neuro-Intensive Care, Genk, Belgium, February 6, 1998.
158. Introduction to computer tools for the anesthesiologist. International Anesthesia Research Society, (Tutorial), Orlando, Florida, March 9, 1998.
159. Perioperative management of head trauma. International Anesthesia Research Society, (Review Course), Orlando, Florida, March 11, 1998.
160. Critical care anesthesia. International Anesthesia Research Society, (Poster Discussant), Orlando, Florida, March 11, 1998.
161. Near-infrared spectroscopy. Critical Care Medicine II: Neuro Critical Care, Sixteenth Annual Houston Conference on Biomedical Engineering Research, Houston, Texas, April 2, 1998.
162. Perioperative management of head trauma. Texas Society of Anesthesiologists, Austin, Texas, April 25, 1998.
163. Anesthetic considerations for the head trauma victim. Navy Anesthesia Society, San Antonio, Texas, June 12, 1998.
164. Perioperative management of acute head injury. California Society of Anesthesiologists and Texas Society of Anesthesiologists, Snowmass, Colorado, July 29, 1998
165. Current concepts of mechanical ventilation and weaning. California Society of Anesthesiologists and Texas Society of Anesthesiologists, Snowmass, Colorado, July 29, 1998.
166. Prevention of acute renal failure. California Society of Anesthesiologists and Texas Society of Anesthesiologists, Snowmass, Colorado, July 30, 1998.
167. Computer resources for anesthesiologists. California Society of Anesthesiologists and Texas Society of Anesthesiologists, Snowmass, Colorado, July 30, 1998.
168. Practical medicolegal considerations. Panel Discussion. Texas Society of Anesthesiologists, San Antonio, Texas, September 12, 1998.
169. Perioperative management of head trauma. Northwestern University Medical School Department of Anesthesiology, Chicago, Illinois, September 17, 1998.
170. Perioperative fluid management. Edward Brunner Honorary Lecture, Northwestern University Medical School Department of Anesthesiology, Chicago, Illinois, September 18, 1998.
171. Fluid resuscitation: Crystalloids versus colloids. Austrian Society of Anesthesiology Resuscitation and Intensive Care Medicine, Vienna, Austria, September 30, 1998.
172. Hypertonic solutions for brain resuscitation. Austrian Society of Anesthesiology Resuscitation and Intensive Care Medicine, Vienna, Austria, October 1, 1998.

173. Management of head trauma. Refresher Course Lecture, American Society of Anesthesiologists, Orlando, Florida, October 17, 1998.
174. Current concepts in the perioperative management of traumatic brain injury. Panel: Perioperative Management of the Neuro-Trauma Patient, American Society of Critical Care Anesthesiologists, Orlando, Florida, October 20, 1998.
175. Clinical Forum on Neuroanesthesia. Moderator, Panel Discussion, American Society of Anesthesiologists, Orlando, Florida, October 20, 1998.
176. Anesthesia residency training in USA. The 5th American-Japan Anesthesia Congress, Matsuyama, Japan, October 27, 1998.
177. Neurologic consequences of cardiac surgery. The 5th American-Japan Anesthesia Congress, Matsuyama, Japan, October 28, 1998.
178. Current concepts in mechanical ventilation. 1998 Holiday Update in Charleston. Medical University of South Carolina Department of Anesthesia and Perioperative Medicine, Charleston, South Carolina, December 4, 1998.
179. Perioperative management of head trauma. 1998 Holiday Update in Charleston. Medical University of South Carolina Department of Anesthesia and Perioperative Medicine, Charleston, South Carolina, December 4, 1998.
180. Perioperative management of head trauma. Regional Refresher Course, American Society of Anesthesiologists, San Antonio, Texas, January 26, 1997.
181. Perioperative fluid management. Crystalloid, Colloid and Hypertonic Solutions. Regional Refresher Course, American Society of Anesthesiologists, San Antonio, Texas, January 26, 1997.
182. Neurologic critical care. Panel: Critical Care in Review: Perioperative Medicine, (Panel Chair), Society of Critical Care Medicine, San Diego, California, February 9, 1997.
183. Near-infrared Spectroscopy. Panel: Advances in Non-Invasive and Invasive Monitoring of Cerebrovascular Function (Panel Chair), Society of Critical Care Medicine, San Diego, California, February 10, 1997.
184. Hypertonic fluid resuscitation. 25th Annual Anesthesiology Review Course, University of Alabama School of Medicine, Department of Anesthesiology, Birmingham, Alabama, February 22, 1997.
185. Perioperative management of head trauma. 25th Annual Anesthesiology Review Course, University of Alabama School of Medicine, Department of Anesthesiology, Birmingham, Alabama, February 22, 1997.
186. Experimental traumatic brain injury: implications for clinical treatment. 42nd Annual Postgraduate Course in Anesthesiology, The University of Utah School of Medicine, Department of Anesthesiology, Snowbird, Utah, February 23, 1997.
187. Secondary injury after clinical traumatic brain injury. 42nd Annual Postgraduate Course in Anesthesiology, The University of Utah School of Medicine, Department of Anesthesiology, Snowbird, Utah, February 23, 1997.
188. Update on neurosurgical intensive care. 42nd Annual Postgraduate Course in Anesthesiology, The University of Utah School of Medicine, Department of Anesthesiology, Snowbird, Utah, February 25, 1997.
189. Intraoperative hemodilution. Panel: Strategies to Avoid Blood Transfusions. International Course on Anesthesiology and Critical Care Medicine (Harvard Medical International), Sao Paulo, Brazil, March 7, 1997.

190. Fluid replacement in neurosurgical patients. International Course on Anesthesiology and Critical Care Medicine (Harvard Medical International), Sao Paulo, Brazil, March 7, 1997.
191. Managing the acute head injury patient. International Anesthesia Research Society, (Tutorial), San Francisco, California, March 18, 1997.
192. Creative solutions to workforce shortages - how to do more with less. (Panel) Southern University Department of Anesthesiology Chairs, Winston-Salem, North Carolina, May 8, 1997.
193. Cerebral effects of sepsis. Critical Care Grand Rounds, St. Francis Medical Center, Pittsburgh, Pennsylvania, June 10, 1997.
194. Neuro monitoring in the intensive care unit. Internal Medicine Grand Rounds, St. Francis Medical Center, Pittsburgh, Pennsylvania, June 11, 1997.
195. Neurologic consequences of cardiac surgery. California Society of Anesthesiologists and Texas Society of Anesthesiologists, Snowmass, Colorado, July 29, 1997.
196. Management of circulatory shock: should we throw away the Swan-Ganz catheter? California Society of Anesthesiologists and Texas Society of Anesthesiologists, Snowmass, Colorado, July 30, 1997.
197. Current economics of anesthetic practice. (Panel), California Society of Anesthesiologists and Texas Society of Anesthesiologists, Snowmass, Colorado, July 30, 1997.
198. Perioperative management of severe head injury. California Society of Anesthesiologists, and Texas Society of Anesthesiologists, Snowmass, Colorado, July 31, 1997.
199. Hospital citizenship. Resident Program, Texas Society of Anesthesiologists, Irving, Texas, September 6, 1997.
200. Hypothermia for brain protection: a 50 year perspective. Distinguished Lecture at American Society of Critical Care Anesthesiologists, San Diego, California, October 17, 1997.
201. Management of head trauma. Refresher Course Lecture, American Society of Anesthesiologists, San Diego, California, October 19 1997.
202. Trauma and general anesthesia. Clinical Forum on Neuroanesthesia, American Society of Anesthesiologists, San Diego, California, October 22, 1997.
203. Fluid resuscitation - too much or too little? Panel: Complications Following Traumatic Injury: Implications for Anesthetic Care, Postgraduate Assembly, The New York State Society of Anesthesiologists, Inc., New York, New York, December 17, 1997.
204. Perioperative fluid management. California Society of Anesthesiologists 13th Annual Winter Seminar in Clinical Anesthesia, Sun Valley, Idaho, February 19, 1996.
205. Perioperative management of head trauma. California Society of Anesthesiologists, 13th Annual Winter Seminar in Clinical Anesthesia, Sun Valley, Idaho, February 20, 1996.
206. Fluid management and acid-base analysis: fine points. (Tutorial), International Anesthesia Research Society, Washington, D. C., March 11, 1996.
207. Perioperative fluid management. Department of Anesthesia, Maimonides Medical Center, Brooklyn, New York, March 15, 1996.
208. Perioperative fluid management. New York State Society of Anesthesiologists District Meeting, Rochester, New York, April 3, 1996.

209. Secondary injury after traumatic brain injury. Department of Anesthesiology Grand Rounds, University of Rochester Medical Center, Rochester, New York, April 4, 1996.
210. Anesthetic management of head trauma. Mexican Society of Anesthesia, XXII Annual Refresher Course Lectures in Anesthesia, Mexico City, Mexico, June 21, 1996.
211. Brain oximetry. Mexican Society of Anesthesia, XXII Annual Refresher Course Lectures in Anesthesia, Mexico, June 21, 1996.
212. Should the hypotensive, brain-injured patient be resuscitated with hypertonic solutions? Fifth Wiggers Bernard Conference on Brain Damage Secondary to Hemorrhagic-Traumatic Shock, Sepsis and Traumatic Brain Injury, Vienna, Austria, May 20, 1996.
213. Therapy of head-injured patients: key parameters for management. 14th Bodensee Symposium on Microcirculation (Small Volume Resuscitation in Head Injury), Bodensee, Germany, June 14, 1996.
214. Fluid therapy in closed head injury. Department of Surgery, Brooke Army Medical Center, San Antonio, Texas, September 16, 1996.
215. Fluid management of trauma patients. Problem-Based Learning Discussion, American Society of Anesthesiologists, New Orleans, Louisiana, October 21, 1996.
216. Does monitoring of the head-injured patient improve outcome? American Society of Anesthesiologists, New Orleans, Louisiana, Panel: Management of Head Injury - Current Concepts, October 22, 1996.
217. Blood gas interpretation. California Society of Anesthesiologists 13th Annual Seminar in Clinical Anesthesia, Sun Valley, Idaho, February 21, 1996.
218. Hypertonic fluid resuscitation. Advances in Physiology and Pharmacology in Anesthesia and Critical Care, White Sulphur Springs, West Virginia, Panel: Contemporary Issues in Fluid Resuscitation, November 5, 1996.
219. Resuscitation of the acutely injured brain. Department of Anesthesia, University of Cincinnati, Ohio, November 20, 1996.
220. Brain monitoring: where are we? Where are we going? Greater Cincinnati Society of Anesthesiologists, Cincinnati, Ohio, November 20, 1996.
221. Fluid management. Panel: The Changing Practice of Neuroanesthesia (Panel Chair), Postgraduate Assembly, The New York State Society of Anesthesiologists, Inc., New York, New York, December 9, 1996.
222. The brain and cardiopulmonary bypass. Anesthesia Update 1995. University of California, San Diego, School of Medicine, Department of Anesthesiology, San Diego, California, January 4, 1995.
223. Perioperative fluid management. Anesthesia Update 1995. University of California, San Diego, School of Medicine, Department of Anesthesiology, San Diego, California, January 4, 1995.
224. Fluid management in the neurosurgical patient. Neurosurgery Conference, the University Hospital for the Albert Einstein College of Medicine, Bronx, New York, February 6, 1995.
225. Head trauma. Seminar, Department of Anesthesiology, Albert Einstein College of Medicine, Bronx, New York, February 7, 1995.
226. Moderator, Poster Discussion Sessions, Critical Care Anesthesia. International Anesthesia Research Society, Honolulu, Hawaii, March 11, 1995.

227. Clinical pearls - the patient with head trauma. Review Course Lecture, International Anesthesia Research Society, Honolulu, Hawaii, March 13, 1995.
228. Perioperative fluid management: crystalloid, colloid and hypertonic solutions. Columbia University, Department of Anesthesiology, New York, New York, March 30, 1995.
229. Neurologic complication of cardiac surgery. The University of Arizona, Department of Anesthesiology, Tucson, Arizona, April 5, 1995.
230. Perioperative fluid management. The University of Arizona, Department of Anesthesiology, Tucson, Arizona, April 5, 1995.
231. Acute head injury. Department of Anesthesiology, The University of Texas Health Science Center at San Antonio, Texas, April 20, 1995.
232. Perioperative fluid management. San Antonio Society of Anesthesiologists, San Antonio, Texas, April 20, 1995.
233. Perioperative fluid management. Department of Anesthesiology, Medical College of Pennsylvania, Pittsburgh, Pennsylvania, May 8, 1995.
234. Anesthetic management of head trauma. Grand Rounds, Medical College of Pennsylvania, Pittsburgh, Pennsylvania, May 9, 1995.
235. Perioperative fluid management. 32nd Annual New York Anesthesiology Review, New York, New York, June 14, 1995.
236. Understanding fluids and electrolytes. 32nd Annual New York Anesthesiology Review, New York, New York, June 14, 1995.
237. Critical care management of head injuries. 32nd Annual New York Anesthesiology Review, New York, New York, June 14, 1995.
238. Update in neuroanesthesia. John H. Kendig Neuroscience Lecture Series. St. John's Mercy Hospital St. Louis, Missouri, July 26, 1995.
239. Perioperative fluid management. Department of Anesthesiology, Medical College of Virginia, Richmond, Virginia, September 18, 1995.
240. Acid-base and electrolyte abnormalities in a young male with an acute abdomen. Problem-Based Learning Discussion, American Society of Anesthesiologists, Atlanta, Georgia, October, 1995.
241. Fluid management of trauma patients. Problem-Based Learning Discussion, American Society of Anesthesiologists, Atlanta, Georgia, October, 1995.
242. Oxygen delivery: does it matter? Problem-Based Learning Discussion, American Society of Anesthesiologists, Atlanta, Georgia, October, 1995.
243. Future of critical care research training. Fellowship Directors' Meeting, American Society of Critical Care Anesthesiologists, Atlanta, Georgia, October 20, 1995.
244. Inhalation anesthetics with a focus on sevoflurane. Department of Anesthesiology, University of Minnesota Medical School, Minneapolis, Minnesota, December 4, 1995.
245. Management of the patient in shock. Department of Anesthesiology, University of Minnesota Medical School, Minneapolis, Minnesota, December 5, 1995.
246. Anesthetic management of head trauma. University of Wisconsin-Madison Medical School, Madison, Wisconsin, January 4, 1994.

247. Neurologic effects of cardiac surgery. University of Wisconsin-Madison Medical School, Madison, Wisconsin, January 5, 1994.
248. The use of crystalloid, colloid and hypertonic solutions for perioperative fluid management. American Society of Anesthesiologists Regional Refresher Course, San Antonio, Texas, January 23, 1994.
249. Controversies in perioperative fluid management. Review Course Lecture, International Anesthesia Research Society, 68th Clinical & Scientific Congress, Orlando, Florida, March 6, 1994.
250. CPB and the CNS. Tutorial, International Anesthesia Research Society, 68th Clinical and Scientific Congress, Orlando, Florida, March 6, 1994.
251. Anesthesia for patients with head trauma. Joint Grand Rounds, Beth Israel Hospital and Brigham & Women's Hospital, Boston, Massachusetts, April 6, 1994.
252. Development and applications of new technology. Pulmonary Care Seminar, 2001; Galvez Hotel, Galveston, Texas, April 8, 1994.
253. Interpretation of arterial blood gases. Duke University Medical Center, Department of Anesthesiology, Durham, North Carolina, May 10, 1994.
254. Traumatic brain injury: prevention of secondary ischemia. Anesthesiology Grand Rounds, Duke University Medical Center, Durham, North Carolina, May 11, 1994.
255. Fluid therapy in the ICU. Critical Care Grand Rounds, Duke University Medical Center, Durham, North Carolina, May 12, 1994.
256. Advances in neuro intensive care. Surgical Critical Care Multidisciplinary Conference, Michigan State University, Grand Rapids, Michigan, June 10, 1994.
257. Physicians involvement and roles in TQM/CQI. Workshop, Creating a Healthcare System that Works, American Productivity and Quality Center, Houston, Texas, July 9, 1994.
258. Head trauma. 7th Annual Fellows Conference, Society of Critical Care Medicine, Lake Tahoe, Nevada, September 5, 1994.
259. Perioperative fluid management: crystalloid, colloid and hypertonic solutions. The role of nonblood-containing fluids in resuscitation. American Society of Anesthesiologists Refresher Course, San Francisco, California, October 16, 1994.
260. The role of new knowledge in anesthesia/critical care. Panel on Critical Care Medicine: Can Anesthesiology Survive Without It? American Society of Anesthesiologists, San Francisco, California, October 17, 1994.
261. Perioperative fluid therapy. Emory University Hospital, Department of Anesthesiology, Atlanta, Georgia, November 3, 1994.
262. Cerebral oximetry. Emory University Hospital, Atlanta, Georgia, November 4, 1994.
263. The head injured patient. Anesthesiology and Critical Care Update 1994. University of Florida College of Medicine, Department of Anesthesiology and Division of Critical Care Medicine, Lake Buena Vista, Florida, November 21, 1994.
264. Fluid therapy for head injured patients. Anesthesiology and Critical Care Update 1994. University of Florida College of Medicine, Department of Anesthesiology and Division of Critical Care Medicine, Lake Buena Vista, Florida, November 21, 1994.

265. Perioperative fluid management. Virginia Mason Clinical Conference. Virginia Mason Clinic, University of Washington, Seattle, Washington, January 26, 1993.
266. Cerebral blood flow and metabolism during cardiopulmonary bypass. Anesthesiology Research Seminar, University of Washington, Seattle, Washington, January 26, 1993.
267. Clinical aspects of brain protection. Seattle Anesthesia Society Dinner. University of Washington, Seattle, Washington, January 26, 1993.
268. Perioperative fluid management. Case Conference, University of Washington, Seattle, Washington, January 27, 1993.
269. Perioperative management of head trauma. Seventh Annual Anesthesia Update 1993, Department of Anesthesiology, Medical College of Wisconsin, and The American Society of Critical Care Anesthesiologists, Copper Mountain, Colorado, February 10, 1993.
270. Perioperative fluid management (Part 1). Seventh Annual anesthesia Update 1993, Department of Anesthesiology, Medical College of Wisconsin, and The American Society of Critical Care Anesthesiologists, Copper Mountain, Colorado, February 10, 1993.
271. Perioperative fluid management (Part 2). Seventh Annual Anesthesia Update 1993, Department of Anesthesiology, Medical College of Wisconsin, and The American Society of Critical Care Anesthesiologists, Copper Mountain, Colorado, February 11, 1993.
272. Blood gas and electrolyte abnormalities. Seventh Annual Anesthesia Update 1993, Department of Anesthesiology, Medical College of Wisconsin, and The American Society of Critical Care Anesthesiologists, Copper Mountain, Colorado, February 11, 1993.
273. Cerebrovascular responses to shock and resuscitation. Anesthesia and the Central Nervous System: 38th Annual Postgraduate Course in Anesthesiology, Department of Anesthesiology, University of Utah School of Medicine, Snowbird, Utah, February 20, 1993.
274. Brain monitoring in the critical care unit. Anesthesia and the Central Nervous System: 38th Annual Postgraduate Course in Anesthesiology, Department of Anesthesiology, University of Utah School of Medicine, Snowbird, Utah, February 21, 1993.
275. Neurologic complications of cardiac surgery. Anesthesia and the Central Nervous System: 38th Annual Postgraduate Course in Anesthesiology, Department of Anesthesiology, University of Utah School of Medicine, Snowbird, Utah, February 23, 1993.
276. Treatment of cerebral ischemia. Review Course Lecture, International Anesthesia Research Society, 67th Congress, San Diego, California, March 20, 1993.
277. Ask the expert: neuroanesthesia. Tutorial, International Anesthesia Research Society, 67th Congress, San Diego, California, March 20, 1993.
278. Pharmacologic protection of the brain during cardiac surgery. Society of Cardiovascular Anesthesiologists, San Diego, California, April 26, 1993.
279. Cytokines in sepsis. University of Virginia Health Sciences Center, Department of Anesthesiology, Charlottesville, Virginia, May 5, 1993.
280. Physiologic considerations in the management of acute head injury. 6th Annual Trauma Anesthesia and Critical Care Symposium, Baltimore, Maryland, May 22, 1993.
281. Hypertonic saline in elevated ICP. 14th International Symposium on Current Problems in Emergency and Intensive Care Medicine, Intensive Care Medicine 1992, Munster, Germany, May 14, 1993.

282. Fluid therapy in the critically ill patient. Kentucky Anesthesia Symposium, University of Louisville, Louisville, Kentucky, June 5, 1993.
283. Quantitative brain hemoglobin measurements. Panel Moderator: Near Infrared Spectroscopy, 22nd Educational and Scientific Symposium, Society of Critical Care Medicine, New York, New York, June 11, 1993.
284. Total quality improvement. Texas Society of Anesthesiologists 1993 Annual Meeting, Irving, Texas, September 10, 1993.
285. Cardiopulmonary bypass and the brain. The University of Texas Medical School, Houston, Texas, September 20, 1993.
286. Perioperative fluid management. Texas Gulf Coast Anesthesia Society, Houston, Texas, September 20, 1993.
287. Cerebrovascular effects of shock and fluid resuscitation. The George Washington University, Department of Anesthesiology, Washington, D.C., September 21, 1993.
288. Neurosurgical intensive care. The George Washington University, Department of Anesthesiology, Washington, D. C., September 22, 1993.
289. Experimental circulation, cerebral resuscitation. Moderator, American Society of Anesthesiologists, Washington, D.C., October 11, 1993.
290. Fluid management of trauma patients. Problem-based Luncheon Discussions. American Society of Anesthesiologists, Washington, D.C., October 10 and 12, 1993.
291. Clinical aspects of brain protection. Walter Reed Army Medical Center, Washington, D.C., November 16, 1993.
292. CNS complications of cardiopulmonary bypass. Department of Anesthesiology, New York University Medical Center, New York, New York, January 15, 1992.
293. Therapeutic priorities in trauma patients. The American Society of Critical Care Anesthesiologists, and the Department of Anesthesiology and Critical Care Medicine, Memorial Sloan-Kettering Cancer Center, New York, New York, January 31, 1992.
294. Closed head injuries. The American Society of Critical Care Anesthesiologists, and the Department of Anesthesiology and Critical Care Medicine, Memorial Sloan-Kettering Cancer Center, New York, New York, February 1, 1992.
295. Fluid therapy. Department of Anesthesia, Emory University Hospital, Atlanta, Georgia, February 5, 1992.
296. Fluid therapy. Department of Anesthesia, Georgia Baptist Medical Center, Atlanta, Georgia, February 5, 1992.
297. Closed head injury. Department of Anesthesiology, Yale University School of Medicine, New Haven, Connecticut, February 18, 1992.
298. Neurological sequelae of cardiac surgery. Department of Anesthesiology, Yale University School of Medicine, New Haven, Connecticut, February 19, 1992.
299. Cardiopulmonary bypass and the brain. Review Course Lecture, International Anesthesia Research Society, San Francisco, California, March 14, 1992.
300. Intracranial pressure monitoring. 12th International Symposium on Intensive Care and Emergency Medicine, Brussels Congress Center, Brussels, Belgium, March 24-27, 1992.

301. Cerebral circulation during cardiopulmonary bypass. Department of Anesthesiology, National Naval Medical Center, Bethesda, Maryland, April 16, 1992.
302. Perioperative fluid therapy. Uniformed Services University of the Health Sciences, Bethesda, Maryland, April 16, 1992.
303. Central nervous system. Program Coordinator, Postgraduate Review Course, Society of Critical Care Medicine, 21st Educational and Scientific Symposium, San Antonio, Texas, May 27-29, 1992.
304. Neurologic monitoring. Society of Critical Care Medicine, 21st Educational and Scientific Symposium, San Antonio, Texas, May 27, 1992.
305. Initial evaluation of a new prototype of a noninvasive brain oxygen monitor. Society of Critical Care Medicine, 21st Educational and Scientific Symposium, San Antonio, Texas, May 28, 1992.
306. Hypertonic saline resuscitation. Texas Society of Anesthesiologists 1992 Annual Meeting, El Paso, Texas, September 12, 1992.
307. Hypertonic saline resuscitation. ICU-Fellows Conference, Massachusetts General Hospital, Boston, Massachusetts, September 23, 1992.
308. CNS physiology and cardiopulmonary bypass. Cardiopulmonary bypass in the 90's - II, Emory University School of Medicine, Department of Anesthesiology, Atlanta, Georgia, October 2-4, 1992.
309. Blood gas interpretation. UTMB Second Annual Fall Round-Up, Galveston, Texas, October 10, 1992.
310. Fluid management of trauma patients. Problem-Based Luncheon Discussion, American Society of Anesthesiologists, New Orleans, Louisiana, October 18, 1992.
311. The use of crystalloid, colloid & hypertonic solutions for perioperative fluid management. Refresher Course Lecture, American Society of Anesthesiologists, New Orleans, Louisiana, October 18, 1992.
312. Non-anesthetic considerations and perioperative care. Panel on anesthesia and Organ Dysfunction: The Kidney, American Society of Anesthesiologists, New Orleans, Louisiana, October 19, 1992.
313. Neurologic monitoring. Panel on Neurologic Critical Care: An Update, American Society of Anesthesiologists, New Orleans, Louisiana, October 20, 1992.
314. Oncotic pressure and volemia -- should new ideas be taken into the OR? Panel on Neuroanesthesia Research: Clinical Relevance, American Society of Anesthesiologists, New Orleans, Louisiana, October 20, 1992.
315. CNS physiology and cardiopulmonary bypass. Baylor University, Department of Anesthesiology, Houston, Texas, October 22, 1992.
316. New insights into cerebral protection. Symposium: Emergency Cardiac Care: New Recommendations, American Heart Association, New Orleans, Louisiana, November 16, 1992.
317. The acutely head-injured patient, panel discussion, case management problems of critically ill patients. Postgraduate Assembly in Anesthesiology, The New York State Society of Anesthesiologists, Inc., New York, New York, December 15, 1992.
318. Perioperative fluid management - what's the solution? Luncheon Discussion. Postgraduate Assembly in Anesthesiology, The New York State Society of Anesthesiologists, Inc., New York, New York, December 15, 1992.
319. Neurologic and neuropsychologic complications of cardiac surgery. Department of Anesthesiology, Vanderbilt University, Nashville, Tennessee, January 31, 1991.

320. Cerebral blood flow and metabolism: clinical implications. Department of Anesthesiology, Vanderbilt University, Nashville, Tennessee, February 1, 1991.
321. Management of the patient with head trauma. 17th Annual Scientific Meeting, Arizona Society of Anesthesiologists, Scottsdale, Arizona, February 15, 1991.
322. Monitoring the brain. 17th Annual Scientific Meeting, Arizona Society of Anesthesiologists, Scottsdale, Arizona, February 15, 1991.
323. Fluid management in trauma patients. 17th Annual Scientific Meeting, Arizona Society of Anesthesiologists, Scottsdale, Arizona, February 16, 1991.
324. Anesthetic management of the patient with head trauma. 65th Congress, International Anesthesia Research Society, San Antonio, Texas, March 11, 1991.
325. Treatment of increased ICP: controversies and recent developments, practical approaches to pediatric and critical care. University of North Carolina, Chapel Hill, North Carolina, March 23, 1991.
326. Neurologic emergencies: spinal cord compression and head trauma, practical approaches to pediatric emergency and critical care. University of North Carolina, Chapel Hill, North Carolina, March 23, 1991.
327. Monitoring in the 1990's. 10th Annual Carolina/Virginia Society of Critical Care Medicine, Myrtle Beach, South Carolina, April 12, 1991.
328. Brain monitoring. Department of Anesthesia, University of Colorado Health Sciences Center, Denver, Colorado, April 15, 1991.
329. ICU care of the head trauma patient. Department of Anesthesia, University of Colorado Health Sciences Center, Denver, Colorado, April 15, 1991.
330. Brain protection. Gadgets Workshop, 13th Annual Meeting, Society of Cardiovascular Anesthesiologists, San Antonio, Texas, May 8, 1991.
331. Brain monitoring in critical care medicine. Plenary Lecture, Society of Critical Care Medicine, 20th Educational and Scientific Symposium, Washington, D.C., May 24, 1991.
332. Head injury. Grand Rounds, Harvard Medical School, Department of Anesthesia, Massachusetts General Hospital, Boston, Massachusetts, September 12, 1991.
333. Perioperative fluid management: crystalloid, colloid and hypertonic solutions. American Society of Anesthesiologists, San Francisco, California, October 27, 1991.
334. Cardiopulmonary bypass: principles governing our practice. Panel Discussion. American Society of Anesthesiologists, San Francisco, California, October 28, 1991.
335. Critical care scientific papers, Moderator. American Society of Anesthesiologists, San Francisco, California, October 30, 1991.
336. Quality assurance to continuous quality improvement: transitions in a multidisciplinary program. North Carolina Association of Quality Assurance Professionals, Winston-Salem, North Carolina, November 1, 1991.
337. Anesthetic considerations in trauma. 10th Annual Trauma Symposium, William Beaumont Army Medical Center, El Paso, Texas, November 14, 1991.
338. Neuropsychiatric effects of cardiopulmonary bypass--what and why? Department of Anesthesiology, The New York Hospital, Cornell Medical Center, New York, New York, December 2, 1991.

339. Clinical aspects of brain protection. Department of Anesthesia, Massachusetts General Hospital, Boston, Massachusetts, January 11, 1990.
340. Brain resuscitation. 15th Annual Vail Symposium in Intensive Care, Vail, Colorado, February 14, 1990.
341. Brain monitoring. 15th Annual Vail Symposium in Intensive Care, Vail, Colorado, February 14, 1990.
342. Perioperative fluid and electrolyte management. International Anesthesia Research Society, Honolulu, Hawaii, March 10, 1990.
343. Moderator, Review Course Lectures, International Anesthesia Research Society, Honolulu, Hawaii, March 10, 1990.
344. Brain and spinal cord monitoring: the theory. Miami Comprehensive Review Course in Anesthesiology, Miami Beach, Florida, April 1, 1990.
345. Brain and spinal cord monitoring: the practice. Miami Comprehensive Review Course in Anesthesiology, Miami Beach, Florida, April 1, 1990.
346. Brain protection. Miami Comprehensive Review Course in Anesthesiology, Miami Beach, Florida, April 1, 1990.
347. Difficult decisions in neuroanesthesia (panelist). Miami Comprehensive Review Course in Anesthesiology, Miami Beach, Florida, April 1, 1990.
348. Evaluation and anesthetic considerations in head trauma. 18th Annual Postgraduate Seminar in Anesthesia, Anesthesia Considerations in Critical Care, University of Cincinnati, Cincinnati, Ohio, May 5, 1990.
349. Anesthetic considerations in patients with spinal injury or disease. 18th Annual Postgraduate Seminar in Anesthesia, Anesthesia Considerations in Critical Care, University of Cincinnati, Cincinnati, Ohio, May 6, 1990.
350. Central nervous system monitoring. Critical Care Grand Rounds, Wayne State University Medical School, Detroit, Michigan, May 17, 1990.
351. Cerebrovascular effects of shock, trauma, and resuscitation. Department of Anesthesia, University of Pennsylvania, Philadelphia, Pennsylvania, May 23, 1990.
352. Neuropsychologic complications of cardiopulmonary bypass. Department of Anesthesia, University of Pennsylvania, Philadelphia, Pennsylvania, May 23, 1990.
353. Monitoring considerations in 1990, plenary session. Society of Critical Care Medicine, San Francisco, California, May 29, 1990.
354. Current management of stroke in "Management of neurologic crises" (Moderator), plenary session. Society of Critical Care Medicine, San Francisco, California, May 29, 1990.
355. Cerebral circulation in critical care/neurologic monitoring. 3rd Annual Trauma Anesthesia and Critical Care Symposium, Baltimore, Maryland, June 16, 1990.
356. Crystalloids vs. Colloids. Mercy Hospital, Department of Anesthesia, Charlotte, North Carolina, July 10, 1990.
357. Acute resuscitation in trauma patients. Department of Surgery, Spartanburg Medical Center, Spartanburg, South Carolina, July 31, 1990.

358. Cardiopulmonary function monitoring, 1990's. Fourth Annual Symposium on Cardiology and Cardiovascular Surgery, Lutheran College of Health Professions, Fort Wayne, Indiana, October 10, 1990.
359. Initial clinical experience using in vivo spectroscopy to quantify brain oxygen saturation. American Society of Anesthesiologists, Las Vegas, Nevada, October 21, 1990.
360. Non-invasive monitoring of the CNS: the 90's in panel discussion: Monitoring Advances for the Critically Ill Patient. American Society of Anesthesiologists, Las Vegas, Nevada, October 23, 1990.
361. Moderator, scientific session: experimental neurosciences and biochemistry V. American Society of Anesthesiologists, Las Vegas, Nevada, October 23, 1990.
362. Critical care research implications of LTB4 antagonism. Rohme-Poulenc-Rorer Pharmaceutical Company, Philadelphia, Pennsylvania, November 5, 1990.
363. Fluid therapy. Department of Anesthesiology, Cleveland Metro General Hospital, Cleveland, Ohio, November 6, 1990.
364. Perioperative fluid therapy. Department of Anesthesiology, Medical University of South Carolina, Charleston, South Carolina, November 8, 1990.
365. Fluid management. Department of Anesthesiology, University of Iowa Hospital, Iowa City, Iowa, November 12, 1990.
366. Neurologic complications of cardiac surgery. Department of Anesthesiology, University of Iowa Hospital, Iowa City, Iowa, November 13, 1990.
367. Common critical care management problems, (Panel Chairman). Postgraduate Assembly in Anesthesiology, The New York State Society of Anesthesiologists, Inc., New York, New York, December 10, 1990.
368. Recent advances in brain monitoring. Postgraduate Assembly in Anesthesiology, The New York State Society of Anesthesiologists, Inc., New York, New York, December 10, 1990.
369. Cerebrovascular effects of shock and resuscitation. The Mount Sinai Medical Center, New York, New York, January 18, 1989.
370. Brain monitoring. University of Miami, Department of Anesthesia, Vail, Colorado, February 9, 1989.
371. Brain protection during anesthesia. University of Miami, Department of Anesthesia, Vail, Colorado, February 9, 1989.
372. Neurologic complications of cardiac surgery. Department of Anesthesia, Naval Hospital, Portsmouth, Virginia, February 14, 1989.
373. Cerebral blood flow during cardiopulmonary bypass. Panel Discussion: Cardiac Anesthesia - New Information, International Anesthesia Research Society, Orlando, Florida, March 5, 1989.
374. Anesthesia and renal function. Review course lecture, International Anesthesia Research Society, Orlando, Florida, March 5, 1989.
375. Cerebral circulation during cardiopulmonary bypass. Nashville Society of Anesthesiologists, Nashville, Tennessee, April 4, 1989.
376. Protection of the brain from ischemia. Harvard Medical School, Department of Continuing Education, Cambridge, Massachusetts, April 19, 1989.

377. Cerebral circulation during cardiopulmonary bypass. The University of Tennessee Medical Center at Knoxville, Tennessee, May 9, 1989.
378. Management of shock. Grand Rounds, Rowan Memorial Hospital, Salisbury, North Carolina, May 18, 1989.
379. Cerebral circulation during cardiopulmonary bypass. Cleveland Clinic, Cleveland, Ohio, May 21, 1989.
380. Fluid, electrolytes and nutrition. Department of Anesthesia, Cleveland Clinic Foundation, Cleveland, Ohio, May 22, 1989.
381. Metabolic derangements. Department of Anesthesia, Cleveland Clinic Foundation, Cleveland, Ohio, May 22, 1989.
382. Moderator, panel on neurologic complications of cardiac arrest. Society of Critical Care Medicine, New Orleans, Louisiana, June 8, 1989.
383. Clinical trials and resuscitation research. Society of Critical Care Medicine, New Orleans, Louisiana, June 8, 1989.
384. Moderator, scientific session. Society of Critical Care Medicine, New Orleans, Louisiana, June 8, 1989.
385. The patient with an acute head injury. American Society of Anesthesiologists Workshop on Anesthesia for the Unstable Patient, Boston, Massachusetts, June 25, 1989.
386. The patient with electrolyte and renal abnormalities. American Society of Anesthesiologists Workshop on Anesthesia for the Unstable Patient, Boston, Massachusetts, June 25, 1989.
387. Chairman, scientific session. The 5th World Congress on Intensive and Critical Care Medicine, Kyoto, Japan, September 5, 1989.
388. Brain monitoring in critical care The 5th World Congress on Intensive and Critical Care Medicine, Kyoto, Japan, September 6, 1989.
389. Perioperative fluid and electrolyte management. Loyola University Medical Center, Maywood, Illinois, October 3, 1989.
390. Cerebral considerations during cardiopulmonary bypass. Loyola University Medical Center, Maywood, Illinois, October 4, 1989.
391. Fluid management in the perioperative period. Review Course Lecture, American Society of Anesthesiologists, New Orleans, Louisiana, October 17, 1989.
392. Head trauma, panel discussion: Critical Care Anesthesiology: The ICU/OR Interface in Multiple Trauma, American Society of Anesthesiologists, New Orleans, Louisiana, October 17, 1989.
393. Hierarchy of factors determining cerebral blood flow during hypothermic cardiopulmonary bypass. American Society of Anesthesiologists, New Orleans, Louisiana, October 17, 1989.
394. Diagnosis of thromboembolic disease. Panel on Management of Thromboembolic Disease. Congress of Neurological Surgeons, Atlanta, Georgia, October 30, 1989.
395. Perioperative management of fluids and electrolytes. San Diego Naval Hospital, San Diego, California, November 14, 1989.
396. Cerebral consequences of cardiopulmonary bypass. University of California, San Diego School of Medicine, San Diego, California, November 15, 1989.

397. Quality Assurance: a hospital perspective. University of California, San Diego School of Medicine, San Diego, California, November 15, 1989.
398. Perioperative management of fluids and electrolytes. University of California, San Diego School of Medicine, San Diego, California, November 16, 1989.
399. Prevention of perioperative renal failure. University of California, San Diego School of Medicine, San Diego, California, November 16, 1989.
400. Brain resuscitation. Medical University of South Carolina, Division of Respiratory/Critical Care, Charleston, South Carolina, November 18, 1989.
401. Fluid and electrolyte management of the critically ill. Medical University of South Carolina, Division of Respiratory/Critical Care, Charleston, South Carolina, November 19, 1989.
402. Brain protection during anesthesia. 14th Caribbean Symposium in Anesthesiology and Related Fields, San Juan, Puerto Rico, November 30, 1989.
403. Perioperative management of fluids and electrolytes. 14th Caribbean Symposium in Anesthesiology and Related Fields, San Juan, Puerto Rico, December 1, 1989.
404. Acute renal insufficiency: monitoring and management. Western Pennsylvania Society of Anesthesiologists, Pittsburgh, Pennsylvania, February 24-26, 1988.
405. What the anesthesiologist needs to know about oliguria. Anesthesia Potpourri, Georgia Society of Anesthesiologists, St. Joseph's Hospital, Atlanta, Georgia, February 27-28, 1988.
406. The role of eicosanoids in acute nervous system injury. The Duke Symposium: Biology of Critical Care Medicine, Duke University Medical Center, Durham, North Carolina, March 1, 1988.
407. Acid-base interpretation. Department of Anesthesia, Duke University Medical Center, Durham, North Carolina, March 2, 1988.
408. Immediate hemodynamic responses to hypertonic saline. Hypertonic Saline investigators Meeting, Letterman Army Institute of Research, San Francisco, California, March 3-4, 1988.
409. Horizons in brain resuscitation. Carolina/Virginia Society of Critical Care Medicine, Asheville, North Carolina, April 14-15, 1988.
410. Neurologic trauma. 12th Annual Anesthesia Symposium of Baystate Medical Center, Springfield, Massachusetts, April 23-24, 1988.
411. The trauma patient returns to the OR. 12th Annual Anesthesia Symposium of Baystate Medical Center, Springfield, Massachusetts, April 23-24, 1988.
412. Respiratory care in the critically ill patient. Clinical Conference of the University of Alabama at Birmingham, Birmingham, April 27-28, 1988.
413. Cerebrovascular effects of shock and resuscitation. Clinical conference of the University of Alabama at Birmingham, Birmingham, April 27-28, 1988.
414. Emergency surgery for the critical ICU patient. 17th Annual Anesthesia Symposium, Pensacola Beach, Florida, April 30-May 1, 1988.
415. Fluids and electrolytes: have we been doing it wrong? 17th Annual Anesthesia Symposium, Pensacola Beach, Florida, April 30-May 1, 1988.

416. Cerebrovascular effects of shock and resuscitation. The University of Tennessee Medical Center at Knoxville, Department of Anesthesia, Gatlinburg, Tennessee, May 15, 1988.
417. Cerebrovascular responses to cardiopulmonary bypass. Fort Sanders Regional Medical Center, Department of Anesthesia, Knoxville, Tennessee, May 15, 1988.
418. Cerebrovascular response to hypocarbia during cardiopulmonary bypass. Unincorporated Neuroanesthesia Research Group. Johns Hopkins University Hospital, Baltimore, Maryland, May 18, 1988.
419. Moderator, scientific session. Society of Critical Care Medicine, Annual Scientific Meeting, Orlando, Florida, June 1, 1988.
420. Quality assurance in the intensive care unit. Society of Critical Care Medicine, Orlando, Florida, June 2, 1988.
421. Cerebrovascular effects of shock and resuscitation. University of Wisconsin, Madison, Wisconsin, June 7, 1988.
422. Cerebral blood flow during cardiopulmonary bypass. University of Wisconsin, Madison, Wisconsin, June 8, 1988.
423. Cerebral blood flow during cardiopulmonary bypass. Medical College of Wisconsin, Milwaukee, Wisconsin, June 9, 1988.
424. Cerebrovascular responses of shock and resuscitation. Milwaukee Society of Anesthesiologists, Milwaukee, Wisconsin, June 9, 1988.
425. Workshop moderator: indications for placement of nasal and oral endotracheal tubes. Consensus Conference on National Association of Medical Directors of Respiratory Care, Washington, D.C., June 27-28, 1988.
426. Eicosanoids and global ischemia. University of Pittsburgh School of Medicine, Division of Critical Care Medicine, Department of Anesthesia, Pittsburgh, Pennsylvania, August 31, 1988.
427. Critical care quality assurance. Presbyterian-University Hospital, Pittsburgh, Pennsylvania, August 31, 1988.
428. Recent advances in cerebrovascular physiology. University of Vermont, Department of Surgery, Division of Anesthesia, Medical Center of Vermont, Burlington, Vermont, September 22, 1988.
429. Preoperative renal evaluation. Panel on Preoperative Evaluation. American Society of Anesthesiologists, San Francisco, California, October 10, 1988.
430. Protection of the brain from hypoxia. Refresher Course, American Society of Anesthesiologists, San Francisco, California, October 12, 1988.
431. Cerebrovascular complications of cardiac surgery. The Upjohn Company, Kalamazoo, Michigan, October 19, 1988.
432. Mechanical ventilation. Wesley Long Community Hospital, Inc., Department of Nursing, Greensboro, North Carolina, November 2, 1988.
433. Recent advances in cerebrovascular physiology. College of Physicians and Surgeons of Columbia University, New York, New York, November 10, 1988.
434. Cerebral blood flow and autoregulation, University of Florida College of Medicine, Anesthesiology and Critical Care Update: 1988, Lake Buena Vista, Florida, November 22, 1988.

435. Cerebral protection. University of Florida College of Medicine, Anesthesiology and Critical Care Update: 1988, Lake Buena Vista, Florida, November 22, 1988.
436. The role of arachidonate metabolites in global brain ischemia. Bethesda Naval Hospital, Bethesda, Maryland, February 11, 1987.
437. Cerebral blood flow during cardiopulmonary bypass. Bethesda Naval Hospital, Bethesda, Maryland, February 12, 1987.
438. Oliguria - significance and management. Review Course Lecture, International Anesthesia Research Society, 61st Congress, Orlando, Florida, March 17, 1987.
439. Overview of hemodynamic monitoring. Anesthesia Review Course, Seventh Medical Command, United States Army, Heidelberg, Germany, March 23, 1987.
440. Hemodynamic monitoring in the treatment of shock. Anesthesia Review Course, Seventh Medical Command, United States Army, Heidelberg, Germany, March 23, 1987.
441. Acid-base interpretation. Anesthesia Department Resident Lecture Series, Mayo Clinic, Rochester, Minnesota, May 5, 1987.
442. Cerebral blood flow during cardiopulmonary bypass. Anesthesia Department Grand Rounds, Mayo Clinic, Rochester, Minnesota, May 6, 1987.
443. Renal function and failure. Core Curriculum Review Course, Society of Critical Care Medicine, 16th Annual Meeting, Anaheim, California, May 26, 1987.
444. Cerebral blood flow is unchanged following acute reduction in mean arterial pressure with Captopril. Poster Presentation, Society of Critical Care Medicine, 16th Annual Meeting, Anaheim, California, May 26, 1987.
445. Conventional ventilatory support. Minicourse on Acute Lung Injury, Society of Critical Care Medicine, 16th Annual Meeting, Anaheim, California, May 26, 1987.
446. Bedside measurement of cerebral blood flow. Panel on CNS Monitoring, Society of Critical Care Medicine, 16th Annual Meeting, Anaheim, California, May 26, 1987.
447. Cerebral ischemia: pathophysiology. Refresher Course: Critical Care Medicine, American Society of Critical Care Anesthesiologists, Chicago, Illinois, August 30, 1987.
448. Renal replacement therapy. Refresher Course: Critical Care Medicine, American Society of Critical Care Anesthesiologists, Chicago, Illinois, August 30, 1987.
449. Fluid therapy following cardiac arrest. Society of Neurosurgical Anesthesia and Critical Care, Atlanta, Georgia, October 9, 1987.
450. Effects of pump flow reduction on cerebral blood flow during hypothermic cardiopulmonary bypass. American Society of Anesthesiologists, Atlanta, Georgia, October 12, 1987.
451. Intravenous labetalol for blood pressure reduction following myocardial revascularization. American Society of Anesthesiologists, Atlanta, Georgia, October 13, 1987.
452. Moderator, panel on septic shock. American Society of Anesthesiologists, Atlanta, Georgia, October 13, 1987.
453. Cerebral blood flow changes in the critically ill. Critical Care Update: 1987, Lake Buena Vista, Florida, November 21-25, 1987.

454. Postoperative management of patients with renal failure. Postgraduate Assembly, The New York State Society of Anesthesiologists, Inc., New York, New York, December 12-16, 1987.
455. Neurologic complications of cardiopulmonary bypass. Children's Hospital National Medical Center, Washington, D.C., January 16, 1986.
456. Neurologic complications of cardiopulmonary bypass. Uniformed Services University of Health Sciences, Bethesda, Maryland, January 16, 1986.
457. Thromboxane synthetase inhibition and global cerebral ischemia. Bethesda Naval Hospital, Bethesda, Maryland, January 17, 1986.
458. Cerebral blood flow in anesthesia and critical care. Duke University Medical Center, Durham, North Carolina, January 21, 1986.
459. Cerebrovascular effects of rapid fluid resuscitation in a canine intracranial mass lesion model. International Anesthesia Research Society 60th Congress, Las Vegas, Nevada, March 18, 1986.
460. Inhibition of thromboxane A₂ production does not affect post-ischemic brain hypoperfusion in dogs. International Anesthesia Research Society 60th Congress, Las Vegas, Nevada, March 18, 1986.
461. Pathophysiologic mechanisms in acute pulmonary insufficiency. Emory University School of Medicine, Department of Anesthesiology, 22nd Annual Postgraduate Course, Atlanta, Georgia, May 1, 1986.
462. Management of oliguria: kidney vs. heart vs. lung. Emory University School of Medicine, Department of Anesthesiology, 22nd Annual Postgraduate Course, Atlanta, Georgia, May 1, 1986.
463. Effects of hypertonic saline on cerebral oxygen transport during resuscitation from hemorrhagic shock. Letterman Army Institute of Research, Symposium on Hypertonic Sodium Chloride Solutions for Resuscitation of Hemorrhagic Shock, San Francisco, California, June 2, 1986.
464. Pathophysiology and pharmacology of cerebral blood flow. American Society of Critical Care Anesthesiologists, Refresher Course: Critical Care Medicine, Chicago, Illinois, August 30, 1986.
465. Dialysis and ultrafiltration. American Society of Critical Care Anesthesiologists, Refresher Course: Critical Care Medicine, Chicago, Illinois, August 31, 1986.
466. Nitroprusside decreases cerebral blood flow during cardiopulmonary bypass. American Society of Anesthesiologists, Las Vegas, Nevada, October 19, 1986.
467. Moderator, Critical Care Medicine III (scientific papers). American Society of Anesthesiologists, Las Vegas, Nevada, October 21, 1986.
468. Fluid therapy in neurosurgical patients. Postgraduate Assembly, The New York State Society of Anesthesiologists, New York, New York, December 14, 1986.
469. Regional cerebral blood flow: clinical significance. National Institutes of Health, Devices and Technology Branch Contractors Meeting, Bethesda, Maryland, December 9, 1986.
470. Hemodynamic monitoring. Anderson County Medical Society, Anderson Memorial Hospital, Anderson, South Carolina, January 8, 1985.
471. Oliguria. Anesthesia Department, University of Alabama at Birmingham, Birmingham, Alabama, February 26, 1985.
472. Shock. Anesthesia Department, University of Alabama at Birmingham, Birmingham, Alabama, February 27, 1985.

473. Neurological complications in critical care. Carolina/Virginia Society of Critical Care Medicine, Winston-Salem, North Carolina, April 27, 1985.
474. Overview of preoperative evaluation and respiratory concerns. North Carolina Medical Society, Pinehurst, North Carolina, May 4, 1985.
475. Hypotension and shock. Watauga County Medical Society, Boone, North Carolina, July 15, 1985.
476. Differential diagnosis and management of oliguria. Texas Society of Anesthesiologists, Corpus Christi, Texas, September, 1985.
477. Cerebral resuscitation after cardiopulmonary resuscitation. Texas Society of Anesthesiologists, Corpus Christi, Texas, September, 1985.
478. Cerebral blood flow during cardiopulmonary bypass. Department of Anesthesia, University of Texas Health Science Center School of Medicine, Houston, Texas, September, 1985.
479. Blood-gas interpretation. Department of Anesthesia, University of Texas Health Science Center School of Medicine, Houston, Texas, September, 1985.
480. Physiologic effects of dialysis and ultrafiltration. American Society of Anesthesiologists, San Francisco, California, October 12-16, 1985.
481. Cerebral resuscitation. Anderson Memorial Hospital, Anderson, South Carolina, November 1, 1985.
482. Differential diagnosis and management of oliguria. Anderson Memorial Hospital, Anderson, South Carolina, November 1, 1985.
483. Cerebral resuscitation. Medical University of South Carolina, Annual Critical Care Review, Charleston, South Carolina, November 22-24, 1985.
484. Acid-base interpretation. Medical University of South Carolina, Annual Critical Care Review, Charleston, South Carolina, November 22-24, 1985.
485. Cerebrovascular effects of fluid resuscitation. Department of Anesthesiology, The University of North Carolina, Chapel Hill, North Carolina, November 27, 1985.
486. Brain injury following cardiac arrest. Department of Anesthesiology, The University of North Carolina, Chapel Hill, North Carolina, November 27, 1985.
487. Mechanical ventilation in anesthesia. Fairfax Hospital, Fairfax, Virginia, February 15, 1984.
488. Differential diagnosis and management of acute oliguria. American Society of Anesthesiologists, Refresher Course Lecture, New Orleans, Louisiana, October 14, 1984.
489. Mechanical ventilation. Department of Anesthesiology, National Naval Medical Center, Bethesda, Maryland, September 30, 1982.
490. Recent advances in critical care medicine. Rowan County Medical Society, Salisbury, North Carolina, October 7, 1982.
491. Preoperative evaluation of the surgical patient. Grand Rounds, Rowan Memorial Hospital, Salisbury, North Carolina, January 27, 1983.
492. Myocardial infarction following regional anesthesia in patients undergoing carotid endarterectomy. International Anesthesia Research Society, New Orleans, Louisiana, March 13-17, 1983.
493. Neurophysiologic monitoring for patients undergoing carotid endarterectomy. International Anesthesia Research Society, New Orleans, Louisiana, March 15, 1983.

494. Acid-base interpretation--background. Nurse Anesthetist Management Workshop, Naval School of Health Sciences, Bethesda, Maryland, April 7, 1983.
495. Acid-base interpretation--examples. Nurse Anesthetist Management Workshop, Naval School of Health Sciences, Bethesda, Maryland, April 7, 1983.
496. Acid-base interpretation. Department of Anesthesia, Bethesda Naval Hospital, Bethesda, Maryland, April 7, 1983.
497. Interpretation of hemodynamic monitoring data. Department of anesthesiology, Charlotte Memorial Hospital, Charlotte, North Carolina, May 12, 1983.
498. Interpretation of hemodynamic monitoring data. High Point Memorial Hospital, High Point, North Carolina, September 7, 1983.
499. Care of the critically ill patient. Clinical Skills Workshops & Review, Winston-Salem, North Carolina, September 12, 1983.
500. Mechanism of injury and natural history in ARDS. Howard University Hospital, Washington, D.C., September 17, 1983.
501. Bronchodilators, pharmacologic approach to the critically ill patient. Bethesda Naval Hospital, Bethesda, Maryland, September 22, 1983.
502. Clinical applications of calcium channel blockers. American Society of Extra-Corporeal Technology, Asheville, North Carolina, September 24, 1983.
503. Effects on intracranial pressure of resuscitation from hemorrhagic shock using hypertonic saline or Ringer's lactate. American Society of Anesthesiologists, Atlanta, Georgia, October 10, 1983.
504. Pulmonary physiology, critical care update: pulmonary nursing. Old Salem Chapter American Association of Critical Care Nurses, Winston-Salem, North Carolina, March 29-30, 1982.
505. Cardiovascular pharmacology. The First Educational Symposium of the Carolina-Virginia Society of Critical Care Medicine, Williamsburg, Virginia, May 8, 1982.
506. Preoperative evaluation of the surgical patient. Wilkes General Hospital, North Wilkesboro, North Carolina, September 7, 1982.
507. High-frequency positive-pressure ventilation. Uniformed University of Health Sciences, Bethesda, Maryland, April 16, 1981.
508. Vasodilators: afterload reduction, preload reduction. Cardiology Update, '81, Teaching Institute for Nurses and Allied Health Professionals, Winston-Salem, North Carolina, May 5, 1981.
509. Positive end-expiratory pressure in the treatment of hypoxemia. Breath of Spring '81. Ninth Annual Mid-Atlantic Region Respiratory Therapy Symposium, Winston-Salem, North Carolina, May 14, 1981.
510. Hemodynamic monitoring data in treatment of shock. Fall Session of the North Carolina Society of Anesthesiologists, Wrightsville Beach, North Carolina, September 3, 1981
511. Positive end-expiratory pressure. Walter Reed Army Medical Center, Washington, D.C., February 10, 1980.
512. Emergency intubation. 2nd Annual Chesapeake Bay Area Anesthesia Conference, Annapolis, Maryland, May, 1980.

513. Optimal PEEP. First Annual Chesapeake Bay Area Anesthesia Conference: A Clinical Update, Annapolis, Maryland, May 12, 1979.
514. Recognition and management of shock. California Society of Anesthesiologists 13th Annual Winter Seminar in Clinical Anesthesia, Sun Valley, Idaho, February 23, 1996. Testosterone (T) metabolism in male rat: an approach using steady state kinetics. IV International Congress of Endocrinology, Washington, D.C., June 18-24, 1972.