



January 12, 2015

Linda Porter, Ph.D.
National Institute of Neurological Disorders and Stroke
National Institutes of Health
31 Center Drive
Bethesda, MD 20892

Re: Nomination to Interagency Pain Research Coordinating Committee

Dear Dr. Porter,

The American Society of Anesthesiologists (ASA), representing over 52,000 members, is pleased to nominate James Rathmell, M.D., to the Interagency Pain Research Coordinating Committee (IPRCC) at the National Institutes of Health (NIH). ASA believes that Dr. Rathmell possesses the crucial experience and expertise including the advancement of pain care research that the IPRCC seeks.

Dr. Rathmell is the Henry Knowles Beecher Professor of Anesthesia at Harvard Medical School and Executive Vice Chair of the Department of Anesthesia, Critical Care and Pain Medicine at Massachusetts General Hospital. He currently serves as Co-Chair of the IPRCC working group on Professional Education and Training, and is devoted to establishing the highest international standards for the education of physicians in pain medicine. Dr. Rathmell led a multidisciplinary task force that redesigned pain medicine education in the United States and authored the new fellowship training requirements implemented by the Accreditation Council for Graduate Medical Education (ACGME) in 2007. The requirements govern pain subspecialty training for all physicians, including anesthesiologists, physiatrists, neurologists, and psychiatrists.

Dr. Rathmell has published and presented extensively on the topic of pain medicine. In 2004, he published a description of catastrophic neural injuries following intra-arterial injection of particulate steroid during cervical injections and a technique to lower risk that has become standard worldwide. Over nearly 20 years of practice, he refined techniques and assembled descriptions in the *Atlas of Image-Guided Intervention in Regional Anesthesia and Pain Medicine (2007)* – the 2nd Edition of this text was published in 2011. Dr. Rathmell has played a central role in the development and publication of international clinical guidelines that have improved the safety and consistency of pain treatment. He has edited seven books, including two of the world's best-selling pain texts: *Raj's Practical Management of Pain, 4th Edition (2008)* and *Bonica's Management of Pain, 4th Edition (2010)*.

Dr. Rathmell has designed, conducted, and published numerous international, multicenter clinical trials examining novel analgesic agents and devices. He serves on the editorial board

of *Anesthesiology* and was immediate-past Associate Editor-in-Chief of *Regional Anesthesia and Pain Medicine*, both with impact factors ranking them among the world's top five pain journals.

In regard to his service to ASA, Dr. Rathmell has served as a member of the ASA Annual Program Content Committee for Pain Medicine since 2005, the ASA Task Force on the Future of Pain Medicine since 2008, and the ASA Task Force on Guidelines for Treatment of Chronic Pain from 2006-2010. Dr. Rathmell has served as a member of the ASA Committee on Pain Medicine since 1999 and he chaired the committee from 2001-2005. The Committee on Pain Medicine is charged with studying pain mechanisms and management as well as reviewing and disseminating developments in the field of pain medicine.

If selected to serve on the IPRCC, Dr. Rathmell is enthusiastically willing to serve and commit to the meetings required.

ASA is pleased to have the opportunity to nominate Dr. Rathmell to the IPRCC and hopes that the IPRCC will seriously consider his appointment. Dr. Rathmell is a recognized leader in pain medicine and provides a diverse and broad expertise that will benefit the important mission of the committee. If you have any questions, please do not hesitate to let me know.

Respectfully yours,

A handwritten signature in black ink, appearing to read "J.P. Abenstein", written in a cursive style.

J.P. Abenstein, M.S.E.E., M.D.
President
American Society of Anesthesiologists

**Harvard Medical School
Curriculum Vitae**

Date Prepared: January 1, 2015

Name: James P. Rathmell, M.D.

Office Address: Massachusetts General Hospital
Department of Anesthesia, Critical Care and Pain Medicine
55 Fruit Street, Gray Bigelow 444
Boston, Massachusetts 02114
USA

Home Address: 18 Dartmouth Street
Boston, MA 02116

Work Phone: (617)643-7677

Work Email: rathmell.james@mgh.harvard.edu

Work FAX: (617)724-8500

Place of Birth: Philadelphia, Pennsylvania

Education

1982	B.S.	Science	Pennsylvania State University
1984	M.S.	Biochemistry	Wake Forest University
1988	M.D.	Medicine	Bowman Gray School of Medicine, Wake Forest University

Postdoctoral Training

07/88-06/89	Intern	Internal Medicine and Pediatrics	North Carolina Baptist Hospitals
07/89-06/92	Resident	Anesthesiology	North Carolina Baptist Hospitals
07/91-06/92	Chief Resident	Concentration in Cardiovascular Anesthesia and Pain Management	North Carolina Baptist Hospitals
07/91-06/92	Research Fellow	Anesthesiology	North Carolina Baptist Hospitals

Faculty Academic Appointments

1992-1995	Assistant Professor	Anesthesiology	University of Vermont College of Medicine
1995-1996	Instructor	Anaesthesia	Harvard Medical School
1997-2003	Associate Professor	Anesthesiology	University of Vermont College of Medicine
2003-2006	Professor	Anesthesiology	University of Vermont College of Medicine
2006-	Adjunct Professor	Anesthesiology	University of Vermont College of Medicine
2006-	Associate Professor	Anaesthesia	Harvard Medical School
2011-	Professor	Anaesthesia	Harvard Medical School
2012-	Henry Knowles Beecher Professor of Anesthesia		Harvard Medical School

Appointments at Hospitals/Affiliated Institutions

Past

1992-1995	Staff Anesthesiologist	Department of Anesthesia	Fletcher Allen Health Care, Burlington, Vermont
1995-1996	Staff Anesthesiologist	Department of Anesthesia	Brigham and Women's Hospital, Boston, Massachusetts
1996-1997	Staff Anesthesiologist	Department of Anesthesia	St. Joseph's Hospital, Atlanta, Georgia
1997-2006	Staff Anesthesiologist	Department of Anesthesia	Fletcher Allen Health Care, Burlington, Vermont
2006-2011	Associate Anesthetist	Department of Anesthesia and Critical Care	Massachusetts General Hospital, Boston, Massachusetts

Current

2012-	Anesthetist	Department of Anesthesia, Critical Care and Pain Medicine	Massachusetts General Hospital, Boston, Massachusetts
-------	-------------	--	---

Other Professional Positions

1993-2011	Consultant, Pain Management Issues	Vermont Board of Medical Practice
2013-	Consultant, Pain Management Issues	Massachusetts Board of Registration in Medicine

Major Administrative Leadership Positions

Local

1992-1995	Conference Coordinator, Weekly Morbidity and Mortality Conference	Department of Anesthesiology, University of Vermont
1993-1995	Course Co-coordinator, Medical Student Anesthesiology Elective	University of Vermont College of Medicine
1993-1995	Program Director, Nurse Anesthesia Training	Medical Center Hospital of Vermont
1994-1995	Program Director, Pain Management Training Program	Medical Center Hospital of Vermont
1994-1995	Director, Center for Pain Medicine	Medical Center Hospital of Vermont
1995, 1997-2004	Coordinator, Pain Management Lecture Series	Medical Center Hospital of Vermont
1995-1996	Director, Pain Management Center	Brigham and Women's Hospital
1996-1997	Director, Pain Management Services	St. Joseph's Hospital of Atlanta
1997-2006	Director, Center for Pain Medicine	Fletcher Allen Health Care
1997-2005	Program Director, Residency in Anesthesiology	Fletcher Allen Health Care/University of Vermont
1997-2006	Program Director, Fellowship in Pain Medicine	Fletcher Allen Health Care/University of Vermont
2001-2005	Course Co-Director, Neural Sciences, Vermont Integrated Curriculum	University of Vermont College of Medicine
2001-2006	Vice Chairman for Education and Research	Department of Anesthesiology, Fletcher Allen Health Care/University of Vermont
2004-2006	Associate Dean for Admissions	University of Vermont College of Medicine
2006-	Director, MGH Pain Center	Massachusetts General Hospital
2007-2010	Chief, Division of Pain Medicine	Massachusetts General Hospital

2010-	Vice Chair, Division of Pain Medicine	Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital
2010-	Course Director, HST 350, Pharmacology and Clinical Therapeutics	Harvard Medical School
2012-	Executive Vice Chair	Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital

Committee Service

Local

1992	Development Task Force, Critical pathway for laparoscopic cholecystectomy 1992	Fletcher Allen Health Care Member
1992-1995	Resident Education Committee, Department of Anesthesiology 1992-1995	University of Vermont College of Medicine Member
1992-1995	Residency Recruitment Committee, Department of Anesthesiology 1992-1995	University of Vermont College of Medicine Member
1995-1996	Executive Committee 1995-1996	Department of Anesthesia, Brigham and Women's Hospital Member
1995-1996	Credentials Committee 1995-1996	Department of Anesthesia, Brigham and Women's Hospital Member
1997-2006	End of Life Care/Palliative Care Service Advisory Committee 1997-2006	Fletcher Allen Health Care Member
1997-2006	Education Committee 1997-2006	Department of Anesthesiology, University of Vermont College of Medicine Chair
1998-2001	Instructional Improvement Committee 1998-2001	University of Vermont College of Medicine Member
1998-2006	Committee on Admissions 1998-2006 2004-2006	University of Vermont College of Medicine Member Chair

1999-2006	Graduate Medical Education Committee 1999-2006	Fletcher Allen Health Care Member
2000-2006	Board of Directors, Vermont Integrated Curriculum 2000-2006	University of Vermont College of Medicine Member
2002-2006	Pain Management Task Force 2002-2006	Fletcher Allen Health Care Chair
2004-2006	Advancement Committee 2004-2006	University of Vermont College of Medicine Member (<i>ex officio</i>)
2005-2006	Committee on Research and Education 2005-2006	Fletcher Allen Health Care Physicians Organization Member
2006-	Admissions Committee, Subcommittee 4 2006-	Harvard Medical School Member
2006 -	Executive Committee 2006-	Department Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital Member
2008-	Search Committee for Chief, Division of Cardiac Anesthesia 2008-2011	Department Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital Chair
2008-	Committee on Clinical Research 2008-	Department Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital Chair
2008-	Academic Appointments & Promotions Subcommittee 2008-	Department Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital Member
2009-	Search Committee for Chief, Division of Ortho/Regional Anesthesia 2009-2011	Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital Chair
2010-	Curriculum Committee, Subcommittee on Course and Clerkship Review and Evaluation 2010-	Harvard Medical School Member

2010-	Search Committee for Chief, Department of Anesthesiology	Department of Anesthesiology, VA Boston Health System
2010-		Member
2011-	MGPO Ambulatory Council	Massachusetts General Hospital
2011-		Member
2012-	MGH Care Redesign Leadership Committee	Massachusetts General Hospital
2012-		Member
2012-	MGH Back Pain Care Redesign Committee	Massachusetts General Hospital
2012-		Co-Chair
2012-	Arthroplasty Care Redesign Committee	Massachusetts General Hospital
2012-		Member
National and International		
1999-2003	Medicare Coverage Advisory Committee	Health Care Financing Administration, United States Department of Health and Human Services
1999-2003		Member
2000-		American Board of Anesthesiology (ABA)
2000-		Member, Pain Medicine Examination Committee
2005-		Associate (Oral Board) Examiner
2009-		Member, Board of Directors
2010-		Chair, Pain Medicine Examination Committee
2001-2013		Accreditation Council for Graduate Medical Education (ACGME)
2001-2004		Member, Pain Management Working Group
2004-2006		Chair, Task Force on Pain Curriculum Development
2006-2012		Member, Residency Review Committee (RRC) for Anesthesiology
2009-2011		Vice Chair, Residency Review Committee (RRC) for Anesthesiology
2005-	Pain Council	Foundation for Anesthesia Education and Research

2005-		Member
2013-	National Institutes of Health, Interagency Pain Research Coordinating Committee	Co-Chair National Pain Strategy Workgroup on Professional Education and Training

Professional Societies

1984-	American Medical Association	
1984-		Member
1989-	International Anesthesia Research Society	
1989-		Member
1989-	American Society of Anesthesiologists	
1989-		Member
1994-1996		Alternate Delegate, New Hampshire/Vermont, ASA House of Delegates
1999-2003, 2006-		Member, Committee on Pain Medicine
2001-2005		Chair, Committee on Pain Medicine
2002		Member, Task Force on Interventional Pain Medicine
2005-2008		Member, Committee on Research
2005-2008		Member, Committee on Academic Anesthesiology
2005-		Member, Committee on Professional Liability
2005-		Member, Annual Program Content Committee for Pain Medicine
2006-2009		Member, Task Force on Use of Neuraxial Opioids
2006-2010		Member, Task Force on Infectious Complications Associated with Neuraxial Techniques
2006-2010		Member, Task Force on Guidelines for Treatment of Chronic Pain
2008-		Member, Task Force on the Future of Pain Medicine
1992-2006	New Hampshire/Vermont Society of Anesthesiologists	
1992-2006		Member
1994-1995		Secretary/Treasurer
1997-2000		President

1992-2006	Vermont State Medical Society 1992-2006	Member
1994-	American Society of Regional Anesthesia and Pain Medicine 1994- 2000-2002 2001-2007 2001 2002 2002-2004 2002-2009 2006-2009	Member Chair, Communications Committee Member, Annual Meeting Program Committee Member, Comprehensive Pain Review Course Committee Chair, Program Committee, Annual Pain Meeting Member, Education Committee Member, Board of Directors Assistant Treasurer
1994-	International Association for the Study of Pain 1994-	Member
1995-	American Pain Society 1995- 2005, 2006	Member Member, Annual Meeting Program Committee
1999-	New England Pain Association 1999-	Vermont State Representative
1999-	Association of Pain Fellowship Directors 1999- 1999-2001 2001-2003 2003-2005	Member Secretary President-Elect President
2005-	American Academy of Pain Medicine 2005- 2005-2009	Member Member, Annual Meeting Program Committee
2006-	Massachusetts Medical Society 2006-	Member
2006-	Massachusetts Society of Anesthesiologists 2006-	Member

2006- 2006- 2006-2009	International Spine Intervention Society	Member Board of Directors
2007- 2007-	Association of University Anesthesiologists	Member
2008-2009 2010-2011	World Institute of Pain, 2008-2009 2010-2011	Member, Planning Committee, 2009 World Congress on Pain (New York) Member, Planning Committee, 2011 World Congress on Pain (Seoul, Korea)

Grant Review Activities

2005 2005	Hong Kong Council on Scientific Grants 2005	Hong Kong Council on Scientific Grants Invited Grant Reviewer
2005-2008 2005-2008	Foundation for Anesthesia Education and Research 2005-2008	Foundation for Anesthesia Education and Research Grant Reviewer

Editorial Activities

Agency for Health Care Policy and Research (AHCPR), Specialty Reviewer
Anesthesia and Analgesia, Guest Reviewer
CNS Drugs, Guest Reviewer
Journal of the American Medical Association (JAMA) , Guest Reviewer
Journal of Clinical Pain, Guest Reviewer
Journal of Pain, Guest Reviewer
Journal of Pain and Symptom Management, Guest Reviewer
Journal of Trauma, Guest Reviewer
Mayo Clinic Proceedings, Guest Reviewer
Pain Medicine, Guest Reviewer
Pediatrics, Guest Reviewer

Other Editorial Roles

1995-		Regional Anesthesia and Pain Medicine
	1995-1999	Guest Reviewer
	1999-2002	Associate Editor (Imaging Section)
	2002-2014	Associate Editor-in-Chief (Pain Medicine)
2003-		Anesthesiology
	2003-2006	Guest Reviewer
	2006-	Associate Editor
	2009-	Cover Art Design (Oversee the design of cover art for all journal issues)
	2013-	Executive Editor
2010-		Neuromodulation
	2010-	Member, Editorial Board

Honors and Prizes

1984-1988	Charles A. Strickland Scholarship	Bowman Gray School of Medicine, Wake Forest University	(Academic merit scholarship award)
1984-1988	Medical Student Scholars Program	Bowman Gray School of Medicine, Wake Forest University	(Robert Wood Johnson funded program to promote careers in academic medicine)
1984-1986	Vice President, Class of 1988	Bowman Gray School of Medicine, Wake Forest University	
1985-	Sigma Xi Scientific Research Society	Bowman Gray School of Medicine, Wake Forest University	
1986-1988	President, Class of 1988	Bowman Gray School of Medicine, Wake Forest University	
1987	Alpha Omega Alpha Honor Medical Society (Junior Year)	Bowman Gray School of Medicine, Wake Forest University	

1988	M. Robert Cooper Award for Oncology Research	Bowman Gray School of Medicine, Wake Forest University	
1988	Richard L. Burt Research Achievement Award	Bowman Gray School of Medicine, Wake Forest University	
2007-2009	Resident/Fellow Teaching Award	American Society of Regional Anesthesia and Pain Medicine	(Annual award for sustained role as teacher and mentor)
2009	John Bonica Award	World Institute of Pain	(Annual award for international role in clinical excellence and education)
2010	John Abajian – John Mazuzan Annual Anesthesia Lecture	University of Vermont College of Medicine	
2014	Phillipe M. Lippe Award	American Academy of Pain Medicine	(Annual award for outstanding contributions to the social and political aspect of Pain Medicine)

Report of Funded and Unfunded Projects

Past

- 1992-1993 Hemodynamic and pharmacodynamic comparison of doxacurium and pipecuronium with pancuronium during induction of cardiac anesthesia: does the benefit justify the cost?
University of Vermont College of Medicine – Departmental Funding
Principal Investigator
This multicenter clinical trial examined the hemodynamic effects of three long-acting neuromuscular blocking agents during induction of cardiac anesthesia. I was the principal investigator and first author on the resulting manuscript.
- 1992-1993 Labor epidural reactivation or spinal anesthesia for delayed postpartum tubal ligation: a cost comparison.
University of Vermont College of Medicine – Departmental Funding
Co-Investigator
This study examined the success rate of using an epidural catheter placed for labor analgesia to conduct subsequent surgical post-partum tubal ligation. I served as a co-investigator and co-author on the manuscript.
- 1993-1994 Spinal anesthesia for repair of meningomyelocele in neonates: a case series.

- University of Vermont College of Medicine – Departmental Funding
Co-Investigator
This study examined the use of spinal anesthesia in infants undergoing myelomeningocele repair. I served as a co-investigator and co-author on the manuscript.
- 1994-1995 Use of a jet stylet introducer and capnography for difficult endotracheal intubation.
University of Vermont College of Medicine – Departmental Funding
Co-Investigator
This study examined the use of a novel jet stylet in combination with capnography for performing endotracheal intubation. I worked with Robert Spencer, a resident in anesthesiology, as mentor, co-investigator and co-author on the manuscript.
- 1994-1995 Medial and lateral antebrachial cutaneous nerve blocks: an easily learned regional anesthetic for forearm arteriovenous fistula surgery.
University of Vermont College of Medicine – Departmental Funding
Co-Investigator
This study examined the use of a novel peripheral nerve block for providing anesthesia for creation of forearm arteriovenous fistulae for dialysis. I served as a co-investigator and co-author on the manuscript.
- 1994-1995 Analgesic efficacy and side effects of subarachnoid intrathecal sufentanil-bupivacaine administered to women in advanced labor.
University of Vermont College of Medicine – Departmental Funding
Co-Investigator
This study examined the use of spinal analgesia with sufentanil and bupivacaine during advanced labor. I served as a co-investigator and co-author on the manuscript.
- 1994-1995 Detection of intravascular epidural catheters using 2-chloroprocaine. Influence of local anesthetic and nalbuphine premedication.
University of Vermont College of Medicine – Departmental Funding
Principal Investigator
This study examined the effect of premedication on the reliability of detecting intravenous local anesthetic injection in healthy volunteers. I served as a principal investigator and primary author on the manuscript.
- 1996-1997 A multicenter, randomized, blind comparison of amrinone with milrinone after elective cardiac surgery.
University of Vermont College of Medicine – Departmental Funding
Principal Investigator
This multicenter clinical trial examined the inotropic effects of amrinone and milrinone immediately after separation from cardiopulmonary bypass in patients undergoing cardiac surgery. I served as a principal investigator for the overall trial and primary author on the manuscript.
- 1997-1999 Effects of infusion rate of intravenously administered morphine on physiological, psychomotor, and self-reported measures in humans.
University of Vermont College of Medicine
Co-Investigator (\$110,000)

This study examined the effect of infusion rate of the euphoric effects produced by intravenous morphine in healthy volunteers. I served as a co-investigator and co-author on the manuscript.

- 1999-2001 Intrathecal morphine for postoperative analgesia: a randomized, controlled, dose-ranging study after hip and knee arthroplasty.
University of Vermont College of Medicine – Departmental Funding
Principal Investigator
This single-center clinical trial examined the dose-response to intrathecal morphine for providing analgesia after total joint replacement. I worked with Richard Taylor, a medical student, as mentor, principal investigator and primary author on the manuscript.
- 2000-2001 The safety and efficacy of electrotransport E-TRANS® fentanyl (HCl) 40 mcg for the treatment of post-operative pain: a double-blind, multicenter, placebo-controlled trial incorporating JCAHO Pain Management Standards. (Phase III clinical trial)
ALZA Pharmaceutical Corporation
Site Principal Investigator (\$67,000)
The goal of this study was to test the safety and efficacy of the inotopheretic transdermal fentanyl system in the treatment of post-operative pain. I served as an advisor during the design of this trial and as principal investigator.
- 2000-2004 A prospective, randomized comparison of Intradiscal Electrothermal Therapy (IDET) vs. anterior lumbar interbody fusion for the treatment of discogenic low back pain. (Phase IV clinical device trial, investigator-initiated)
Oratec Interventions
Principal Investigator (\$100,000)
This study was designed to compare the efficacy of IDET, then a newly available treatment with little available data on efficacy, with that of surgical lumbar interbody fusion treatments for low back pain. I initiated this study, designed and conducted all aspects of the trial, which we halted at the interim analysis due a high rate of complication in the surgical limb of the study.
- 2002-2004 Development of multi-media case discussions for the Vermont Integrated Curriculum’s Neural Sciences Course.
University of Vermont College of Medicine, Frymoyer Scholarship
Principal Investigator (\$50,000)
The goal of this project was to develop a series of web-based educational modules for the newly developed Neural Sciences Course for first year medical students. My role was as co-director of for the new course, as the primary author of this grant, and as well as producer of the 10 web-based learning modules for the course.
- 2003-2004 Clinical protocol for a double-blind multicenter study of the safety and efficacy of parecoxib followed by valdecoxib compared to placebo for treatment of post-surgical pain in patients who have coronary bypass graft via median sternotomy. (Phase III clinical trial)
Pharmacia/Pfizer
Site Principal Investigator (\$65,000)
The goal of this study was to establish the safety and efficacy of intravenous parecoxib in patients following CABG. I served as an advisor during the design of this trial and as

principal investigator.

- 2003-2004 Clinical protocol for a multicenter, double-blind, placebo controlled, randomized study of the analgesic efficacy, safety and tolerability of a fixed dose of valdecoxib 40mg over seven days in patients undergoing anterior cruciate ligament reconstruction. (Phase III clinical trial)
Pharmacia/ Pfizer
Site Principal Investigator (\$102,000)
The goal of this study was to establish the efficacy and safety of intravenous valdecoxib in patients following ACL repair. I served as an advisor during the design of this trial and as principal investigator.
- 2003-2004 Multicenter, double-blind, randomized, placebo-control, parallel-group study to evaluate the safety and efficacy of Trileptal® in patients with neuropathic pain due to radiculopathy. (Phase III clinical trial)
Novartis Pharmaceuticals
Site Principal Investigator (\$22,000)
The goal of this study was to establish the efficacy of oxcarbazepam in the treatment of chronic radiculopathy. I served as principal investigator.
- 2004-2005 A double-blind, randomized, sham procedure controlled study to evaluate the efficacy and safety of a single epidural dose of SKY0401 in the management of post-operative pain in patients undergoing hip arthroplasty with regional anesthesia. (Phase III clinical trial)
Endo Pharmaceuticals
Site Principal Investigator (\$18,000)
The goal of this study was to determine the safety and efficacy of liposome encapsulated morphine administered in the epidural space for treating pain after total hip replacement. I served as principal investigator.
- 2004-2005 Comparison of the safety and efficacy of patient controlled analgesia delivered by fentanyl HCl transdermal system versus morphine IV pump for pain management after primary unilateral total hip replacement. (Phase IIIb clinical trial).
Ortho-McNeil
Site Principal Investigator (\$54,000)
The goal of this study was to test the safety and efficacy of the inotopheretic transdermal fentanyl system in the treatment of pain after total hip replacement. I served as an advisor during the design of this trial and as principal investigator.
- 2004-2005 Comparison of the safety and efficacy of patient controlled analgesia delivered by fentanyl HCl transdermal system versus morphine IV pump for pain management after lower abdominal/pelvic surgery. (Phase IIIb clinical trial)
Ortho-McNeil
Site Principal Investigator (\$42,000)
The goal of this study was to test the safety and efficacy of the inotopheretic transdermal fentanyl system in the treatment of pain after abdominal surgery. I served as an advisor during the design of this trial and as principal investigator.
- 2004-2005 Anatomic location of the segmental artery branches and artery of Adamkiewicz determined

through cadaver dissection: implications for regional anesthesia procedures and surgical techniques.

University of Vermont College of Medicine – Departmental Funding

Principal Investigator

This cadaveric dissection was conducted to delineate the anatomy of the arterial supply to the spinal cord in relationship to the intervertebral foramina. I designed and supervised this study, which was carried out by Mark Hoeft, then a medical student; the findings were used to propose a safer means to conduct cervical transforaminal injections.

- 2004-2006 A phase II double-blind randomized parallel group study of intravenous (IV) methylnaltrexone (MNTX) in the prevention of post-operative ileus Phase II clinical trial. (Phase II clinical trial)
Progenics, Inc.
Principal Investigator (\$132,000)
The goal of this study was to determine if intravenous methylnaltrexone, a peripheral opioid-antagonist, would prevent post-operative ileus following colectomy. I served as a primary author in the trial design, as principal investigator, and as one of two lead authors in the manuscript.
- 2004-2006 Use of Digital Subtraction cineangiography during transforaminal and translaminar injection of steroids. A prospective observational study.
University of Vermont College of Medicine – Departmental Funding
Principal Investigator
This study examined the use of digital subtraction technology during specific image-guided interventions in the pain clinic. The study was conducted by two medical students and the resulting images have been published in several monographs and book chapters detailing the usefulness of this technology.
- 2004-2006 A dose response study of clonidine as an adjunct in intravenous regional anesthesia.
University of Vermont College of Medicine – Departmental Funding
Co-Principal Investigator
The goal of this study was to determine the usefulness of adding clonidine to intravenous regional anesthesia and was conducted and presented by Clarence Ivie, then a fellow in pain medicine. I served as co-principal investigator and advisor for this project.
- 2005-2006 Study of percutaneous intradiscal nucleoplasty efficacy. (Phase IV clinical trial)
ArthroCare Corporation
Site Principal Investigator (\$77,000)
The goal of this study was to examine the efficacy of a newly available treatment for radicular pain associated with contained disc herniations. I served as a key advisor during trial design, principal investigator, and a lead author on the resulting publication.
- 2005-2006 An open-label, 12-month study to evaluate the safety, tolerability, and efficacy of Oravescent fentanyl citrate for the management of breakthrough pain in opioid-tolerant patients with chronic non-cancer pain. (Phase III clinical trial)
Cephalon, Inc. (\$54,000)
Site Principal Investigator
The goal of this study was to examine the efficacy and safety of oral transmucosal fentanyl

for treating chronic non-cancer pain. I served as principal investigator and a key advisor and author on a manuscript examining the long-term safety profile of this new agent.

- 2005-2006 Multicenter, double-blind, placebo-controlled study to evaluate the efficacy and safety of lenalidomide in the treatment of painful lumbar radiculopathy. (Phase III clinical trial).
Celgene Corporation
Site Principal Investigator (\$16,000)
The goal of this study was to establish the efficacy of lenalidomide in the treatment of chronic radiculopathy. I served as principal investigator.
- 2005-2006 A randomized, double-blind, placebo-controlled, escalating dose-response trial of intravenous adenosine for perioperative analgesia in females undergoing abdominal hysterectomy or myomectomy. (Phase II clinical trial)
Xsira Pharmaceuticals, Inc.
Site Principal Investigator (\$9,000)
This study was designed to examine the safety and efficacy of intravenous adenosine for reducing postoperative pain. I served as an advisor during trial design and principal investigator.
- 2006-2007 A phase 3, multicenter, randomized, placebo-controlled, double-blind study to evaluate the efficacy and safety of the sterile lidocaine hydrochloride monohydrate (LHM) product in adult subjects. (Phase III clinical trial)
Anesiva Inc.
Site Principal Investigator (\$78,500)
- 2007-2008 Assessment of differential sensory blockade using QX-314 and capsaicin in large animals. (Pre-clinical trial)
MGH Department of Anesthesia & Critical Care – Departmental Funding
Principal Investigator
This study was designed in collaboration with Drs. Clifford Woolf (MGH) and Bruce Bean (HMS) and aimed to examine the effectiveness of a novel local anesthetic combination in large animals. I designed and conducted all portions of this study in collaboration with Dr. Philipp Lirk at Innsbruck Medical Center in Innsbruck Austria.
This study examined the efficacy of a novel pressurized delivery system for providing local anesthesia prior to placement of intravenous catheters in adults. I served as principal investigator.
- 2008-2009 A phase 2, double-blind, randomized, placebo-controlled, multiple-dose, dose escalation study to evaluate the efficacy, safety and tolerability of NKTR-118 in patients with opioid-induced constipation (OIC).
Nektar Therapeutics
Site Principal Investigator
- 2008-2010 Correlation of the spectrophotometric properties of tissue with the anatomic localization of a photonic needle tip.
Karolinska Institute/Philips Research – Unfunded Scientific Collaboration
Principal Investigator

This project is an ongoing evaluation of a new needle which allows the acquisition of a wide, continuous absorption spectrum (visible/infrared regions) from the tip of a small bore, hollow needle. I am working with Björn Holmström, M.D., Ph.D. (Professor and Chair of the Department of Anesthesiology at Karolinska Institute in Stockholm, Sweden) and Adrien Dejardins, Ph.D. (Senior Scientist, Philips Research, Eindhoven, The Netherlands). We have performed a series of large animal experiments using fluoroscopy with 3-dimensional reconstruction and high-resolution ultrasound to correlate the spectrophotometric characteristics of tissue with the anatomic location of the needle tip during neuraxial and peripheral neural blockade.

Current

- 2006-2014 A phase I, multicenter, placebo-controlled, double-blind, randomized, single administration trial to evaluate the safety and tolerability of intradiscal rhGDF-5 for the treatment of early stage lumbar disc degeneration. (Phase I clinical trial)
Johnson & Johnson Regenerative Therapeutics, LLC (\$99,620)
Site Principal Investigator
The goal of this study is to evaluate the safety and tolerability of recombinant human growth and differentiation factor 5 for the treatment of early lumbar disc degeneration. This is a first in man study aimed at reversing early disc degeneration, and I have served as an advisor during all aspects of trial design and as principal investigator.
- 2008-2014 Driving embryonic stem cells to dorsal root ganglion-like nociceptor neurons.
(Translational)
Harvard Stem Cell Institute/Glaxo Smith Kline
Co-Investigator (\$885,461)
This project was designed in collaboration with Drs. Clifford Woolf and Joachim Scholz (MGH) and is meant to explore the relationship between pain phenotype in patients with painful diabetic neuropathy and cellular ion channel activity in stem cells derived from skin fibroblasts. I am a co-investigator for this trial and the clinical liaison, responsible for patient recruitment and detailed examination (phenotype) of each patient.
- 2011-2014 A Multicenter, Randomized, Double-blind, Placebo Controlled, Clinical Trial to Evaluate the Safety, Tolerability and Preliminary Effectiveness of 2 Doses of Intradiscal rhGDF-5 (Single Administration) for the Treatment of Early Stage Lumbar Disc Degeneration
Site Principal Investigator
Advanced Technologies and Regenerative Medicine, LLC
- 2011-2014 Unrestricted Educational Grant to the MGH Center for Pain Medicine
Principal Grant Recipient (Co-Recipient, Jianren Mao, MD, PhD)
(\$3,000,000)
Purdue Pharma

Report of Local Teaching and Training

Teaching of Students in Courses

Teaching Prior to Start of Current Harvard Appointment

Local

University of Vermont College of Medicine/Fletcher Allen Health Care

1993-1995	Physical Diagnosis Tutor Medical students	University of Vermont College of Medicine/Fletcher Allen Health Care Twenty 1 hour sessions per year
1997-2003	Physical Therapy Training Program 25 physical therapy students	University of Vermont College of Medicine/Fletcher Allen Health Care One 3 hour session per year
2001-2004	Clinical Pharmacology Medical students and graduate students	University of Vermont College of Medicine/Fletcher Allen Health Care One 3 hour lecture per year
2003-2006	Vermont Integrated Curriculum, Bridge I: “Anatomy and Physiology of Pain”, “Assessment and Treatment of Pain” Medical students	University of Vermont College of Medicine/Fletcher Allen Health Care One 2 hour lecture per year
2003-2006	“Obstetric Anesthesia and the Treatment of Acute Pain” Medical students	University of Vermont College of Medicine/Fletcher Allen Health Care One 2 hour lecture per year
2004-2006	Vermont Integrated Curriculum, Neural Sciences Course “Pharmacology of Local Anesthetics”, “Pain & Neuronal Plasticity”, “Case-Based Learning Module: Pain & Palliative Care” Medical students and graduate students	University of Vermont College of Medicine/Fletcher Allen Health Care Ten 1 hour lectures and small groups per year

Teaching During Current Harvard Appointment

Local

Harvard Medical School

2007-2011	HST 350, Pharmacology & Clinical Therapeutics “Pain Management and Therapy” (2007,
-----------	--

2008, 2009)

“The Role of the United States Food and Drug Administration”, “Pain Management and Therapy” (2010, 2011)
4th Year Medical Students

One to two 4 hour sessions per year

2009, 2010 HST 211, Seminar Course for Biomedical Enterprise Program “Pain and Novel Treatments”
Graduate students at MIT/Sloan

One 4 hour session per year

Regional

Outside of Harvard Medical School

2006 - 2010 Neuroanatomy, Neurochemistry, and Pharmacology of Pain, Tufts Masters Course
Graduate students

Two 4 hour sessions per year

Tufts University, Boston MA

Formal Teaching of Residents, Clinical Fellows and Research Fellows

Teaching Prior to Start of Current Harvard Appointment

Local

University of Vermont College of Medicine/Fletcher Allen Health Care

1992-2006	Resident Lecture Series Medical students and anesthesia residents	Fletcher Allen Health Care, University of Vermont Medical Center Twenty 1 hour lectures per year
1995, 1997-2006	Pain Management Lecture Series Medical students, residents and fellows	Fletcher Allen Health Care, University of Vermont Medical Center Thirty 1 hour lectures per year
1998-2006	Orthopedic surgery resident Lecture Series Orthopedic surgery residents	Fletcher Allen Health Care, University of Vermont Medical Center Two 1 hour sessions per year
1999-2001	Lecturer and Coordinator, Fletcher Allen Health Care Pain Management Initiative Nursing students, residents, and attending physicians	Fletcher Allen Health Care, University of Vermont Medical Center One 2 hour sessions per year
2001-2006	“Overview of Pain Medicine”, Introductory Graduate Medical Education Committee lecture series for all Fletcher Allen Health Care entering residents Nursing students, residents, attending physicians	Fletcher Allen Health Care, University of Vermont Medical Center One 5 hour session per year

Teaching During Current Harvard Appointment

Local

Current/HMS affiliated teaching.

2006-	“Complications of spinal injection therapies”, “Complex Regional Pain Syndrome”, “Discogenic pain – evaluation and treatment” “Complications of spinal injection therapies”, “Complex Regional Pain Syndrome”, Fellowship Lecture Series Pain Medicine fellows, Anesthesiology residents, medical students, and nurses	Massachusetts General Hospital Pain Center Three 1 hour lectures per year
2006-	“Pain Management in Opioid Tolerant Patients”, “Complications of Stellate Ganglion Block, Celiac Plexus Block, and Sympathetic Block”, Anesthesia Resident Lecture Series Anesthesiology residents, and medical students	Three to 5 1 hour sessions per year
2006-	Various topics, Journal Club Pain Medicine fellows, Anesthesiology residents, and medical students	MGH Pain Center Six 1 hour sessions per year
2007-	Mock Orals Anesthesiology residents and Pain Medicine fellows	Massachusetts General Hospital Department of Anesthesia and Critical Care Fifteen to twenty 1 hour sessions per year

Clinical Supervisory and Training Responsibilities

1992-1995, 1997-2006	Pain Center and Operating Rooms Clinical Supervision of Pain Medicine fellows, Anesthesiology residents, and medical students, Fletcher Allen Health Care, University of Vermont	Four days per week
1995-1996	Pain Center and Operating Rooms Clinical Supervision of Pain Medicine fellows, Anesthesiology residents, and medical students, Brigham and Women’s Hospital	Three days per week
2006-	Pain Center and Operating Rooms	Three days per week

Clinical Supervision of Pain Medicine
fellows, Anesthesiology residents, and
medical students, Massachusetts General
Hospital

Formally Supervised Trainees

- 1995-1996 Robert Spencer, M.D., Private Practice, Pain Medicine, Concord, New Hampshire
Published a manuscript in *Anesthesia and Analgesia*
- 1997-1998 Jeffrey Borchard, M.D., Private practice, Pain Medicine, New Orleans, Louisiana
- 1997- Mark Hoeft, M.D., Residency in Anesthesiology, Massachusetts General Hospital
Published 2 peer reviewed articles, 1 review article, and 3 letters to the editor, 3
abstract presentations at the American Society of Regional and Anesthesia and
1 abstract presented at Pediatric Anesthesiology conference
- 1997-2000 Jasmin Field, M.D., Private practice, Anesthesiology, Boston, Massachusetts
Case report published in *Anesthesiology*
- 1998-2001 Richard Taylor, M.D., Assistant Professor of Emergency Medicine, Dartmouth
Published manuscript in *Anesthesia & Analgesia*
- 1999- Mark Hoeft, M.D., Resident in Anesthesia, Massachusetts General Hospital
Published 3 original reports and 2 letters
- 1999-2000 Carlos Pino, M.D., Director, Center for Pain Medicine, University of Vermont
Published 3 peer reviewed articles and two book chapters
- 1999-2001 James Janik, M.D., Assistant Professor of Anesthesiology, Stanford
Peer reviewed publication in *Regional Anesthesia & Pain Medicine*, Abstract
presented at American Society of Regional Anesthesia meeting
- 1999-2002 Amir Ajar, M.D., Resident in Otolaryngology, University of Vermont
1 peer reviewed article, 1 case report, 1 letter to the editor published, Abstract
Presented at American Society of Regional Anesthesia
- 2000-2001 Esther Benedetti, M.D., Assistant Professor of Anesthesiology/Pain Medicine,
University of Iowa
- 2001-2002 Timothy Lair, M.D., Private practice, Pain Medicine, Kansas
Article published in *Anesthesia and Analgesia*, Book chapter on cervical
transforaminal Injection of steroids
- 2002-2003 John Breth, M.D., Director, Pain Center, University of Kansas
Book review published in *Journal of American Medical Association*
- 2003-2006 Laura Leduc, M.D., Resident in Anesthesiology, Massachusetts General Hospital
- 2004-2005 Bradley Hill, D.O., Private practice, Pain Medicine, Georgia
Book review published in *Anesthesia & Analgesia*

- 2004-2005 Tiffini Lake, M.D., Assistant Professor of Anesthesiology/Pain Medicine, University of Vermont
Article on infectious risks of chronic pain treatments published in *Regional Anesthesia and Pain Medicine*
- 2005-2006 William Megdal, M.D., Private practice, Pain Medicine, Athens, Georgia
- 2006-2007 Prabhav Tella, M.D., Assistant Professor, Pain Medicine, University of Texas Southwestern
Book review published in *Regional Anesthesia and Pain Medicine*
- 2006-2007 Dragos Diaconescu, M.D., Assistant Professor, Anesthesiology/Pain Medicine, Tufts University Director of Acute Pain Service, Tufts New England Medical Center
Published a book chapter
- 2006-2007 Christian Gonzalez, M.D. Assistant Professor, Anesthesiology/Pain Medicine, University of Massachusetts
- 2006-2007 Hariharan Sundaram, M.D., Healthcare investment analyst, Boston, MA
- 2006-2007 Timothy Lo, M.D., Private practice, Pain Medicine, California
- 2007-2008 Christopher Gilligan, M.D., Instructor, Anaesthesia/Emergency Medicine/Pain Medicine, Harvard Medical School, Director of Clinical Trials, MGH Division of Pain Medicine
Published 2 book chapters and a book review during fellowship; Dr. Gilligan is now a junior faculty member and I am his primary faculty mentor, advancing his work in clinical trials.
- 2007-2008 John Keel, M.D., Medical Director, the Spine Center at Beth Israel Deaconess, Instructor in Orthopaedic Surgery, Harvard Medical School
- 2007-2008 Omid Ghalambor, M.D. Private practice, Pain Medicine, Illinois
- 2007-2008 Jai Sethee, M.D., Clinical Fellow in Pain Medicine, Massachusetts General Hospital
Peer Reviewed Article in *Current Pain Headache Report*
- 2007- 2009 Ricardo Rivera, M.D., Private Practice, Pain Medicine, Boston, Massachusetts
Book review published in *Anesthesia & Analgesia*
- 2008 - Shahzad Shaefi, M.D., Resident in Anesthesiology, Massachusetts General Hospital
Book review published in *Journal of Trauma*
- 2008-2009 Victor Chin, M.D., Private practice, Pain Medicine, Atlanta, GA
- 2008-2009 Yi Zhang, M.D., Ph.D., Assistant Anesthetist, Massachusetts General Hospital, Attending Physician, MGH Center for Pain Medicine, Instructor in Anaesthesia, Harvard Medical School
- 2008-2009 Carmen Keith, M.D., Private practice, Pain Medicine, Arkansas
- 2008-2009 Boris Spektor, M.D., Assistant Professor of Anesthesiology,, Emory University
- 2008-2009 Brian Wainger, M.D., Ph.D., Instructor in Anaesthesia, Harvard Medical School,

Attending Physician, MGH Center for Pain Medicine [Harvard NIH Clinician-Scientist Anesthesia Training Grant recipient]
Letter to the Editor published in *The Journal of Bone & Joint Surgery*; Case report in *Anesthesiology*

- 2009-2010 Pankaj Mehta, M.D., Resident in Anesthesiology, Massachusetts General Hospital
Co-authored book chapter *Chronic Pain Management* for *Miller's Basics of Anesthesia, 6th Edition*
- 2009-2010 Mihir Kamdar, M.D., Attending Physician in Pain Medicine and Palliative Care, MGH Center for Pain Medicine
- 2009-2010 Adam Carinci, M.D., Assistant Anesthetist, Massachusetts General Hospital, Attending Physician, MGH Center for Pain Medicine, Instructor in Anaesthesia, Harvard Medical School
- 2009-2010 Smith Manion, M.D., Assistant Anesthetist, Massachusetts General Hospital, Attending Physician, MGH Center for Pain Medicine, Instructor in Anaesthesia, Harvard Medical School
- 2009-2010 Luke Wang, M.D., Assistant Anesthetist, Children's Hospital Boston, Attending Physician in Pain Medicine, Instructor in Anaesthesia, Harvard Medical School [Harvard NIH Clinician-Scientist Anesthesia Training Grant recipient]
- 2009-2010 M. Richard Pavao, M.D., Assistant Professor of Anesthesiology, Attending Physician in Pain Medicine, University of Massachusetts Medical Center

Formal Teaching of Peers (CME and other continuing education courses)

Local Invited Presentations

Those presentations below sponsored by outside entities are so noted and the sponsors are identified.

- 1994 Reflex Sympathetic Dystrophy [Grand Rounds]
University of Vermont College of Medicine, Departments of Neurology and Neurosurgery
- 1994, 1995 Postoperative Pain Management [Grand Rounds]
University of Vermont College of Medicine, Department of Obstetrics and Gynecology
- 1995 Reflex Sympathetic Dystrophy [Guest Lecturer]
Brigham and Women's Hospital, Department of Anesthesia, Boston, Massachusetts
- 1996-2006 New Approaches to Postoperative Pain Management (1996, 1997, 1998);
Imaging in Regional Anesthesia and Pain Medicine (1999, 2000);
Novel Regional Anesthetic Techniques for Postoperative Pain (2001, 2002, 2003);
Acute Pain Management in the Opioid Tolerant Patient (2004, 2005);

Non-surgical approaches to back pain (2006)

[Invited Speaker]

Vermont Perspectives in Anesthesia (National Continuing Medical Education Program), Stowe, Vermont, University of Vermont College of Medicine

- 1996 Postoperative Pain Management [Grand Rounds]
St. Joseph's Hospital of Atlanta, Department of Anesthesiology
- 1996 Complications of Regional Anesthesia [Grand Rounds]
Brigham and Women's Hospital, Department of Anesthesiology
- 1996 Chronic Opioid Therapy for Persistent Non-cancer Pain [Grand Rounds]
Children's Hospital of Boston, Department of Anesthesiology
- 1998 Postoperative Pain Management [Grand Rounds]
University of Vermont College of Medicine, Department of Surgery
- 1999 Chronic Opioids for Non-cancer [Grand Rounds]
University of Vermont College of Medicine, Department of Surgery
- 2000 The Management of Pain in Children [Grand Rounds]
University of Vermont College of Medicine, Department of Pediatrics
- 2001 Pain Management in the Elderly [Webcast on Pain and Geriatrics]
University of Vermont College of Medicine Studios (National Continuing Medical Education Program), University of Vermont College of Medicine
- 2003 Rational Use of Opioid Analgesics [Invited Speaker]
Symposium on End-of-Life Care (National Continuing Medical Education Program), Burlington, Vermont, University of Vermont College of Medicine
- 2003 The Role of COX-2 Selective NSAIDs in Treating Acute and Chronic Pain [Grand Rounds]
University of Vermont College of Medicine, Department of Family Practice
- 2004-2006 Numerous pain and research topics (2 lectures/year) [Grand Rounds]
University of Vermont College of Medicine, Department of Anesthesiology
- 2005 Managing Acute Pain in the Opioid Tolerant Patient [Visiting Professor]
Beth Israel Deaconess, Department of Anesthesia, Boston, Massachusetts
- 2005 Imaging in Regional Anesthesia and Pain Medicine, Rational Use of New Modalities in the Treatment of Chronic Back Pain [Visiting Professor]
Massachusetts General Hospital, Division of Pain Medicine, Boston, Massachusetts
- 2005 Imaging in Regional Anesthesia and Pain Medicine, Rational Use of New Modalities for the Treatment of Back Pain [Visiting Professor]
Massachusetts General Hospital Chronic Pain Rounds
- 2006-2010, 2012-2014 Radiofrequency Treatment for Pain, Rational Use of New Modalities for Spinal Pain (2006);

Radiographic Anatomy for Image Guided Pain Interventions, Radiofrequency Treatment for Pain, Rational Use of New Modalities for the Treatment of Back Pain (2007);

Radiographic Anatomy for Image Guided Pain Interventions, Radiofrequency Treatment for Pain,

Rational Use of New Modalities for the Treatment of Back Pain (2008);

Radiographic Anatomy for Image Guided Pain Interventions, Radiofrequency Treatment for Pain, Rational Use of New Modalities for Spinal Pain, (2009);

Radiographic Anatomy for Image Guided Pain Interventions, Radiofrequency Treatment for Pain, Rational Use of New Modalities for Spinal Pain, (2010)

Rational Use of New Modalities for Spinal Pain (2012, 2013)

Interventional Techniques for Spinal Pain (2014)

The Link Between Acute and Chronic Pain (2014)

[Invited Speaker]

Principles and Practice of Pain Medicine (National Continuing Medical Education Program), Boston, Massachusetts, Harvard Medical School

2007, 2010, 2011, 2014 Management of Acute Postoperative Pain (2007);

Rational Treatment of Back Pain (2010);

Management of Acute Pain in the Opioid Tolerant Patient (2011)

Preparing for Accountable Care: Understanding the Costs in Caring for Patients with Back Pain and Assembling a Comprehensive Care Team (2014)

[Invited Speaker]

Harvard Anesthesia Review and Update Course (National Continuing Medical Education Program), Boston, Massachusetts, Harvard Medical School

2007 Rational Use of New Modalities in the Treatment of Chronic Back Pain [Invited Speaker]

Brigham & Women's Hospital, Division of Pain Medicine

2007 Complications in Pain Medicine [Visiting Professor]

Brigham & Women's Hospital, Department of Anesthesia

2007 Neurolytic Blocks for Cancer Pain [Chronic Pain Rounds]

Massachusetts General Hospital, Division of Pain Medicine

2007 Interventional Approaches for Cancer Pain [Grand Rounds]

Massachusetts General Hospital, Palliative Care Service

- 2007, 2009 A Rational Approach to the Patient with Low Back Pain, A Rational Approach to the Treatment of Spinal Pain, Complications in Pain Medicine [Keynote speaker]
6th Annual Pain Management Conference (National Continuing Nursing Education Program), Norwood, Massachusetts Brigham & Women's Hospital, Division of Nursing
- 2007 Clinical Crossroads: Chronic Back Pain in a 52-Year Old Man [Visiting Professor]
Beth Israel Deaconess Medical Center, Boston, Massachusetts, Journal of the American Medical Association Clinical Crossroads Symposium
- 2008 The Future of Training Neurologists in Pain Medicine [Invited Speaker]
Symposium on Neurological Pain – Planning for the Future (National Continuing Medical Education Program), Boston, Massachusetts, Harvard Medical School
- 2008 Chronic Opioid Use in Non-Cancer Patient [Grand Rounds]
Massachusetts General Hospital, Gastroenterology Grand Rounds
- 2008 Complications in Pain Medicine [Grand Rounds]
Beth Israel Deaconess Hospital, Department of Anesthesiology
- 2010 Non-Operative Therapies for Cervical and Lumbar Degeneration and Stenosis [Invited Speaker]
Primary Care Orthopaedics (National Continuing Medical Education Program), Boston, Massachusetts, Department of Orthopaedics, Massachusetts General Hospital
- 2011, 2012, Spine [Invited Speaker]
2013
Primary Care Orthopaedics (National Continuing Medical Education Program), Boston, Massachusetts, Department of Orthopaedics, Massachusetts General Hospital
- 2012-2013 From the Ether Dome to Functional MRI [Keynote Speaker] (2012)
Educational Models for Acute Pain [Invited Speaker] (2012)
Pre-emptive and Preventative Analgesia [Invited Speaker] (2013)
Harvard Medical School Acute Pain Medicine Symposium, Massachusetts General Hospital, Department of Anesthesia, Critical Care and Pain Medicine, Boston, MA
- 2012 PATA Redesign Update [Grand Rounds]
Massachusetts General Hospital, Anesthesia Grand Rounds
- 2012 The Evolution of the Field of Pain Medicine [Grand Rounds]
Beth Israel Deaconess Medical Center, Anesthesia Grand Rounds, Boston, Massachusetts
- 2013 Complications in Pain Medicine [Grand Rounds]
Brigham and Women's Hospital, Anesthesia Grand Rounds, Boston, Massachusetts
- 2013 Evolution of the American Board of Anesthesiology (ABA) Examinations [Grand Rounds]

- Anesthesia Grand Rounds, Beth Israel Deaconess Medical Center, Boston, Massachusetts
- 2014 Henry Knowles Beecher and the Ethics of Human Experimentation [Grand Rounds] Massachusetts General Hospital, Boston, MA
- 2014 Developing Physician Leaders Coaching in Leadership and Healthcare Conference, Harvard Medical School, Boston, MA

Report of Regional, National and International Invited Teaching and Presentations

Invited Presentations and Courses

Regional

Those presentations below sponsored by outside entities are so noted and the sponsors are identified.

- 1993 Overview of Anesthetic Agents, Postoperative Pain Management [Invited Speaker] Annual Meeting American Society of Post Anesthesia Nurses Vermont Chapter (National Continuing Nursing Education Program), Burlington, Vermont (American Society of Post Anesthesia Nurses)
- 1994 Overview of Anesthetic Agents, Postoperative Pain Management [Invited Speaker] Annual Meeting American Society of Post Anesthesia Nurses Vermont Chapter (National Continuing Nursing Education Program), Burlington, Vermont (American Society of Post Anesthesia Nurses)
- 1996 Postoperative Pain Management [Keynote Speaker] Quarterly Surgical Symposium, Eastern Maine Medical Center, Bangor, Maine (Eastern Maine Medical center)
- 1996 Multidisciplinary Pain Medicine [Invited Speaker] Comprehensive Review of Pain Management, Harvard Medical School, Boston, Massachusetts (Harvard Medical School)
- 1998 Pain Management during Pregnancy [Invited Speaker] Advances in Pain Management, New England Pain Association Annual Meeting, Boston, Massachusetts (New England Pain Association)
- 1998 Assessment and Management of the Patient with Cancer Pain [Invited speaker] New Hampshire/Vermont Society of Anesthesiologists Annual Meeting, Dartmouth-Hitchcock Medical Center, Hanover, New Hampshire (New Hampshire/Vermont Society of Anesthesiologists)
- 1998 Anticonvulsants: Current Applications in Neurologic Conditions [Invited Speaker] Community Grand Rounds, Tufts New England Medical Center, Boston, Massachusetts (New England Medical Center)
- 1998 Reflex Sympathetic Dystrophy [Invited Speaker] Vermont Association of Hand Therapists, Champlain College, Burlington, Vermont

(Vermont Association of Hand Therapists)

- 1999 Assessment and Management of the Patient with Cancer Pain [Invited Speaker]
Vermont Visiting Nurses Association, Colchester, Vermont (Vermont Visiting Nurses Association)
- 1999 Reflex Sympathetic Dystrophy [Visiting Professor]
Department of Anesthesia, Dartmouth Medical School, Hanover, New Hampshire (Dartmouth Medical School)
- 1999 Pain Management in the Elderly [Invited Speaker]
NCS Healthcare, Burlington, Vermont (NCS Healthcare)
- 2000 Management of Pain in Children [Invited Speaker]
Vermont Emergency Department Nurses Association, Burlington, Vermont (Vermont Emergency Department Nurses Association)
- 2002 Radiofrequency Neurolysis (2002) [Invited Speaker]
Harvard Principles and Practice of Pain Medicine, Harvard Medical School, Boston, Massachusetts (Harvard Medical School)
- 2003 Radiofrequency Procedures for the Treatment of Pain (2003) [Invited Speaker]
Harvard Principles and Practice of Pain Medicine, Harvard Medical School Boston, Massachusetts (Harvard Medical School)
- 2003 Analgesic Management in the Pregnant Patient [Invited Speaker]
Baystate Health System, Pain Management in Women, Springfield, Massachusetts (Baystate Health System)
- 2003 The Pharmacologic Management of Chronic Pain, Rational Use of New Modalities in Chronic Back Pain [Invited Speaker]
New England Society of Anesthesiologists Annual Meeting, Cape Cod, Massachusetts (New England Society of Anesthesiologists)
- 2004 Radiofrequency Procedures for the Treatment of Pain (2004) [Invited Speaker]
Harvard Principles and Practice of Pain Medicine, Boston, Massachusetts (Harvard Medical School)
- 2005 Radiofrequency Treatment for Pain; Rational Use of New Modalities for Spinal Pain [Invited Speaker]
Harvard Principles and Practice of Pain Medicine, Boston, Massachusetts (Harvard Medical School)
- 2005 Managing Acute Pain in the Opioid Tolerant Patient [Visiting Professor]
Department of Anesthesia, Dartmouth Medical School, Hanover, New Hampshire (Dartmouth Medical School)
- 2006 Current Trends in Multidisciplinary Pain Management [Invited Speaker]
Massachusetts Society of Anesthesiologists, Boston, Massachusetts (Massachusetts Society of Anesthesiologists)
- 2007 A Rational Approach to the Patient with Back Pain Dworetz-Levesque [Visiting

Professor/Keynote Speaker]
St. Elizabeth's Hospital, Brighton, Massachusetts (St. Elizabeth's Hospital)

- 2010 The John's Fund Lectureship: The Link Between Acute and Chronic Pain [Keynote Speaker]
15th Annual Vermont Perspectives in Anesthesia Conference, Stowe, Vermont
(University of Vermont)
- 2010 New Local Anesthetics and Novel Delivery Systems [Invited Speaker]
Department of Anesthesia, University of Massachusetts Medical Center, Worcester,
Massachusetts (University of Massachusetts Medical)
- 2010 Acute Pain Management Guidelines [Invited Speaker]
Tufts Health Care Institute Program on Opioid Risk Management: The Role of Dentists
in Preventing Opioid Abuse (National Continuing Medical Education Program),
Boston, Massachusetts, Tufts Healthcare Institute
- 2011 The Link Between Acute and Chronic Pain [Grand Rounds]
Tufts Medical Center, Department of Anesthesiology, Boston, Massachusetts
- 2012 Link Between Acute and Chronic Pain [Invited Speaker]
IARS Annual Meeting, Boston, Massachusetts (International Anesthesia Research
Society)
- 2013 Pain Medicine as a Separate Specialty: A view from the ABA, RRC's, and Pain
Medicine Fellowships [Invited Speaker]
American Society of Regional Anesthesia, The Future of ASRA Summit, Boston,
Massachusetts
- 2013 Perioperative Management of the Opioid Tolerant Patient [Invited Speaker]
Infectious Complications Within Interventional Pain Practice [Invited Speaker]
American Society of Regional Anesthesia, 38th Annual Regional Anesthesiology and
Acute Pain Medicine Meeting, Boston, Massachusetts
- 2014 The Link Between Acute and Chronic Pain [Grand Rounds]
Tufts Medical Center, Boston, MA
- 2014 The Link Between Acute and Chronic Pain [Invited Speaker]
Post Graduate Assembly in Anesthesiology, New York State Society of
Anesthesiologists, New York, NY

National

Those presentations below sponsored by outside entities are so noted and the sponsors are identified.

- 1997 Reflex Sympathetic Dystrophy [Visiting Professor]
Department of Anesthesia, University of Utah, Salt Lake City, Utah (University of
Utah)
- 1998 Anticonvulsants: Current Applications in Neurologic Conditions [Invited Speaker]
Community Grand Rounds, Syracuse, New York (State University of New York,

Syracuse)

- 1999 Manpower Assessment in Pain Medicine [Invited Speaker]
Association of Pain Management Fellowship Directors, Dallas, Texas
- 2000 Panel on Neuropathic Pain: Invasive Modalities for Treating Neuropathic Pain, Panel on Cancer Pain,; End of Life Issues; ASRA Breakfast Panel: Imaging in Regional Anesthesia and Pain Medicine [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2000 Radiofrequency Ablation and Spinal Cord Stimulation, Problem Based Learning Discussion: Management of the Patient with Cancer Pain, Problem Based Learning Discussion: Organization and Management of a Pain Clinic [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2001 Moderator, Parallel Session, Pain – Clinical Applications, Speaker, Parallel Session: Imaging in Regional Anesthesia and Pain Medicine, Resident Cracker Barrel: Technology in Residency & Beyond, Master Class: Imaging Techniques for Evaluation of Chronic Pain, Problem Based Learning Discussion: The Efficient Acute Pain Service [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2001 Moderator, Panel on Acute Pain, Panel on Interventional Pain: Radiofrequency Neurolysis [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2001 Use of Imaging Modalities in Pain Medicine [Invited Speaker]
World Foundation for Pain Relief, Current Concepts Meeting, New York, New York (World Foundation for Pain Relief)
- 2001 Panel on Interventional Pain,; Radiofrequency Neurolysis [Invited Speaker, Moderator]
New York State Society of Anesthesiologists, Postgraduate Assembly (New York State Society of Anesthesiologists)
- 2002 Workshop: Use of Fluoroscopy in the Pain Clinic [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2002 Moderator, Panel on Acute Pain, Master Class: Use of Imaging Modalities in Pain Medicine, Workshop: Radiofrequency Neurolysis, Resident Cracker Barrel: Perils

- Beyond Residency: Assessing Practice Opportunities [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting
(American Society of Regional Anesthesia and Pain Medicine)
- 2002 Panel on Failed Back Surgery Syndrome: The Anesthesiologist's Approach [Invited Speaker, Moderator]
American Pain Society Annual Meeting (American Pain Society)
- 2002 Radiofrequency Procedures for the Treatment of Spinal Pain, Education in Pain Medicine: Changes on the Horizon [Invited Speaker]
Eastern Pain Association Annual Meeting, New York, New York (Eastern Pain Association)
- 2002 Breakfast Panel: Rational Use of Opioid Analgesic, Presenter, Pain Review, Workshop: Radiofrequency Neurolysis, Master Class: Rational Use of Imaging in the Pain Patient, Moderator: Panel on Imaging in Pain Medicine, Parallel Session Lecture: What is the role for fluoroscopy in the pain clinic? [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting
(American Society of Regional Anesthesia and Pain Medicine)
- 2003 Moderator, Panel on Imaging in Pain Medicine, Parallel Session Lecture: What is the role for fluoroscopy in the pain clinic?, Parallel Session Lecture: Is Lumbar Discography a Useful Diagnostic Tool?, Problem Based Learning Discussion: Management of Complications in the Pain Clinic, Master Class: What is The Best Place to Practice Pain Medicine: the Hospital, an ASC, or Your Own Office?, Course Director: Interactive Review of Pain Medicine [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting
(American Society of Regional Anesthesia and Pain Medicine)
- 2003 Diagnosis and Treatment of Pain of Spinal Origin [Invited Speaker, Moderator]

American Pain Society, Annual Meeting (American Pain Society)
- 2003 Refresher Course Lecture: Rational Use of New Modalities for Treatment of Low Back Pain, Problem-Based Learning Discussion: My Back Hurts, Can You Fix it Without Surgery?, Panel on Research: Acute and Chronic Pain Trials in a University Medical Center: From Concept to Completion, Panel on Interventional Techniques: Nucleoplasty, IDET, and Annuloplasty, Workshop: Radiofrequency Treatment for Chronic Pain [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2003 Moderator, Parallel Session: Pain Mechanisms/Pain Practices, Parallel Session Lecture: Managing Acute Pain in the Opioid Tolerant Patient, Symposium: Addressing the Proper Treatment of Pain in an Era of Provider and Patient Inquiry [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]

- American Society of Regional Anesthesia and Pain Medicine Annual Meeting
(American Society of Regional Anesthesia and Pain Medicine)
- 2003 Where is the Best Place to Practice Pain Medicine: in the Hospital Outpatient Department, an Ambulatory Surgical Center, or Your Own Office? [Invited Speaker]
American Society of Anesthesiologists Annual Practice Management Meeting
(American Society of Anesthesiologists)
- 2003 Problem-Based Learning Discussion: Epidural Abscess, Lecture: Rational Use of Opioid Analgesics for Non-Malignant Pain, Lecture: Are COX-2 inhibitors safer than traditional NSAIDs? [Invited Speaker, Moderator, Workshop Instructor]
The Cleveland Clinic, Pain & Regional Anesthesia Symposium (The Cleveland Clinic Foundation)
- 2003 Recent Findings on the Mechanisms of Pain and Their Implications for Acute Pain Management [Invited Speaker]
Imogene Bassett Health Care, Cooperstown, NY (Imogene Bassett Health Care)
- 2003 Evidence for use of Intrathecal Hydromorphone and Bupivacaine [Consensus Panel Member]
Polyanalgesic Consensus Conference 2003, New York, NY (Medtronic)
- 2003 The Role of Intrathecal Agents in the Treatment of Acute Pain [Panel Member]
Acute Pain Roundtable, New York, New York (Endo Pharmaceuticals)
- 2004 Problem-Based Learning Discussion: Imaging in Pain Medicine, Lecture: Rational Use of Opioid Analgesics, Lecture: Radiofrequency Procedures for the Treatment of Chronic Pain [Invited Speaker, Moderator, Workshop Instructor]
The Cleveland Clinic, Pain & Regional Anesthesia Symposium (The Cleveland Clinic Foundation)
- 2004 Including Pain Medicine in an Anesthesiology Group [Invited Speaker]
American Society of Anesthesiologists Annual Practice Management Meeting
(American Society of Anesthesiologists)
- 2004 Moderator, Parallel Session on Treatment of Discogenic Pain, Parallel Session Lecture: Imaging in Regional Anesthesia & Pain Medicine, Workshop on Radiofrequency Treatment [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting
(American Society of Regional Anesthesia and Pain Medicine)
- 2004 Lecture: Acute Pain Management in the Opioid Tolerant Patient, Panel Moderator: Challenges in Perioperative Pain Management [Invited Speaker, Moderator]
New York State Society of Anesthesiologists, Postgraduate Assembly, (New York State Society of Anesthesiologists)
- 2004 Refresher Course Lecture: Rational Use of New Modalities for the Treatment of Low Back Pain, Panel on Regional Anesthesia and Pain Medicine: Infectious Complications and Interventional Pain, Workshop: Radiofrequency Treatment for

- Chronic Pain [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2004 Consensus Conference on Infectious Complications in Regional Anesthesia: Infectious Risks of Techniques used to Treat Chronic Pain, Moderator: Parallel Session on Imaging Techniques, Parallel Session Lecture: Imaging in Regional Anesthesia & Pain Medicine [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2004 Symposium on Pain: Understanding Pain; How and What to Treat [Keynote Speaker]
Vermont Chapter of the American College of Physicians Annual Meeting, Stowe, Vermont, Vermont Chapter of the American College of Physicians (American College of Physicians)
- 2004 Managing Acute Pain in the Opioid Tolerant Patient [Visiting Professor]
Virginia Mason Medical Center, Department of Anesthesiology, Seattle, Washington (Virginia Mason Medical Center)
- 2004 Lectures: Rational Use of New Modalities for the Treatment of Back Pain, Imaging in Pain Medicine; Guest Instructor: Regional Anesthesia Study Center of Iowa [Visiting Professor]
University of Iowa, Department of Anesthesiology, Iowa City, Iowa (University of Iowa)
- 2004 Lectures: Managing Acute Pain in the Opioid Tolerant Patient, My Back Hurts; Can you Fix It Without Surgery, Analgesic Management in the Pregnant Patient [Invited Speaker]
California Society of Anesthesiologists Hawaiian Seminar (California Society of Anesthesiologists)
- 2004 Rational Use of New Modalities for the Treatment of Back Pain [Visiting Professor]
University of Chicago, Department of Anesthesiology, Chicago, Illinois (University of Chicago)
- 2005 Lectures: Managing Acute Pain in the Opioid Tolerant Patient, My Back Hurts; Can you Fix It Without Surgery, Analgesic Management in the Pregnant Patient [Invited Speaker]
California Society of Anesthesiologists Hawaiian Seminar (California Society of Anesthesiologists)
- 2005 Introduction of Dr. James Eisenach: the 2005 Bonica Award, Panel: Transforaminal injection of steroids, Panel: Antibiotic prophylaxis for interventional procedures [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting (American Society of Regional Anesthesia and Pain Medicine)

- 2005 Lecture: Today's options for postoperative pain management: Where we are and where we need to go? [Invited Speaker, Moderator]
American Pain Society Annual Meeting (American Pain Society)
- 2005 Refresher Course Lecture: Rational use of new modalities for the treatment of back pain, Workshop: Radiofrequency procedures for the treatment of chronic pain, Panel: Spinal cord stimulation in the future, Panel: Transforaminal injection of steroids [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2005 Consensus Conference on Infectious Risks of Regional Anesthesia: Infectious risks of chronic pain treatment [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2005 Rational Use of New Modalities for the Treatment of Back Pain [Visiting Professor]
University of Alabama, Department of Anesthesiology, Birmingham, Alabama (University of Alabama)
- 2005 Lecture: Innovations in postoperative pain management: an update for the pain specialist [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Academy of Pain Medicine Annual Meeting (American Academy of Pain Medicine)
- 2005 Lectures: Managing Acute Pain in the Opioid Tolerant Patient, Back Pain and the Anesthesiologist, An Approach to the Patient with Cancer-Related Pain [Invited Speaker]
New York Anesthesiology Review, Orlando, Florida (Mt. Sinai Hospital, NY)
- 2005 Lectures: Evidence Based Interventional Pain Management, Complex Regional Pain Syndrome: The Role for Invasive Modalities [Invited Speaker]
American Society of Interventional Pain Physicians Annual Meeting, New Orleans, Louisiana (American Society of Interventional Pain Physicians)
- 2005 Lectures: Discogenic Pain: Diagnosis and Treatment, Current Trends in Multidisciplinary Pain Treatment [Invited Speaker]
22nd Annual Pain Symposium, Texas Tech Health Science Center, Lubbock, Texas (University of Texas)
- 2005 Acute Post-surgical Pain Management: A Critical Appraisal of Current Practice [Symposium Chair and Leader of Evidence-based Review Synthesis]
Acute Pain Summit 2005, Fort Lauderdale, Florida (American Society of Regional Anesthesia and Pain Medicine)
- 2006 Lectures: Managing Acute Pain in the Opioid Tolerant Patient, Back Pain and the Anesthesiologist, An Approach to the Patient with Cancer-Related Pain [Invited

- Speaker]
New York Anesthesiology Review, Orlando, Florida (Mt. Sinai Hospital, NY)
- 2006 Moderator: Innovations in Postoperative Pain Management: No Strings Attached, Review Course Lecture: Rational use of interventional pain treatment, Review Course Lecture: Sympathetic blocks – anatomy and complications [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Academy of Pain Medicine Annual Meeting (American Academy of Pain Medicine)
- 2006 Lectures: Multidisciplinary Pain Management and the Interventionalist, Methadone Reincarnated, Imaging Techniques in Pain Medicine, Epidural Abscess/Hematoma [Invited Speaker, Moderator, Workshop Instructor]
The Cleveland Clinic, Pain & Regional Anesthesia Symposium (The Cleveland Clinic Foundation)
- 2006 Review Course Lecture: Transforaminal injection of steroids, Course Director: Intensive workshop in diagnosis and management of low back pain [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2006 Panel: Discogenic low back pain: Making sense of the range of new treatment options [Invited Speaker, Moderator]
American Pain Society Annual Meeting (American Pain Society)
- 2006 Panel moderator: Chronic pain update, Lecturer: Complications in Pain Medicine [Invited Speaker, Moderator]
New York State Society of Anesthesiologists, Postgraduate Assembly, (New York State Society of Anesthesiologists)
- 2006 Refresher Course Lecture: Radiographic anatomy for image-guided pain intervention, Workshop: Radiofrequency procedures for the treatment of chronic pain, Panel: The academic pain practice: can it survive? [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2006 Lectures: Back Pain 101: Approach to low back pain for the occasional pain doc, Acute pain in geriatric patient, Resident Panel: Residency is nearing its end: now what? Academics versus private practice [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2006 Organizational Anatomy of Pain Pathways and Neuronal Plasticity [Visiting Professor]
Weill Medical College of Cornell University, Department of Anesthesiology, New York, New York (Weill Medical College)

- 2006 Rational Use of New Modalities for Spinal Pain [Keynote Speaker]
Annual Meeting of the Texas Neurological Society, Austin, Texas (Texas Neurological Society)
- 2006 Lectures: Managing Acute Pain in the Opioid Tolerant Patient, Back Pain and the Anesthesiologist [Invited Speaker]
Sleepless in Seattle, Annual Anesthesia Symposium, Seattle, Washington (Virginia Mason Medical Center)
- 2006 Preemptive Analgesia [Invited Speaker]
Wake Forest University Anesthesiology Update, Greenbrier, West Virginia (Wake Forest University)
- 2006 Radiographic Anatomy for Image-guided Intervention; Rational use of New Modalities for the Treatment of Back Pain [Visiting Professor]
Johns Hopkins University Hospital, Department of Anesthesia, Baltimore, Maryland (Johns Hopkins University)
- 2007 Lecture: Discography, IDET, Percutaneous Discectomy, and Nucleoplasty: Complications and Their Prevention [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]

American Academy of Pain Medicine Annual Meeting (American Academy of Pain Medicine)
- 2007 Lecture: Risks and Complications of Spinal Cord Stimulation [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2007 Refresher Course Lecture: Complications in Pain Medicine, Panels: Low back pain – The Essentials, Mixing Anesthesia, Interventional and Non-interventional Pain: What is the Right Way to Split the Money? Interventional Versus Non-interventional Pain Practitioners in the Same Group: Who is Really Carrying the Load? [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2007 Resident Panel: Residency is Almost Over, Now What? Private Practice/Academics/Fellowship, Lecture: Opioid Pharmacology and Patient-controlled Analgesia [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2007 From Preemptive Analgesia to Preventative Analgesia [Visiting Professor]
Pennsylvania State University, Department of Anesthesiology, Hershey, Pennsylvania (Pennsylvania State University)
- 2007 The Disc, Basic Science [Invited Speaker]

- International Spine Intervention Society Annual Meeting, Baltimore, MD
(International Spine Intervention Society)
- 2007 What is the Role of Placebo Effects in Clinical Practice? [Invited Speaker]
10th International Conference on Mechanisms & Treatment of Neuropathic, Salt Lake
City, Utah (University of Rochester)
- 2007 Meet the Professors: Controversies, Consensus & Emerging Concepts in Pain
Management [Invited Speaker]
American Conference on Pain Medicine, New York, NY (Johns Hopkins University)
- 2007 Lectures: Evolution in Fellowship Training and the Future of Pain Medicine: Where
Are We Going? [Invited Speaker]
Cornell Pain Medicine Symposium, New York, New York (Weill Medical College)
- 2008 Epidural Steroids: Pro/Con: Pro: Epidural Steroids are a Useful Adjunct to the
Conservative Care of Patients with Radicular Pain, Cervical Interventions scientific
section: Cervical Interlaminar Epidural Injection: Complications and Management
Decisions [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop
Instructor]
American Academy of Pain Medicine Annual Meeting (American Academy of Pain
Medicine)
- 2008 Refresher Course Lecture: Complications in Pain Medicine, Panel: Lecturer, Use of
Computed Tomography and Digital Subtraction [Refresher Course Lecturer,
Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting
(American Society of Regional Anesthesia and Pain Medicine)
- 2008 Refresher Course Lecture: Complications in Pain Medicine, Panels: Image-Guided
Intervention in Pain Medicine, Chronic and Cancer Pain, The Future of Image
Guidance for Interventional Pain [Refresher Course Lecturer, Moderator, Invited
Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of
Anesthesiologists)
- 2008 Complications in Pain Medicine [Invited Speaker]
Cornell Pain Medicine Symposium, New York, New York (Weill Medical College)
- 2008 An Evidence Based Primer for Interventional Pain Management [Invited Speaker]
American Conference on Pain Medicine, New York, NY (Johns Hopkins University)
- 2008 Resident Panel: How to Choose Between the Allure of Private Practice and the
Intellectual Stimulation of Academic Practice [Refresher Course Lecturer,
Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting
(American Society of Regional Anesthesia and Pain Medicine)
- 2009 Spinal Injections: Complications and Recommendations for Safety [Refresher Course
Lecturer, Moderator, Invited Speaker, Workshop Instructor]

- American Academy of Pain Medicine Annual Meeting (American Academy of Pain Medicine)
- 2009 Refresher Course Lecture: Complications in Pain Medicine, Panel: Lecturer, Education in Pain Medicine, Problem Based Learning Session: What to Do When You Have Your First Complication in Pain Medicine [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2009 Panel: The American Society of Anesthesiologists' Chronic Pain Guideline [Invited Speaker, Moderator]
American Pain Society Annual Meeting (American Pain Society)
- 2009 Refresher Course Lecture: Complications in Pain Medicine, Panel: Can Image-Guidance Improve the Safety of Interventional Pain Treatment?, Poster Session Facilitator: Acute Pain [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2009 Resident Forum: The Whole Truth and Nothing but the Truth, Problem Based Learning Discussion: Publishing Research – *Regional Anesthesia and Pain Medicine* [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]
American Society of Regional Anesthesia and Pain Medicine Annual Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2009 Persistent and Breakthrough Pain: Multidimensional Assessment and Opioid-Based Multimodal Treatment, A Cases and Commentary Workshop [Invited Speaker]
Albert Einstein College of Medicine, Center for Continuing Medical Education, Boston, Massachusetts (Albert Einstein College of Medicine)
- 2009 Rational Use of New Modalities for Spinal Pain; Complications in Pain Medicine; Resident Case Conference: Complications of Regional Anesthesia [Visiting Professor]
University of Pennsylvania, Department of Anesthesiology and Critical Care Medicine, Philadelphia, Pennsylvania (University of Pennsylvania)
- 2009 Critical Issues in Designing a Clinical Trials to Evaluate a Drug Intended to Prevent Chronic Pain [Symposium Co-Director and Invited Speaker]
United States Food And Drug Administration, Analgesic Clinical Trials Project, Scientific Workshop, Silver Springs, MD (Co-sponsored by the University of Pennsylvania and the United States Food and Drug Administration)
- 2009 The Link Between Acute and Chronic Pain; A Rational Approach to the Treatment of Back Pain; Complications in Pain Medicine [Invited Speaker]
Massachusetts Society of Anesthesiologists Meeting, Bermuda (Massachusetts Society of Anesthesiologists)
- 2009 Mock Meeting of the Anesthesiology RRC; Pain Fellowships: How Are We Doing? Did We Let This One Get Away? [Invited speaker]

- Society of Academic Anesthesiology Associates Annual Meeting, Boston, MA
(Society of Academic Anesthesiology Associates)
- 2010 Pain Treatment at the Cervical Spinal Level: Emerging Evidence from the ASA Closed Claims Study, Pain Medicine Moving Forward: 2010 and Beyond – panel discussion, Review of the Methodology and Recommendations of the ASA Practice Guidelines on Chronic Pain [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]

American Academy of Pain Medicine Annual Meeting (American Academy of Pain Medicine)
- 2010 Breakfast Symposium on Transforaminal Injections: Complications of Epidural Steroid Injections: Interlaminar and Transforaminal; Parallel Session Moderator: No Outcome – No Income; Parallel Session Speaker: Outcomes in Pain Medicine - Where Are We Now, Where Do We Need to Go and How Do We Get There?; Problem Based Learning Discussion: What to do When You Have Your First Complication in Pain Medicine; Resident Forum: Pain Medicine and Scope of Practice [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]

American Society of Regional Anesthesia and Pain Medicine Annual Pain Meeting (American Society of Regional Anesthesia and Pain Medicine)
- 2010 Refresher Course Lecture: Improving Safety Through Use of Diagnostic Imaging and Image Guidance in Pain Medicine, Panel: Outcomes in Pain Medicine - What are the Outcomes We Need to Measure in Pain Medicine?, Moderator, Oral Abstract Presentations: Regional Anesthesia - Basic Science, Speaker: American Board of Anesthesiology Information Session [Refresher Course Lecturer, Moderator, Invited Speaker, Workshop Instructor]

American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists)
- 2010 The Link Between Acute and Chronic Pain [Visiting Professor]
University of California San Francisco, San Francisco, California (University of California San Francisco)
- 2010 Neurolytic Blocks for Cancer Pain; Complications of Pain Medicine [Visiting Professor]
Northwestern University Medical School, Department of Anesthesiology, Chicago, Illinois (Northwestern University)
- 2010 Rational Use of New Modalities for Spinal Pain; Complications of Pain Medicine [Visiting Professor]
University of California Los Angeles, Department of Anesthesiology, Los Angeles, California (University of California Los Angeles)
- 2011 Outcomes in Pain Medicine; Complications of Pain Medicine [Visiting Professor]
Stanford University, Department of Anesthesia and Critical Care, Palo Alto, California (Stanford University)

- 2011 Rational Use of New Modalities for Spinal Pain; The Link Between Acute and Chronic Pain [Visiting Professor]
St. Luke's – Roosevelt Hospital Center, Department of Anesthesiology, New York, New York (St. Luke's – Roosevelt Hospital Center)
- 2011 The Link Between Acute and Chronic Pain [Visiting Professor]
University of Florida Medical Center, Gainesville, FL
- 2011 Department of Anesthesiology-Morbidity and Mortality Grand Rounds [Visiting Professor]
Rush University Medical Center
- 2011 The Future of Training for Pain Medicine Specialists; Complications of Pain Medicine [Visiting Professor]
Cleveland Clinic Foundation, Anesthesiology Institute, Cleveland, Ohio (The Cleveland Clinic Foundation)
- 2011 Lectures: Evidence Based Medicine from an Academic Perspective; Resident and Fellows Lecture: Low Back Pain [Invited Speaker]
American Society of Interventional Pain Physicians Annual Meeting, Arlington, Virginia (American Society of Interventional Pain Physicians)
- 2011 Grand Rounds: The Link Between Acute and Chronic Pain [Visiting Professor]
Anesthesia Grand Rounds, Mayo Clinic, Cleveland, Ohio
- 2011 The Link Between Acute and Chronic Pain
Anesthesia Grand Rounds, Stanford University School of Medicine, Stanford, CT
- 2011 The Link Between Acute and Chronic Pain
Anesthesia Grand Rounds, University of Miami, Miami, FL
- 2011 Complications of Epidural Steroid Injections [Invited Speaker]
Improving Safety Through Use of Diagnostic Imaging and Guidance [Moderator]
Chronic Pain Management Claims [Invited Speaker]
The Future of Pain Advocacy: How Can We Bring the Various Pain Groups Together [Invited Speaker]
American Society of Anesthesiologists Annual Meeting (American Society of Anesthesiologists), Chicago, IL
- 2011 Mechanisms of Injury to the Spinal Cord [Invited Speaker]
American Society of Regional Anesthesia and Pain Medicine Annual Pain Medicine Meeting (ASRA), New Orleans, LA
- 2011 Spinal Blocks for Pain: What Works and What Doesn't: Evidence Based [Visiting Professor]
New York University Post Graduate Medical School, New York, NY
- 2012 Cervical Pain: Complications and Treatment [Invited Speaker]
World Institute of Pain World Congress, Miami Beach, FL

- 2012 Acute Pain Management in the Opioid Tolerant Patient; The Link Between Acute and Chronic Pain; The Role of Sympathetic Blocks in Chronic Pain; Rational Approach to Treatment of Low Back Pain [Invited Speaker]
57th Annual Update in Anesthesiology, University of Utah, Park City, UT
- 2012 Future Direction of Pain Management [Invited Speaker]
American Academy of Pain Management Annual Meeting, Palm Springs, CA
- 2012 Central Neuraxial Catastrophies-Epidural Hematoma v. Abscess v. Infarction [Invited Speaker]; Lessons from the ASA Closed Claims Analysis [Invited Speaker]; Learning and Teaching Regional Anesthesia [Moderator]
37th Annual Regional Anesthesiology Meeting & Workshops, American Society of Regional Anesthesia & Pain Medicine, San Diego, CA
- 2012 The Link Between Acute and Chronic Pain [Invited Speaker]
Rowlinsong Lecture in Pain Medicine, University of Virginia School of Medicine, Charlottesville, VA
- 2012 The Link Between Acute and Chronic Pain; Current Concepts and Controversies in the Management of Pain – Meet the Experts [Invited Speaker]
62nd Annual Postgraduate Symposium on Anesthesiology, The University of Kansas School of Medicine, Kansas City, KS
- 2012 The Link Between Acute and Chronic Pain [Grand Rounds Speaker]
Anesthesia Grand Rounds, Walter Reed National Military Medical Center, Bethesda, MD
- 2012 Diagnostc and Therapeutic Imaging [Moderator]
Regional Anesthesia and Acute Pain: Emerging Measures of Predictors for Postoperative Pain [Speaker]
The Value of Care Pathways in Ambulatory Anesthesia and Surgery [Invited Speaker]
Patient Centered Surgical Home: Expanding the Scope of Anesthesiology Practice
Caring for the Surgical Patient From Decision to Beyond Discharge [Panel]
American Society of Anesthesiologists Annual Meeting, Washington, DC
- 2012 Cervical ESI and Selective Root Block [Workshop]
Strategies for a Sustainable Academic Pain Program [Invited Speaker]
American Society of Regional Anesthesia Annual Pain Medicine Meeting, Miami FL
- 2013 The Link Between Acute and Chronic Pain: An Evidence-Based Approach [Invited Speaker]
International Anesthesia Research Society, Annual Meeting, San Diego, CA
- 2013 The Link Between Acute and Chronic Pain: An Evidence-Based Approach [Grand Rounds]
Anesthesia Grand Rounds, Weill Cornell Medical College, New York, NY
- 2013 The Link Between Acute and Chronic Pain: An Evidence-Based Approach [Grand Rounds]
Anesthesia Grand Rounds, SUNY Downstate Medical Center, Brooklyn, NY

- 2013 Preparing for Accountable Care: Back Pain Care Redesign [Moderator/Speaker]; Improving Safety Through Use of Diagnostic Imaging and Image Guidance in Pain Medicine [Refresher Course Lecture]
American Society of Anesthesiologists Annual Meeting, San Francisco, CA
- 2013 Epidural Steroid Injections [Moderator]; Future of Interventional Pain Medicine [Invited Speaker]
American Society of Regional Anesthesia Annual Pain Medicine Meeting, Phoenix, AZ
- 2013 The Link Between Acute and Chronic Pain [Grand Rounds]
Anesthesia Grand Rounds, Columbia University College of Physicians & Surgeons, New York, NY
- 2014 Henry Knowles Beecher and the Ethics of Human Experimentation [Invited John's Fund Key Note Speaker]
John's Funds Lecture, University of Vermont, Stowe, VT
- 2014 Henry Knowles Beecher and the Ethics of Human Experimentation [Grand Rounds/Visiting Professor]
Anesthesia Grand Rounds, Johns Hopkins Medicine, Baltimore, MD
- 2013 Back Pain and Health Care Redesign [Moderator/Speaker]; Improving Safety Through Use of Diagnostic Imaging and Image Guidance in Pain Medicine [Refresher Course Lecture]
American Society of Anesthesiologists Annual Meeting, New Orleans, LA
- 2014 RRC Requirements for Regional Anesthesia and Pain Procedures [Speaker]; Treating Postoperative Pain in the Opioid Tolerant Patient [Speaker]; Phenotyping Patients for Acute and Chronic Pain [Moderator]
American Society of Regional Anesthesia Annual Regional Anesthesiology and Acute Pain Medicine Meeting, Chicago, IL
- 2014 Back Pain and Health Care Redesign: Preparing for Accountable Care [Speaker]; Improving Safety Through Use of Diagnostic Imaging and Image Guidance in Pain Medicine [Speaker]
American Society of Anesthesiologists Annual Meeting, New Orleans, LA
- 2014 ABA/ITE Updates [Speaker]
Society of Academic Anesthesiology Associations Annual Meeting, Chicago, IL
- 2014 The Future of Pain Medicine [Resident Training Speaker]; Pain Medicine Recertification – Update [Speaker]
American Society of Regional Anesthesia Annual Pain Medicine Meeting, San Francisco, CA

International

Those presentations below sponsored by outside entities are so noted and the sponsors are identified.

- 2000 Lectures: Neuroanatomy and Neurophysiology of Pain, Imaging in Regional Anesthesia and Pain Medicine, NSAIDs and Opiates, Neuropathic Pain, Workshops: Facet Blocks, Thoracic Epidural [Invited Speaker, Workshop Instructor]
V Simposio, Anestesia Regional y Medicina del Dolor, Santiago, Chile, Clínica Las Condes, Santiago, Chile (Clínica Los Condes, Santiago, Chile)
- 2002 Lecture: Imaging in Regional Anesthesia and Pain Medicine [Invited Speaker]
European Society of Regional Anesthesia Zonal Meeting, Barcelona, Spain (European Society of Regional Anesthesia)
- 2004 Moderator: Panel on Spinal Cord Stimulation, Interventional Techniques for the Treatment of CRPS, Workshop on Radiofrequency Treatment, Workshop on Lower Extremity Blocks, Review Course Lecture on Radiofrequency Treatment for Chronic Pain [Invited Speaker]
International Symposium on Regional Anesthesia and Pain Medicine, European Society of Regional Anesthesia Zonal Meeting, Santiago, Chile (European Society of Regional Anesthesia)
- 2004 Lectures: Analgesia in Pregnancy and Lactation, Perioperative Analgesia, Low Back Pain and the Anesthetist (2004) [Invited Speaker]
McGill Anesthesia Update, Montréal, Québec, Canada (McGill University)
- 2005 Patient-Controlled Transdermal Delivery: Clinical Trial Data for use in the Post-Operative Setting [Invited Speaker]
International Association for the Study of Pain, 11th World Congress on Pain, Sydney, Australia (International Association for the Study of Pain)
- 2005 Pharmacology of Ziconotide/ Advanced Interventional Pain Conference and Workshop [Invited Speaker]
World Pain Congress, Budapest, Hungary (World Institute of Pain)
- 2005 Lectures: Imaging in Regional Anesthesia and Pain Medicine: We Have Much to Learn, Polyanalgesia in the Management of Pain by Intraspinal Drug Delivery Systems, The Scientific Method, Evidence-based Medicine and use of Interventional Pain Treatments [Invited Speaker]
European Society of Regional Anesthesia Zonal Meeting, Santiago de Compostela, Spain (European Society of Regional Anesthesia)
- 2005 Moderator: Panel on Imaging in Pain Medicine, Lectures: Interventional Techniques for the Treatment of Low back Pain, Pain Management in the Elderly, Workshop: Radiofrequency Procedures for the Treatment of Chronic Pain [Invited Speaker, Workshop Instructor, Moderator]
Conference on Pain Control and Regional Anesthesia, Cape Town, South Africa (European Society of Regional Anesthesia)
- 2006 Lectures: Interventional Management of Chronic Back Pain, Nerve Blocks and Other Interventions for Complex Regional Pain Syndrome, Workshop: Interventions for Complex Regional Pain Syndrome and Spinal Pain, Managing the Difficult and Refractory Chronic Pain Patient [Invited Speaker, Workshop Instructor, Moderator]
European Society of Regional Anesthesia, Davos, Switzerland (European Society of

Regional Anesthesia)

- 2006 Lectures: Intrathecal Drug Delivery Systems, Lumbar Medial Branch Block, Nerve Roots and Disc Lesions/ International Forum on Pain Medicine [Invited Speaker]
Latin America Society of Regional Anesthesia Annual Meeting, Guadalajara, Mexico
(Latin America Society of Regional Anesthesia)
- 2007 Lectures: Treatment of Low Back Pain, Interventions for Complex Regional Pain Syndrome, Workshop: Interventions for Complex Regional Pain Syndrome and Spinal Pain, Back Pain: Case Studies [Invited Speaker, Workshop Instructor, Moderator]
European Society of Regional Anesthesia Winter Week, Grindelwald, Switzerland
(European Society of Regional Anesthesia)
- 2007 Lectures: Image-guided Intervention in Pain Medicine, Radiofrequency Ablation Techniques in Chronic Pain, What's New in CRPS and its Management?, Chronic Pain Management – is it Evidence-based?/ Pain Control & Regional Anesthesia International Conference [Invited Speaker]
European Society of Regional Anesthesia, Hong Kong (European Society of Regional Anesthesia)
- 2007 Lectures: Outcomes of Spinal Cord Stimulation, Radiofrequency Ablation Workshop (McGill Simulation Centre), Transforaminal injection of Steroids: Should we Continue? [Invited Speaker, Workshop Instructor, Moderator]
3rd International Forum of Pain Medicine, Montréal, Québec, Canada (McGill University)
- 2008 How to Manage Chronic Back Pain, Complex Regional Pain Syndrome [Invited Speaker, Workshop Instructor, Moderator]
European Society of Regional Anesthesia Winter Week, Grindelwald, Switzerland
(European Society of Regional Anesthesia)
- 2008 Moderator: Symposium on Pain Medicine, Refresher Course Lecture: Rational Use of New Modalities for the Treatment of Spinal Pain [Invited Speaker, Moderator]
International Association for the Study of Pain, 12th World Congress on Pain, Glasgow, Scotland (International Association for the Study of Pain)
- 2008 The Link Between Acute and Chronic Pain, The Future of Acute Pain Management: Exciting New Research; Panel on Opioids for Chronic Pain Management: Tolerance and Abuse (2008); [Visiting Professor, Webcast Presenter]
University of Toronto, Department of Anesthesiology, Toronto, Ontario, Canada
(University of Toronto)
- 2009 The Link Between Acute and Chronic Pain, The Future of Acute Pain Management: Exciting New Research; Panel on Opioids for Chronic Pain Management: Tolerance and Abuse [Visiting Professor, Webcast Presenter]

University of Toronto, Department of Anesthesiology, Toronto, Ontario, Canada
(University of Toronto)
- 2009 Lectures: Treatment of Low Back Pain, Interventions for Complex Regional Pain Syndrome, Workshop: Sympathetic Blocks [Invited Speaker, Workshop Instructor,

Moderator]

European Society of Regional Anesthesia Winter Week, Grindelwald, Switzerland
(European Society of Regional Anesthesia)

- 2009 Lecture: Treatment of spinal pain, Workshop: Image-guided Pain Treatment for Back Pain/Invited speaker/workshop instructor [Invited Speaker, Workshop Instructor]
European Society of Regional Anesthesia Anatomy Workshop, Innsbruck Medical Center, Innsbruck, Austria (European Society of Regional Anaesthesia and Pain Therapy)
- 2009 Bonica Lecture (Keynote Address): The Evolution of Training in Pain Medicine: Past, Present, and Future, Topical Seminar: The Evolution of Training for Pain Specialists in the United States, Diagnostic Evaluation of Radicular Pain: Rational Use of Diagnostic Imaging, Refresher Course: Interventions in the Neck: How do we Proceed Safely? Chairperson: Patrick Wall Lecture, Panel: Improving the Safety of Cervical Injections [Keynote Speaker]
World Congress on Pain, New York, NY (World Institute of Pain)
- 2009 Lecture: The Future of Acute Pain Management: Exciting New Research, Panel – Opioids for Chronic Pain Management: Tolerance and Abuse, Q & A Panel with the Experts (2009) [Keynote Speaker]
Regional Anesthesia & Pain Medicine 2009, Niagara-on-the-Lake, Ontario, Canada (Canadian Anesthesiologists' Society)
- 2009 Refresher Course Lecture: The role of imaging in chronic pain procedures, Symposium on Back Pain: Understanding discogenic pain, Panel on Evidence-Based Treatment: Neuropathic pain, PBLD: Interventional techniques in chronic pain - why the differences between USA and European practice?, Panel on Cancer Pain: Interventional Pain Therapy for Intractable Thoracic Pain, Workshop: Radicular Neuropathic Pain. Current Interventional Approach [Invited Speaker]
The XXVIII Annual European Society of Regional Anesthesia Congress, Salzburg, Austria (European Society of Regional Anesthesia and Pain Medicine)
- 2010 Regional Anaesthesia as a Diagnostic Instrument in Chronic Pain; The Role of Sympathetic Blocks in Pain Therapy [Invited Speaker, Workshop Instructor]
European Society of Regional Anesthesia Anatomy Workshop, Innsbruck Medical Center, Innsbruck, Austria (European Society of Regional Anaesthesia and Pain Therapy)
- 2010 Lectures: From Acute to Chronic Pain; How to Manage Chronic Back Pain; Case Discussions: Back Pain [Invited Speaker, Workshop Instructor, Moderator]
European Society of Regional Anesthesia Winter Week, Grindelwald, Switzerland (European Society of Regional Anesthesia)
- 2010 The Link Between Acute & Chronic Pain, 51st Annual McGill Anesthesia Update [Invited Speaker]
McGill University, Montréal, Québec, Canada
- 2010 Lumbar Disk Disease: Early Intervention, Pharmacological Management, Post-Operative Pain Control: Evidence Matters, Acute vs. Chronic Pain, Epidural

- Injections: Do Steroids Matter?, Where is the Evidence Based Medicine?, Injections: Who, When & Where? [Invited Speaker, Moderator]
Society for Progress and Innovations for the Near East: Update and Cadaveric Bioskills Workshops, Beirut, Lebanon (Society for Progress and Innovations for the Near East)
- 2010 Moderator: Symposium on Interventional Therapies for Acute and Chronic Pain: Indications and Efficacy, Lecture: Rational Use of New Modalities for the Treatment of Spinal Pain [Invited Speaker/Moderator]
International Association for the Study of Pain, 13th World Congress on Pain, Montréal, Québec, Canada (International Association for the Study of Pain)
- 2010 Refresher Course Lecture: Image Guided Pain Treatment: Fluoroscopy and Computed Tomography, Panel: Interventional Procedures-Evidence Based Treatment of Cancer Pain, Workshop: Cervical and Lumbar Transforaminal Injections [Invited Speaker]
The XXIX Annual European Society of Regional Anesthesia Congress, Porto, Portugal (European Society of Regional Anesthesia and Pain Medicine)
- 2011 Complications of Pain Procedures [Keynote Speaker]
4th International Symposium, Invasive Procedures in Motion 2011, Center for Pain Medicine, Swiss Paraplegic Center, Nottwil, Switzerland (Swiss Paraplegic Center)
- 2011 Regional Anaesthesia as a Diagnostic Instrument in Chronic Pain; The Role of Sympathetic Blocks in Pain Therapy [Invited Speaker, Workshop Instructor]
European Society of Regional Anesthesia Anatomy Workshop, Innsbruck Medical Center, Innsbruck, Austria (European Society of Regional Anaesthesia and Pain Therapy)
- 2011 Complications of Interventional Pain Procedures; The Use of the Photonic Needle in Interventional Pain [Invited Speaker]
Scientific Interventional Symposium, University of Maastricht, The Netherlands
- 2011 Interventional Pain Therapy
31st Myron B. Laver International Postgraduate Course, University of Basel, Basel, Switzerland
- 2011 The Link Between Acute and Chronic Pain [Visiting Professor]
University of Amsterdam, Amsterdam, The Netherlands
- 2012 [Co-Chair for Session]: Controversies in Pain Medicine; Cancer-Related Pain: Update; Neuropathic Pain Management Update; Intrathecal Therapies; Regional Anesthesia Outcomes; Regional Anesthesia Related Nerve Injuries; Prevention of Persistent Post Surgical Pain; Anticoagulation
[Invited Speaker]: Vertebral Augmentation: Useless Intervention; Quality of Evidence and Gaps in Practice; Sacroiliac Joint; Patient Assessment; Phantom Limb Pain; Lumbar Radicular Pain; Nerve Injury Litigation: Lessons Learned; Image Guidance in Pain Medicine; The Evidence; Prevention of Phantom Limb Pain; Prevention of Post-Herniorrhaphy Pain
S.P.I.N.E. Conference, Annual Society for Progress & Innovation for the Near East,

2006-2007, 2010-	Operating Room Anesthesia	Operating Rooms, Massachusetts General Hospital	1-2 days per week
2006-	Surgical Placement of Implantable Devices for Pain	Operating Rooms, Massachusetts General Hospital	1 - 5 procedures per month

Clinical Innovations

Use of image-guidance to improve the safety and efficacy of interventions used for pain treatment	The published work of Dr. Rathmell and numerous collaborators has led to numerous safety improvements, including the earliest reports that image-guidance could be used to accurately deliver targeted epidural steroid injections (2000); the use of computed tomography to perform neurolytic celiac plexus block and improve safety and efficacy in patients with complex anatomy (2000); the first comprehensive report of catastrophic neural injuries associated with intra-arterial injection of particulate steroid during cervical transforaminal injection along with what has become an internationally accepted standard method to avoid this complication using live fluoroscopy or digital subtraction angiography (2004); and the description of a modified technique for using fluoroscopy to reduce the probability of intra-arterial injection during stellate ganglion block (2008).
---	---

Report of Education of Patients and Service to the Community

- 1999 “Health Care for the Terminally Ill” [Invited Testimony]
United States Senate, Committee on Health, Education, Labor, and Pensions
Washington, District of Columbia
- 2001 “Oxycontin and the Rational use of Opioids in Pain Management” [Invited
Testimony]
State of Vermont, Joint House/Senate Health Care Access Oversight Committee
- 2002 “Novel Regional Anesthetic Techniques for Postoperative Pain” [Lecturer]
Pharmacia National Advisory Board Meeting, Washington, District of Columbia
- 2007 Opioid Review, Blue Cross Blue Shield [Invited Evidence-Based Review], Boston
Massachusetts
- 2008 “Does Chiropractic Treatment Work? When Should it Be Used? Harmful?”
[Webcast Speaker], ABC News:
<http://abcnews.go.com/Health/TreatingPain/story?id=4047332>
- 2008 "Lumbar Disc Herniation and Acute Radicular Pain: Current and Emerging
Treatments" [Invited Speaker]
Genzyme Corporation, Boston, Massachusetts

Report of Scholarship

Publications:

Peer Reviewed Publications in Print or Other Media

Research Investigations

1. Capizzi RL, Yang JL, **Rathmell JP**, White JC, Cheng E, Cheng YC, Kute T. Dose-related pharmacologic effects of high-dose ara-C and its self-potential. *Sem Oncol* 1985;12:65-75. PMID: 3892704
2. White JC, Hines LH, **Rathmell JP**. Inhibition of 1-β-D-arabinofuranosylcytosine transport and net accumulation by teniposide and etoposide in Ehrlich Ascites cells and human leukemic blasts. *Cancer Res* 1985;45:3070-3075. PMID: 4005845
3. Capizzi RL, Powell BL, Cooper MR, **Rathmell JP**, White JC, Muss HB, Richards F, Jackson DV, Stuart JJ, White DR, Zekan PJ, Cruz JM. Dose-related pharmacologic effects of high dose ara-C and its use in combination with asparaginase for the treatment of patients with acute nonlymphocytic leukemia. *Scand J Haematol* 1986;36:17-39. PMID: 3457437
4. White JC, **Rathmell JP**, Capizzi RL. Membrane transport influences the rate of accumulation of cytosine arabinoside in human leukemia cells. *J Clin Invest* 1987;79:380-387. PMID: 3805274
5. Shields CL, Shields JA, Eagle RC, **Rathmell JP**. Clinicopathologic review of 142 cases of lacrimal gland lesions. *Ophthalmology* 1989;96:431-435. PMID: 2726173
6. **Rathmell JP**, Brooker, RF, Prielipp, RC, Butterworth JF, Gravlee, GP. Hemodynamic and pharmacodynamic comparison of doxacurium and pipecuronium with pancuronium during induction of cardiac anesthesia: does the benefit justify the cost? *Anesth Analg* 1993;76:513-519. PMID: 8383933
7. Viscomi CM, **Rathmell JP**. Labor epidural reactivation or spinal anesthesia for delayed postpartum tubal: a cost comparison. *J Clin Anes* 1995;7:380-383. PMID: 7576672
8. Viscomi CM, Abajian JC, Wald SL, **Rathmell JP**, Wilson JT. Spinal anesthesia for repair of meningomyelocele in neonates: a case series. *Anesth Analg* 1995;81:492-495. PMID: 7653810
9. Spencer RF, **Rathmell, JP**, Viscomi CM. Use of a jet stylet introducer and capnography for difficult endotracheal intubation. *Anesth Analg* 1995; 81:1079-1083. PMID: 7486050
10. Viscomi CM, Reese J, **Rathmell JP**. Medial and lateral antebrachial cutaneous nerve blocks: an easily learned regional anesthetic for forearm arteriovenous fistula surgery. *Reg Anesth* 1996;21:2-5. PMID: 8826018

11. Viscomi CM, **Rathmell JP**, Mason SB, Livermore M, Schapiro H. Analgesic efficacy and side effects of subarachnoid intrathecal Sufentanil-bupivacaine administered to women in advanced labor. *Reg Anesth* 1996;21:424-429. PMID: 8896002
12. **Rathmell JP**, Viscomi CM, Ashikaga T. Detection of intravascular epidural catheters using 2-chloroprocaine. Influence of local anesthetic and nalbuphine premedication. *Reg Anesth* 1997; 22:113-118. PMID: 9089851
13. Viscomi CM, **Rathmell JP**, Pace, NL. Duration of intrathecal labor analgesia: early versus advanced labor. *Anesth Analg* 1997; 84:1108-1112. PMID: 9141940
14. **Rathmell JP**, Prielipp RC, Butterworth JF, Williams E, Villamaria F, Testa L, Viscomi C, Ittleman FP, Baisden CE, Royster R. A multicenter, randomized, blind comparison of amrinone with milrinone after elective cardiac surgery. *Anesth Analg* 1998;86:683-690. PMID: 9539583
15. **Rathmell JP**, Song T, Torian D. Lumbar epidurography. *Reg Anesth Pain Med* 2000;25:540-545. PMID: 11009243
16. Marsch LA, Bickel WK, Badger GJ, **Rathmell JP**, Swedberg MDB, Jonzon B, Norsten-Höög C. Effects of infusion rate of intravenously administered morphine on physiological, psychomotor, and self-reported measures in humans. *J Pharmacol Exp Ther* 2001;299:1056-1065. PMID: 11714895
17. **Rathmell JP**, Pino C, Taylor R, Patrin T, Viani BV. Intrathecal morphine for postoperative analgesia: a randomized, controlled, dose-ranging study after hip and knee arthroplasty. *Anesth Analg* 2003;97:1452-1457. PMID: 14570664
18. Pino C, Hoeft M, Hofsess C, **Rathmell JP**. Morphologic analysis of bipolar radiofrequency lesions: Implications for denervation of the sacroiliac joint. *Reg Anesth Pain Med* 2005;30:335-338. PMID: 16032584
19. Hoeft MA, **Rathmell JP**, Monsey RM, Fonda BJ. Cervical transforaminal injection and the radicular artery: Variation in anatomical location within the intervertebral foramina. *Reg Anesth Pain Med* 2006;3:270-274. PMID: 16701194
20. Minkowitz HS, **Rathmell JP**, Vallow S, Gargiulo K, Damaraju CV, Hewitt DJ. Efficacy and safety of the Fentanyl Iontophoretic Transdermal System (ITS) and Intravenous Patient-controlled Analgesia (IV PCA) With morphine for pain management following abdominal or pelvic surgery. *Pain Med* 2007; 8:657-668. PMID: 18028044
21. Janik J, Ajar A, **Rathmell JP**, Also from GF. Variable osteology of the sixth cervical vertebra: implications for stellate ganglion block. *Reg Anesth Pain Med* 2008;33:102-108. PMID: 18299089
22. Gerszten PC, Smuck MW, **Rathmell JP**, Simopoulos TT, Crabtree T, Bloch DA, Bhagia SM, Mocek CK, Covey C, Huston CW, Schultz DM, Reusswig PN, Ford WJ, Tarver JM, Pino CA, Bacon DD, Kabazie JA. Plasma disc decompression compared to fluoroscopy-guided transforminal epidural steroid injections for symptomatic contained lumbar disc herniation: a prospective randomized, controlled trial. *J Neurosurg Spine* 2010;12:357-371. PMID: 20201654

23. Fitzgibbon DR, **Rathmell JP**, Michna E, Stephens LS, Posner KL, Domino KB. Malpractice Claims Associated with Medication Management for Chronic Pain. *Anesthesiology* 2010;112:948-956. PMID: 20234314
24. Fine PG, Messina J, Xie F, **Rathmell JP**. Long-term safety and tolerability of fentanyl buccal tablet for the treatment of breakthrough pain in opioid-tolerant patients with chronic pain: An 18-month study. *J Pain Sympt Manage* 2010;40:747-760. PMID: 20594801
25. **Rathmell JP**, Michna E, Fitzgibbon DR, Stephens LS, Posner, KL, Domino KB. Injury and Liability Associated with Cervical Procedures for Chronic Pain. *Anesthesiology* 2011;114:918-926. PMID: 21386702
26. **Rathmell JP**, Desjardins AE, van der Voort M, Hedricks BHW, Nachabe R, Roggeveen S, Babic D, Söderman M, Brynolf M, Holmström B. Identification of the epidural space with optical spectroscopy: an in vivo swine study. *Anesthesiology* 2010;113:1406-1418. PMID: 21068654
27. Desjardins, AE, Hendriks, BH, van der Voort, M, Nachabe, R, Bierhoff, W, Braun, G, Babic, D, **Rathmell, JP**, Holmin, S, Soderman, M, Holmstrom, B. Epidural needle with embedded optical fibers for spectroscopic differentiation of tissue: *ex vivo* feasibility study. *Biomed Opt Express* 2011;2:1452-1461. PMID: 21698009
28. Brynolf, M, Sommer, M, Desjardins, A, van der Voort, M, Roggeveen, S, Bierhoff, W, Hendriks, B, **Rathmell, JP**, Kessels, A, Soderman, M, Holmstrom, B. Optical Detection of the Brachial Plexus for Peripheral Nerve Blocks: An In Vivo Swine Study. *Reg Anesth Pain Med*, 2011;36:350-7. PMID: 21654551
29. Wanderer JP, Ehrenfeld JM, Sandberg WS, **Rathmell JP**. Infographics in Anesthesiology: A Volatile Tale of Two Institutions. *Anesthesiology* 2013;118:1456. PMID: 23059452
30. Liu SS, Buvanendran A, **Rathmell JP**, et al. Predictors for moderate to severe acute postoperative pain after total hip and knee replacement. *Int Orthop* 2012;36:2261-2267. PMID: 22842653
31. Liu SS, Buvanendran A, **Rathmell JP**, et al. A cross-sectional survey on prevalence and risk factors for persistent postsurgical pain 1 year after total hip and knee replacement. *Reg Anesth Pain Med* 2012;37:415-422. PMID: 22660483
32. Werner MU, Bischoff JM, **Rathmell JP**, Kehlet H. Pulsed radiofrequency in the treatment of persistent pain after inguinal herniotomy: a systematic review. *Reg Anesth Pain Med* 2012;37:340-343. PMID: 22476237
33. Liu SS, Buvanendran A, **Rathmell JP**, Sawhney M, Bae J, Moric M, Perros S, Pope A, Poultsides L, Della Valle C, Shin N, McCartney C, Ma Y, Shah M, Wood MJ, Manion, SC, Sculco TP. Predictors for moderate to severe acute postoperative pain after total hip and knee replacement. *Int Orthop*, 2012;36:2261-2267. PMID: 22842653

34. Viscusi ER, **Rathmell JP**, Fichera A, Binderow SR, Israel RJ, Galasso FL, Penenberg D, Gan TJ. Randomized placebo-controlled study of intravenous methylnaltrexone in postoperative ileus. *J Drug Assessment* 2013;2:127-134.

35. Bateman BT, Hernandez-Diaz S, **Rathmell JP**, Seeger JD, Doherty M, Fischer MA, Huybrechts KF. Patterns of Opioid Utilization in Pregnancy in a Large Cohort of Commercial Insurance Beneficiaries in the United States. *Anesthesiology* 2014 May;120:1216-24. PMID:24525628

Other Peer-reviewed Publications

36. **Rathmell JP**, Garahan MP, Alsofrom GF. Epidural abscess following epidural analgesia. *Reg Anesth Pain Med* 2000;25:79-82. PMID: 10660247

37. **Rathmell JP**, Roland T, DuPen SL. Management of pain associated with metastatic epidural spinal cord compression: Use of imaging studies in planning epidural therapy. *Reg Anesth Pain Med* 2000; 25:113-116. PMID: 10746526

38. Viscomi CM, **Rathmell JP**, Monsey RD. Radiographic appearance of the lumbar spine after lumbar fusion. *Reg Anesth Pain Med* 2000;25:286-290. PMID: 10834785

39. **Rathmell JP**, Gallant JM, Brown DL. Computed tomography and the anatomy of celiac plexus block. *Reg Anesth Pain Med* 2000;25:411-416. PMID: 10925940

40. Field J, **Rathmell JP**, Stephenson JH, Katz NP. Neuropathic pain following cervical epidural steroid injection. *Anesthesiology* 2000;93:885-888. PMID: 10969325

41. Tarver JM, **Rathmell JP**, Alsofrom GF. Lumbar discography. *Reg Anesth Pain Med* 2001;26:263-266. PMID: 11359227

42. Ajar A, **Rathmell JP**, Mukerji S. The subdural compartment. *Reg Anesth Pain Med* 2002;27:72-76. PMID: 11799508

43. **Rathmell JP**, Aprill C, Bogduk N. Cervical transforaminal injection of steroids. *Anesthesiology* 2004;100:1595-1600. PMID: 15166582

44. Hassenbusch SJ, Portenoy RK, Cousins M, Buchser E, Deer TR, Du Pen SL, Eisenach J, Follett KA, Hildebrand KR, Krames ES, Levy RM, Palmer PP, **Rathmell JP**, Rauck RL, Staats P, Stearns L, Willis KD. Polyanalgesic consensus conference 2003: An update on the management of pain by intraspinal drug delivery – report of an expert panel. *J Pain Sympt Mgmt* 2004;27:540-563. PMID: 15165652

45. **Rathmell JP**, Lake T, Ramundo MB. Infectious risks of chronic pain treatments: injection therapy, surgical implants, and intradiscal techniques. *Reg Anesth Pain Med* 2006;31:346-352. PMID: 16857554

46. Ajar A, Hoeft M, Alsofrom G, Mukerji S, **Rathmell JP**. Review of brachial plexus anatomy as seen on diagnostic imaging: Clinical correlation with computed tomography-guided brachial plexus block. *Reg Anesth Pain Med* 2007;32:79-83. PMID: 17196497
47. Deer T, Krames E, Hassenbusch S, Burton A, Caraway D, Dupen S, Eisenach J, Erdek M, Grigsby E, Kim P, Levy R, McDowell G, Mekhail N, Panchal S, Prager J, Rauck R, Saulino M, Sitzman T, Staats P, Stanton-Hicks M, Stearns L, Willis KD, Witt W, Follett K, Huntoon M, Liem L, **Rathmell JP**, Wallace M, Buchser E, Cousins M, Ver Donck A. Future Directions for Intrathecal Pain Management: A Review and Update from the Interdisciplinary Polyanalgesic Consensus Conference 2007. *Neuromodulation* 2008;11:92-97. PMID: 22151040
48. **Rathmell, JP**. A 50-year-old man with chronic low back pain. *JAMA* 2008;299:2066-2077. PMID: 18381566
49. **Rathmell JP**, Saal JS, Saal J. Discography, IDET, Percutaneous Discectomy and Nucleoplasty: Complications and Their Prevention. *Pain Med* 2008;9(S1):S73-S81.
50. Neal J, Bernards C, Hadzic A, Hebl J, Hogan Q, Horlocker T, Lee L, **Rathmell JP**, Sorenson E, Suresh S, Wedel D. ASRA Practice Advisory on Neurologic Complications in Regional Anesthesia and Pain Medicine. *Reg Anesth Pain Med* 2008;33:404-415. PMID: 18774509
51. Sethee J, **Rathmell JP**. Epidural steroid injections are useful for the treatment of low back pain and radicular symptoms: pro. *Curr Pain Headache Rep* 2009;13:31-34. PMID: 19126368
52. American Society of Anesthesiologists Task Force on Neuraxial Opioids, Horlocker TT, Burton AW, Connis RT, Hughes SC, Nickinovich DG, Palmer CM, Pollock JE, **Rathmell JP**, Rosenquist RW, Swisher JL, Wu CL. Practice guidelines for the prevention, detection, and management of respiratory depression associated with neuraxial opioid administration. *Anesthesiology* 2009;110:218-230. PMID: 19194148
53. Pino C, Ivie C, **Rathmell JP**. Lumbar discography: Diagnostic role in discogenic pain. *Tech in Reg Pain and Anesth*, 13:85-92, 2009
54. Cohen SP, **Rathmell JP**. Intravenous infusion tests have limited utility for selecting long-term drug therapy in patients with chronic pain: a systematic review. *Anesthesiology* 2009;111:416-31. PMID: 19602955
55. American Society of Anesthesiologists Task Force on Infectious Complications Associated with Neuraxial Techniques: Horlocker TT, Birnbach DJ, Connis RT, Nickinovich DG, Palmer CM, Pollock JE, **Rathmell JP**, Rosenquist RW, Swisher JL, Wu CL. Practice Advisory for the Prevention, Diagnosis and Management of Infectious Complications Associated with Neuraxial Techniques. *Anesthesiology* 2010;112:530-545. PMID: 20051824
56. American Society of Anesthesiologists Task Force on Chronic Pain Management: Rosenquist RW, Benzon HT, Connis RT, De Leon-Casasola OA, Glass DD, Korevaar WC, Mekhail NA, Merrill DG, Nickinovich DG, **Rathmell JP**, Sang CN, Simon DL. Practice Guidelines for Chronic Pain Management: An Updated Report by the American Society of Anesthesiologists Task Force on

Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine. *Anesthesiology* 2010;112:810-833. PMID: 20124882

57. Deer, TR, Smith, HS, Cousins, M, Doleys, DM, Levy, RM, **Rathmell, JP**, Staats, PS, Wallace, M, Webster, LR. Consensus guidelines for the selection and implantation of patients with noncancer pain for intrathecal drug delivery. *Pain Physician* 2010 13:E175-213. PMID: 20495597

58. **Rathmell, JP**, Michna, E, Fitzgibbon, DR, Stephens, LS, Posner, KL, Domino, KB . Injury and Liability Associated With Cervical Procedures for Chronic Pain. *Anesthesiology*, 2011;114:918-926. PMID: 21386702

59. Horlocker, TT, Neal, JM, **Rathmell, JP**. Practice advisories by the American Society of Regional Anesthesia and Pain Medicine: grading the evidence and making the grade. *Reg Anesth Pain Med*, 2011;36:1-3. PMID: 21455080

60. **Rathmell, JP**, Kehlet, H. Do we have the tools to prevent phantom limb pain? *Anesthesiology* 2011;114:1021-1024. PMID: 21383618

61. **Rathmell, JP**, American Society of Regional Anesthesia and Pain Medicine 2011 John Bonica Award Lecture: The evaluation of the field of pain medicine. *Reg Anesth Pain Med* 2012;37:652-656. PMID: 23086350

62. Williams EC, Buchbinder BR, Ahmed S, Alston TA, **Rathmell JP**, Wang J Case Scenario: Spontaneous Intracranial Hypotension: Presentation, Diagnosis, and Treatment. *Anesthesiology* 2014 Aug 12. [Epub ahead of print] PMID: 25118954

Non-peer Reviewed Scientific or medical publications/materials in print or other media:

Proceedings of meetings or other non-peer reviewed research publications

1. **Rathmell JP**. Pain in Pregnancy: Rational Use of Medications. [Newsletter] *New England Pain Association Newsletter*, 1999;3:2-4.

2. **Rathmell JP**, Patchin R. Controversies in pain management: Ethics in business practice. [Newsletter] *American Society of Anesthesiologists Newsletter*, October 1999.

3. **Rathmell JP**. Are we training too many pain specialists? [Newsletter] *Texas Pain Bulletin*, December 1999.

4. **Rathmell JP**. The Pain Relief Promotion Act of 1999. [Newsletter] *New England Pain Association Newsletter*, Fall 2000.

5. **Rathmell JP**. Are we training too many pain specialists? [Newsletter] *American Society of Anesthesiologists Newsletter*, November 2000.

6. **Rathmell JP**. Are we training too many pain specialists? [Newsletter] *ASRA Newsletter*, Spring 2000.

7. **Rathmell JP**. Imaging in regional anesthesia and pain medicine. [Newsletter] New England Pain Association Journal, Fall 2000.
8. **Rathmell JP**, Patchin RJ. Pain Management: Ethics in Business Practice. [Newsletter] American Society of Anesthesiologists Newsletter, January 2000.
9. Broadman L, **Rathmell JP**. OxyContin and other opioids. [Newsletter] American Society of Anesthesiologists Newsletter, November 2001.
10. **Rathmell JP**. Neurolytic Blocks for Cancer Pain. [Newsletter] American Society of Anesthesiologists Newsletter, April 2001.
11. **Rathmell JP**, Panchal S. The ASA-ASRA Electronic Pain Medicine Workshop. [Newsletter] American Society of Anesthesiologists Newsletter, November 2001.
12. Broadman L, **Rathmell JP**. What's the Fuss Over OxyContin and Other Long-Acting Opioids? [Newsletter] American Society of Anesthesiologists Newsletter, October 2001.
13. **Rathmell JP**, Brown DL. The evolution of training in pain medicine in the United States. [Newsletter] American Society of Anesthesiologists Newsletter, November 2002.
14. **Rathmell JP**. Regional anästhesie und –analgesie. [Illustrations provided for text.] Schulz–Stübner S (editor). Schattauer, Stuttgart, Germany, 2003:162-163.
15. Merrill D, **Rathmell JP**. The Best Place to Practice Pain Medicine: Is it the Hospital Outpatient Department, an Ambulatory Surgery Center or your own Office? [Newsletter] American Society of Anesthesiologists Newsletter, August 2003.
16. **Rathmell JP**, Brown DL. The evolution of training in pain medicine in the United States. [Newsletter] American Society of Regional Anesthesia and Pain Medicine Newsletter, August 2003.
17. **Rathmell JP**, Deer TR. Pain medicine and anesthesiology: oil and water? Do they mix? [Newsletter] American Society of Anesthesiologists Newsletter, 2004;68:7-9.
18. Lubenow TR, **Rathmell JP**. Let's take a rational approach to technical training in pain medicine. [Newsletter] American Society of Anesthesiologists Newsletter, 2005;69:6-8.
19. Benzon HT, **Rathmell JP**, Huntoon MA. Training Issues and Advancement. New ACGME requirements for fellowship training in pain medicine. [Newsletter] APS Bulletin, 2007;17.

Reviews, Chapters, Monographs and Editorials

1. Capizzi RL, **Rathmell JP**, White JC. Clinical pharmacology of high dose ara-C: metabolic interrelationships and self-potential. [Chapter] In: Gale RP, Golde DW (eds.), Leukemia: Recent Advances in Biology, Alan R. Liss, New York, 1985:559-570.

2. **Rathmell JP**, Jamison RN. Opioid therapy for chronic noncancer pain. [Review] *Curr Opin Anesthesiology* 1996;9:436-442.
3. **Rathmell JP**, Viscomi CM, Ashburn MA. Management of non-obstetric pain during pregnancy and lactation. [Review] *Anesth Analg* 1997;85:1074-1087. PMID: 9356103
4. Viscomi CM, **Rathmell JP**. Pain Management issues in the pregnant patient. [Chapter] In: Ashburn MA, Rice LJ (eds.), *The Management of Pain*, Churchill-Livingstone, New York, 1998:363-381.
5. **Rathmell JP**, Katz J. Diabetic and other peripheral neuropathies. [Chapter] In: Benzon H (ed). *Essentials of pain medicine and regional anesthesia*, Churchill Livingstone, New York, 1999:288-294.
6. **Rathmell JP**, Viscomi CM, Bernstein IM. Pain management during pregnancy and lactation. [Chapter] In: Raj PP, *Practical management of pain*, 3rd edition, Mosby Year Book, St. Louis, MO, 2000:196-211.
7. Love W, **Rathmell JP**, Tarver JM. Regional Anesthesia for Acute Pain Management, [Review] *Problems in Anesthesia* 12, 2000:165-176.
8. González-Lobato I, Auilar JL, **Rathmell JP**, de León-Casasola OA, Plancarte R, Viscomi CM, March Y, Mille JE, Bernstein IM, Velázquez R. Tratamiento del dolor en situaciones especiales. [Chapter] In: Torres LM (ed), *Tratado de cuidados críticos y emergencias*. Arán Ediciones, Cádiz, Spain, 2001:231-302.
9. Stojanovic M, **Rathmell JP**. Use of fluoroscopy in pain management. [Chapter, Electronic Media] *Harvard Electronic Anesthesia Library CD-ROM Compendium*, Lippincott-Raven, Philadelphia, PA, 2001.
10. **Rathmell JP**. Imaging in regional anesthesia and pain medicine: we have much to learn. [Editorial] *Reg Anesth Pain Med* 2002;27:240-241. PMID: 12016594
11. **Rathmell JP**, Carr DB. The scientific method, evidence-based medicine, and rational use of interventional pain treatments. [Editorial] *Reg Anesth Pain Med* 2003;28:498-501. PMID: 14634936
12. **Rathmell JP**, Neal JM, Liu SS. Outcome measures in acute pain management. [Chapter] In: Rowbotham DJ, Macintyre PE. *Clinical Pain Management: Acute Pain*, London, Edward Arnold Publishers, 2003:163-182.
13. **Rathmell JP**, Viscomi CM, Bernstein IM. Pain management during pregnancy and lactation. [Chapter] In: Raj PP, *Pain medicine: a comprehensive review*, 2nd edition, Mosby Year Book, St. Louis, MO, 2004.
14. **Rathmell JP**, Viscomi CM, Bernstein IM. Pregnancy and chronic Pain. [Chapter] In: Wallace MS, Staats P. *Just the Facts: Pain Medicine*, McGraw-Hill, New York, NY, 2004.

15. Katz J, **Rathmell JP**. Diabetic and other peripheral neuropathies. [Chapter] In: Benzon H (ed). Essentials of pain medicine and regional anesthesia, 2nd Edition, Churchill Livingstone, New York, 2004.
16. **Rathmell JP**. Neuroanatomy and neurophysiology relevant to pain and regional anesthesia. [Chapter] In: **Rathmell JP**, Neal JM, Viscomi CV (Editors). Requisites in Anesthesiology: Regional Anesthesia. Elsevier Health Sciences, Philadelphia, 2004:3-12.
17. **Rathmell JP**. Head and neck blocks. [Chapter] In: **Rathmell JP**, Neal JM, Viscomi CV (Editors). Requisites in Anesthesiology: Regional Anesthesia. Elsevier Health Sciences, Philadelphia, 2004:44-58.
18. **Rathmell JP**. Regional anesthesia of the trunk. [Chapter] In: **Rathmell JP**, Neal JM, Viscomi CV (Editors). Requisites in Anesthesiology: Regional Anesthesia. Elsevier Health Sciences, Philadelphia, 2004:73-82.
19. **Rathmell JP**. Sympathetic blocks. [Chapter] In: **Rathmell JP**, Neal JM, Viscomi CV (Editors). Requisites in Anesthesiology: Regional Anesthesia. Elsevier Health Sciences, Philadelphia, 2004:128-144.
20. **Rathmell JP**. Acute pain. [Chapter] In: **Rathmell JP**, Neal JM, Viscomi CV (Editors). Requisites in Anesthesiology: Regional Anesthesia. Elsevier Health Sciences, Philadelphia, 2004:194-205.
21. **Rathmell JP**. Pediatric regional anesthesia. [Chapter] In: **Rathmell JP**, Neal JM, Viscomi CV (Editors). Requisites in Anesthesiology: Regional Anesthesia. Elsevier Health Sciences, Philadelphia, 2004:186-193.
22. **Rathmell JP**. The injectionists. [Editorial] Reg Anesth Pain Med 2004; 29:305-306. PMID: 15305247
23. **Rathmell JP**, Benzon HT. Transforaminal injection of steroids: should we continue? [Editorial] Reg Anesth Pain Med 2004;29:397-9. PMID: 15372381
24. **Rathmell JP**. Rational Use of New Modalities for the Treatment of Back Pain. [Chapter] In: Schwartz AJ (Ed.), ASA Refresher Course Lectures, Volume 32. Lippincott, Philadelphia, PA, 2004:143-153.
25. **Rathmell JP**, Lair TR, Nauman B. The role of intrathecal drugs in the treatment of acute pain. [Review] Anesth Analg 2005;101:S30-S43. PMID: 16334491
26. Richebe P, **Rathmell JP**, Brennan TJ. Immediate early genes after pulsed radiofrequency: Neurobiology in need of clinical trials. [Editorial] Anesthesiology 2005;102:1-3. PMID: 15618777
27. **Rathmell JP**, Ballantyne J. Local anesthetics for the treatment of neuropathic pain: on the limits of meta-analysis. [Editorial] Anesth Analg. 2005;101:1736-1737. PMID: 16301252

28. **Rathmell JP.** Cervical and lumbar transforaminal injection. [Chapter] In: Brown DL (Ed.), Atlas of Regional Anesthesia, 3rd Edition, WB Saunders, Philadelphia, PA, 2006:333-340.
29. **Rathmell JP.** Implantation of spinal drug delivery systems. [Chapter] In: Brown DL (Ed.), Atlas of Regional Anesthesia, 3rd Edition, WB Saunders, Philadelphia, PA, 2006:341-352.
30. **Rathmell JP.** Spinal cord stimulation. [Chapter] In: Brown DL (Ed.), Atlas of Regional Anesthesia, 3rd Edition, WB Saunders, Philadelphia, PA, 2006:353-364.
31. **Rathmell JP,** Simopoulos TT, Bajwa ZH, Ahmed S. Low back pain. [Chapter] In: Ballantyne J (Ed.), MGH Handbook of Pain Management 3rd Edition. Lippincott, Philadelphia, PA, 2006.
32. **Rathmell JP.** Introduction to the 2005 Bonica Lecture Award: James C. Eisenach, M.D. [Editorial] Reg Anesth Pain Med 2006;31:143-145. PMID: 16543100
33. **Rathmell JP,** Wu CL, Sinatra RS, Ballantyne JC, Ginsberg B, Gordon DB, Liu SS, Perkins FM, Reuben SS, Rosenquist RW, Viscusi ER. Acute Post-surgical Pain Management: A Critical Appraisal of Current Practice. [Review] Reg Anesth Pain Med 2006;31:S1-S42. PMID: 16849098
34. **Rathmell JP.** Rational Use of New Modalities for the Treatment of Back Pain. [Chapter] In: Schwartz AJ, Butterworth J, Gross J (Eds.), ASA Refresher Course in Anesthesiology 2006, Volume 34. Lippincott, Williams & Wilkins: Philadelphia, PA, 2006.
35. **Rathmell JP,** Pollack GJ. Nerve blocks for the head and neck. [Chapter] In: Hadzic A. Regional anesthesia and acute pain management. McGraw Hill, New York, 2006, pp. 319-330.
36. Neal JM, **Rathmell JP.** Scientific misconduct: no end in sight. [Editorial] Reg Anesth Pain Med 2006;31:294-295. PMID: 16857548
37. Liu SS, Warren DT, Wu CL, Ballantyne JC, Ginsberg B, **Rathmell JP,** Rosenquist RW, Viscusi ER. A lovely idea: forming an ASRA acute postoperative pain (AcutePOP) database. [Editorial] Reg Anesth Pain Med 2006;31:291-293. PMID: 16857547
38. Lair T, **Rathmell JP.** Cervical transforaminal injection of steroids. [Chapter] In: Schmidt R, Willis W (eds). Encyclopedia of Pain, Springer Berlin Heidelberg, 2007.
39. **Rathmell JP,** Pino C. Interventional management of chronic pain. [Chapter] In: Longnecker D, Brown D, Newman M, Zapol W (Editors), Principles of Anesthesiology, McGraw-Hill, New York, 2008.
40. Liu SS, Liguori GA, Wu CL, Ballantyne JC, **Rathmell JP,** Ginsberg B, Rosenquist RW, Viscusi ER, Warren DT. Announcing the official formation of ASRA AcutePOP (Acute Postoperative Pain) initiative. [Editorial] Reg Anesth Pain Med 2007;32:265-266.
41. Neal JM, **Rathmell JP.** Bringing closure to the retraction issue. [Editorial] Reg Anesth Pain Med 2007;32:265-266.

42. **Rathmell JP**. The Argument for Use of Epidural Steroid Injections in Management of Acute Radicular Pain. [Review] *The Permanente Journal* 2007;11:54-56. PMID: 21412483
43. Harris KC, **Rathmell JP**. Forward-deployed anesthesiologists and pain treatment in combat support hospitals: making decisions about deployment of anesthesiologists in support of global war on terrorism. [Editorial] *Anesthesiology* 2007;107:872-874. PMID: 18043054
44. Polomano RC, **Rathmell JP**, Krenzischek DA, Dunwoody CJ. Emerging trends and new approaches to acute pain management. [Review] *J Perianesth Nurs* 2008;23:S43-S53. PMID: 18226793
45. Polomano RC, Dunwoody CJ, Krenzischek DA, **Rathmell JP**. Perspective on pain management in the 21st century. [Review] *J Perianesth Nurs* 2008;23:S4-S14. PMID: 18226792
46. Krenzischek DA, Dunwoody CJ, Polomano RC, **Rathmell JP**. Pharmacotherapy for acute pain: implications for practice. [Review] *J Perianesth Nurs* 2008;23:S28-S42. PMID: 18226791
47. Dunwoody CJ, Krenzischek DA, Pasero C, **Rathmell JP**, Polomano RC. Assessment, physiological monitoring, and consequences of inadequately treated acute pain. [Review] *J Perianesth Nurs* 2008;23:S15-S27. PMID: 18226790
48. **Rathmell JP**. The Promise of an Effective Treatment for Sacroiliac-related Low Back Pain. [Editorial] *Anesthesiology* 2008;109:167-168. PMID: 18648223
49. **Rathmell JP**. Complications in pain medicine. [Chapter] In: Cousins and Bridenbaugh's Neural Blockade, 4th Edition, Cousins MJ, Bridenbaugh PO, Carr D, Horlocker T (Editors). Lippincott Williams & Wilkins, Philadelphia, 2009, pp. 1223-1267.
50. **Rathmell JP**, Ahmed S. Neural blockade for the treatment of spinal pain. [Chapter] In: Cousins and Bridenbaugh's Neural Blockade, 4th Edition, Cousins MJ, Bridenbaugh PO, Carr D, Horlocker T (Editors). Lippincott Williams & Wilkins, Philadelphia, 2009, pp. 1063-1110.
51. **Rathmell JP**, Robinson JP, Gatchel RJ. Pain-related impairment. [Chapter] In: *AMA Guides to the Evaluation of Permanent Impairment*, 6th Edition, American Medical Association, Chicago, IL, 2008, pp 31-46.
52. **Rathmell JP**. Toward improving the safety of transforaminal injection. [Editorial] *Anesth Analg* 2009;109:8-10. PMID: 19535690
53. Neal JM, **Rathmell JP**, Rowlingson JC. Publishing studies that involve "off-label" use of drugs: formalizing Regional Anesthesia and Pain Medicine's policy. [Editorial] *Reg Anesth Pain Med* 2009; 34:391-392. PMID: 19749585
54. 19. Liu SS, Wu CL, Ballantyne JC, Buvanendran A, **Rathmell JP**, Warren DT, Viscusi ER, Ginsberg B, Rosenquist RW, Yadeau JT, Liguori GA. Where in the world is ASRA acutePOP? [Editorial] *Reg Anesth Pain Med*. 2009;34:269-74. PMID: 19591261

55. **Rathmell JP**, Miller MJ. Death after Initiation of Intrathecal Drug Therapy for Chronic Pain: Assessing Risk and Designing Prevention. [Editorial] *Anesthesiology* 2009;111:706-708. PMID: 200029248
56. Fleischmann KH, Kuter DJ, Coley CM, **Rathmell JP**. Practice guidelines often fail to keep pace with the rapid evolution of medicine: A call for clinicians to remain vigilant and revisit their own practice patterns. [Editorial] *Reg Anesth Pain Med* 2010;35:4-7. PMID: 20048651
57. Butterworth JF, **Rathmell JP**. Standard care, standards for care, or standard of care? [Editorial] *Anesthesiology* 2010;112:277-278. PMID: 20098125
58. **Rathmell JP**. Selective nerve root block. [Chapter] In: Brown DL (Ed.), *Atlas of Regional Anesthesia*, 4th Edition, WB Saunders, Philadelphia, PA, 2010, pp. 357-363.
59. **Rathmell JP**. Implantation of spinal drug delivery systems. [Chapter] In: Brown DL (Ed.), *Atlas of Regional Anesthesia*, 4th Edition, WB Saunders, Philadelphia, PA, 2010, pp. 365-373.
60. **Rathmell JP**. Spinal cord stimulation. [Chapter] In: Brown DL (Ed.), *Atlas of Regional Anesthesia*, 4th Edition, WB Saunders, Philadelphia, PA, 2010, pp. 375-383.
61. Bartels, K, **Rathmell JP**. Pain. [Chapter] In: *Clinical Anesthesia Procedures of the Massachusetts General Hospital*, 8th Edition, Lippincott Williams & Wilkins, Philadelphia, PA, 2010, pp. 601-614.
62. Hurley RW, Goldstein H, **Rathmell JP**. Neuropathies. [Chapter] In: Benzon H (ed). *Essentials of pain medicine and regional anesthesia*, 3rd Edition, Churchill Livingstone, New York, NY, 2010.
63. Cohen, SP, **Rathmell, JP**. Tackling the technical challenges that hinder the success of facet joint radiofrequency treatment for spinal pain. [Editorial] *Reg Anesth Pain Med* (2010);35:327-328. PMID: 20588147
64. Kehlet, H, **Rathmell, JP**. Persistent postsurgical pain: the path forward through better design of clinical studies. [Editorial] *Anesthesiology* (2010);112:514-515. PMID: 20124977
65. Mehta P, **Rathmell JP**. Chronic pain management. [Chapter] In: Miller RD (Ed.), *Basics of Anesthesia*, 6th Edition, Lippincott Williams & Wilkins, Philadelphia, 2010.
66. Spektor B, Gulur P, **Rathmell JP**. Diagnostic and therapeutic blocks. [Chapter] In: Lynch ME, Craig KD, Peng PWH (Editors). *Clinical Management of Pain: A Practical Guide*. Blackwell Publishing, Oxford, UK, 2010.
67. **Rathmell JP**, Fields HL. Pain: pathophysiology and management. [Chapter] In: Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL. *Harrison's Principals of Internal Medicine*, 18th Edition. McGraw-Hill, New York, NY, 2011.
68. **Rathmell, JP**, Manion, SC. The role of image guidance in improving the safety of pain treatment. *Curr Pain Headache Rep* 2012;16:9-18. PMID: 22125112.

69. Buvanendran A, **Rathmell JP**. Ultrasound versus Fluoroscopy in Image-guided Pain Treatment: Use Caution. [Editorial] *Anesthesiology* 2012.
70. Deer, TR, Prager, J, Levy, R, **Rathmell JP**, et al. Polyanalgesic Consensus Conference-2012: Consensus on Diagnosis, Detection, and Treatment of Catheter-Tip Granulomas (Inflammatory Masses). [Review] *Neuromodulation* 2012.
71. Deer TR, Prager J, Levy R, **Rathmell JP**, et al. Polyanalgesic Consensus Conference 2012: Recommendations for the Management of Pain by Intrathecal (Intraspinal) Drug Delivery: Report of an Interdisciplinary Expert Panel. [Review] *Neuromodulation* 2012.
72. Liu SS, Buvanendran A, **Rathmell JP**, et al. A Cross-Sectional Survey on Prevalence and Risk Factors for Persistent Postsurgical Pain 1 Year After Total Hip and Knee Replacement. [Review] *Reg Anesth Pain Med* 2012;37:415-22.
73. **Rathmell JP**, Manion SC. The role of image guidance in improving the safety of pain treatment. [Review] *Curr Pain Headache Rep* 2012;16:9-18.
74. Jowza M, Nagpal G, Viscomi CM, **Rathmell JP**. Pain in Pregnancy. [Chapter] In: Chin ML, Fillingim RL, Ness TJ. *Pain in Women*. Oxford University Press, New York 2013, pp. 122-134.
75. Cohen SP, Bicket MC, Jamison D, Wilkinson I, **Rathmell JP**. Epidural steroids: a comprehensive, evidence-based review. [Review] *Reg Anesth Pain Med* 2013;38:175-200. PMID: 23086350.
76. Eisenach, JC, **Rathmell JP**. In reply. [Editorial] *Anesthesiology* 2014;120:238-239. PMID: 24398737.
77. Gilligan, CJ and **Rathmell JP**. On the fabric of the human body and modern ultrasound imaging. [Editorial] *Anesthesiology* 2014;120:10-11. PMID: 24071618.
78. Kennedy, DJ, Baker, RM and **Rathmell JP**. Use of spinal injections for low back pain. [Editorial] *JAMA* 2013;310(16):1736. PMID: 24150473.
79. **Rathmell JP**, Lien, C, and Harman, A. Objective structured clinical examination and board certification in anesthesiology. [Editorial] *Anesthesiology* 2014;120: 4-6. PMID: 24201034.
80. Wanderer JP, **Rathmell JP**. Ketamine as an antidepressant: a brief research history. [Infographic] *Anesthesiology*. 2014;121:A29.
81. **Rathmell JP**, Lien CA, Harman A. In reply. [Editorial] *Anesthesiology* 2014;121:432. PMID: 25050507.
82. Wanderer JP, **Rathmell JP**. A brief history of femoral nerve blocks. [Infographic] *Anesthesiology* 2014;121:A21. PMID: 25050515.
83. Wanderer JP, **Rathmell JP**. Massive hemorrhage and malpractice claims. [Infographic] *Anesthesiology* 2014;121:A21. PMID: 25222691.

84. Wanderer JP, **Rathmell JP**. Care transitions: handover carefully! [Infographic] *Anesthesiology* 2014;121:A21. PMID: 25247869.
85. Rozanski M, Neuhaus V, Reddy R, Jupiter JB, **Rathmell JP**, Ring DC. An open-label comparison of local anesthesia with or without sedation for minor hand surgery. [Editorial] *Hand* 2014;9:399-405. PMID: 25414600.
86. Wanderer JP, Bateman BT, **Rathmell JP**. Opioid use is rising. [Editorial] *Anesthesiology* 2014;121:A23. PMID: 25405312.
87. Wanderer JP, **Rathmell, JP**. Epidural injections and the new subspecialty of pain medicine. [Editorial] *Anesthesiology* 2014;121:A23. PMID: 25335184.
88. **Rathmell JP**. The proper role for epidural injection of corticosteroids. [Editorial] *Anesthesiology* 2014;121:919-21. PMID: 25335170.

Books/Textbooks for the medical or scientific community

1. **Rathmell JP**. Harvard Electronic Anesthesia Library CD-ROM Compendium, Lippincott-Raven, Philadelphia, PA, 2001. [Section Editor]
2. **Rathmell JP**, Neal JM, Viscomi CV (Editors). *Requisites in Anesthesiology: Regional Anesthesia*. Elsevier Health Sciences, Philadelphia, 2004. [Editor]
3. **Rathmell JP**. *Atlas of Image-Guided Intervention in Regional Anesthesia and Pain Medicine*. Lippincott Williams & Wilkins, Philadelphia, PA, 2005. [Editor and Sole Author]
4. Neal JM, **Rathmell JP** (Editors). *Complications in Regional Anesthesia and Pain Medicine*, Elsevier, Philadelphia, PA, 2007. [Editor]
5. Benzon HT, **Rathmell JP**, Wu C, Turk D, Argoff C (Editors). *Raj's Practical Management of Pain*, 4th Edition, Elsevier, Philadelphia, 2008. [Editor]
6. **Rathmell JP**, Fishman S, Ballantyne JC (Editors). *Bonica's Management of Pain*, 4th Edition, Lippincott Williams & Wilkins, Philadelphia, 2010. [Editor]
7. Rosenquist RW, **Rathmell JP** (Editors). *A Practical Approach to Pain Medicine*, Lippincott Williams & Wilkins, Philadelphia, 2010. [Editor]
8. **Rathmell JP**. *Atlas of Image-Guided Intervention in Regional Anesthesia and Pain Medicine*, 2nd Edition. Lippincott Williams & Wilkins, Philadelphia, PA, 2012. [Editor and Sole Author]
9. Neal JM, **Rathmell JP** (Editors). *Complications in Regional Anesthesia and Pain Medicine*, Lippincott Williams & Wilkins, Philadelphia, PA, 2014. [Editor]
10. Flood, P, **Rathmell JP**, Shafer, Stoelting's *Pharmacology & Physiology in Anesthetic Practice*, 5th Edition. Lippincott Williams & Wilkins, Philadelphia, PA, 2014. [Co-Author]

11. Stoelting RK, Flood P, **Rathmell, JP**, Shafer, S. Stoelting's Handbook of Pharmacology & Physiology in Anesthetic Practice, 3rd Edition. Lippincott Williams & Wilkins, Philadelphia, PA, 2014. [Co-Author]

Case Reports

1. **Rathmell JP**, Shields CL, Shields JA, Eagle RC, Gordon RD. Chronic dacryoadenitis associated with juvenile rheumatoid arthritis. [Case Report] Orbit 1988;7:95-100.

2. Edlow BL, Wainger BJ, Frosch MP, Copen WA, **Rathmell JP**, Rost NS. Posterior circulation stroke after C1-C2 intraarticular facet steroid injection: evidence for diffuse microvascular injury. [Case Report] Anesthesiology 2010;112:1532-1535. PMID: 20460995

Letters to the Editor

1. **Rathmell JP**, Viscomi CM, Ashburn MA. In Response to: Non-steroidal anti-inflammatory drugs during lactation. [Letter] Anesth Analg 1998;87:977.

2. **Rathmell JP**. Brown DL. Waffling by choice: Reply to Dr. Moore. [Letter] Regional Anesthesia & Pain Medicine 2001;26:286-287.

3. Merrill D, **Rathmell JP**, Lema MJ. Graduating residents' perceptions of their preparedness for practice. [Letter] JAMA 2001;286:2666-2667. PMID: 11730431

4. **Rathmell JP**, Tarver JM, Memon Z. Radiofrequency sacroiliac joint denervation: the devil is in the details. [Letter] Reg Anesth Pain Med 2001;26:263-266. PMID: 11707806

5. Merrill DG, **Rathmell JP**, Rowlingson JC. Epidural steroid injections. [Letter]. Anesth Analg 2002;95:403-408. PMID: 12598284

6. Ajar AH, **Rathmell JP**, Mukherji SK. Reply to Dr. Collier. [Letter] Reg Anesth Pain Med 2002;27:537.

7. Merrill D, **Rathmell JP**, Rowlingson JC. Rational use of fluoroscopy in the pain clinic. [Letter] Anesth Analg 2003;96:907-908.

8. **Rathmell JP**, April C, Bogduk N. Cervical transforaminal injection of steroids. [In Reply] Anesthesiology 2004;100:1595-600. PMID: 15166582

9. Hoelt MA, **Rathmell JP**, Dayton MR, Lee P, Howe JG, Incavo SJ, Lawliss III JF. Continuous intra-articular infusion of bupivacaine after total-knee arthroplasty may lead to potentially toxic levels of local anesthetic. [Letter] Reg Anesth Pain Med 2005;30:414-415. PMID: 16032602

10. **Rathmell JP**, April C, Bogduk N. Cervical transforaminal injection of steroids. [In Reply] Anesthesiology 2005;102:870. PMID: 15166582

11. Hoeft MA, **Rathmell JP**. Reply to Dr. White. [In Reply] Reg Anesth Pain Med 2006;31:184-185.
12. Hoeft MA, **Rathmell JP**. Reply to Drs. Provenzano and Fanciullo. [Letter] RegAnesth Pain Med 2007;32:169-170.
13. **Rathmell JP**. Reply to Drs. Joshi, Kehlet, and Rawal. Acute post-surgical pain management: a critical appraisal of current practice. [In Reply] Reg Anesth Pain Med 2007;32:545. PMID: 18035312
14. Merrill DG, **Rathmell JP**, Rosenquist RW. Epiduroscopy and epidural steroid injections. [Letter] Anesthesiology 2008;108:538. PMID: 18292692
15. Wainger BJ, **Rathmell JP**. Perils of intravascular methylprednisolone injection into the vertebral artery. [Letter] J Bone Joint Surg Am 2009;91:1277-1278. PMID: 19411485

Book Reviews

1. **Rathmell JP**. Pain medicine: a comprehensive review. [Book Review] Anesthesiology 1996;84:1271.
2. **Rathmell JP**. Sota Omoigui's anesthesia drugs handbook, 3rd edition. [Book Review] Anesthesiology 2000;93:1163.
3. **Rathmell JP**. Atlas of pain management injection techniques. [Book Review] Anesthesiology 2001;95:1048.
4. **Rathmell JP**, Hill B. Wall and Melzack's Textbook of Pain, 5th Edition. [Book Review] Anesthesia Analg 2006;102:1914-5.
5. Breth J, **Rathmell JP**. Weiner's Pain Management: A practical guide for clinicians. [Book Review] JAMA 2006;296:1297-1298.
6. Shaefi S, **Rathmell JP**. Pharmacology for Anaesthesia and Intensive Care. [Book Review] J Trauma 2008;65:1569.
7. Rivera R, Gulur P, **Rathmell JP**. Interventional Pain Management: Image-Guided Procedures, 2nd ed. [Book Review] Anesth Analg 2009;108:389-390.
8. Gilligan C, **Rathmell JP**. Pain Management: Evidence, Outcomes, and Quality of Life : A Sourcebook. [Book Review] Anesthesiology 2009;111:221.
9. Kutner, L, Gulur, P, **Rathmell JP**. A Child in Pain: What Health Professionals Can Do To Help. [Book Review], Crown House Publishing LTD, Carmarthen Wales UK 2010.

Professional Educational Materials or Reports, in Print or Other Media

1. **Rathmell JP**, Irving G, de Leon-Casasola O. Interactive review of pain medicine on CD-ROM. American Society of Regional Anesthesia and Pain Medicine, Richmond, VA. 2004.
2. Viscusi E, **Rathmell JP**. Practice Challenge and Complete Educational Activity, CD-ROM, web based CME program. Pain Education Network, 2004. Available at www.paineducationnetwork.com.
3. Ekman E, Viscusi E, **Rathmell JP**. Case Based Practice Survey, CD-ROM, web based CME program. Pain Education Network, 2005. Available at www.paineducationnetwork.com.
4. **Rathmell JP**, Ballantyne JC. Low back pain. In: American Academy of Orthopedic Surgeons. Orthopedic Knowledge Online, 2007; Available at <http://www5.aaos.org/oko/menus/pain.cfm>.
5. **Rathmell JP**. “Managing Pain After Total Joint Replacement”, In: Current Surgical Techniques and Perioperative Pain Management in Total Hip and Total Knee Arthroplasty, A CME activity sponsored by HealthStream on DVD, 2008.
6. Chamberlain R, Rathmell JP. Evidence based management of post-operative ileus: Preventing post-operative ileus: The use of epidural analgesia and opioid antagonists to ameliorate adverse effects, Chatham Institute e-newsletter, Issue 2, 2008-2009, CME activity can be accessed at <http://www.ce-university.org/surgery>,
7. Ashburn M, Argoff C, **Rathmell JP** (Eds). “Insights into Pain Management” 7-module interactive CME multimedia series, jointly sponsored by University of Pennsylvania, 2009. Available at <http://www.onlinepaincme.com/index.html>.
8. **Rathmell JP**, Gilligan C: Low Back Pain. American Academy of Orthopaedic Surgeons Web site: Orthopaedic Knowledge Online 2011;9(1): http://orthportal.aaos.org/oko/abstract.aspx?article=OKO_PAI006. Accessed December 29, 2010.

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings

[Only those abstracts that are not available as full manuscripts appear in this section.]

1. Gan TJ, Viscusi E, **Rathmell J**, Fichera A, Binderow S, Stambler N, Galasso F, Penenberg D, Israel R. A phase 2 study of methylnaltrexone administered postoperatively to patients following segmental colectomy for the management of postoperative ileus. [Abstract] International Forum of Pain Medicine, 2007.
2. Yarmush J, **Rathmell J**, Hewitt D, Damaraju C. The safety and efficacy of fentanyl iontophoretic transdermal system (ITS) versus morphine intravenous patient-controlled analgesia (IV PCA) in obese subjects. [Abstract] American Society of Anesthesiologists, 2007.

3. **Rathmell J**, Jiang Y, Lirk P, Kirchmair L, Binshtok A, Bean B, Woolf C. Assessment of Differential Sensory Blockade using QX-314 and Capsaicin in Large Animals. [Abstract] International Association for the Study of Pain, 12th World Congress on Pain, 2008.
4. Shin N, Ngeow J, Liu S, Buyanendran A, **Rathmell J**. Chronic pain after total knee and hip arthroplasty: A survey of outcomes. Abstract Number A587. American Society of Anesthesiologists, New Orleans, 2009.
5. McCarty, K, Rozanski, M, Peloquin, R, Freiberg, A, **Rathmell, J**. Outcomes and Database Research: Perioperative Interventions. [Poster] American Society of Anesthesiologists, 2012.
6. Cox, E, Alston, T, Buchbinder, B, **Rathmell, J**, Wang, J. Persistent Low Pressure Headache: A Cervical Dural Tear Secondary to an Osteophyte. [Poster] American Society of Anesthesiologists, 2012.

Narrative Report

OVERVIEW

I am an anesthesiologist and serve as Executive Vice Chair and Chief of the Division of Pain Medicine in the Department of Anesthesia, Critical Care and Pain Medicine at Massachusetts General Hospital (MGH). My aim is to develop the next generation of leaders in medicine.

AREA OF EXCELLENCE: CLINICAL EXPERTISE AND INNOVATION

I dedicate the majority of my time to patient care and the education of physicians specializing in anesthesiology and pain medicine, working and teaching regularly in both the pain clinic and the operating room. Much of my published work and international reputation is on the use of image-guidance to improve the safety of pain treatment. In 2004, I published a description of catastrophic neural injuries following intra-arterial injection of particulate steroid during cervical injections and a technique to lower risk that has become standard worldwide. Over nearly 20 years of practice, I refined techniques and assembled descriptions in the *Atlas of Image-Guided Intervention in Regional Anesthesia and Pain Medicine (2007)* – the 2nd Edition of this text will be published in 2011. I have played a central role in the development and publication of international clinical guidelines that have improved the safety and consistency of pain treatment. I have edited 7 books, including two of the world's best-selling pain texts: *Raj's Practical Management of Pain, 4th Edition (2008)* and *Bonica's Management of Pain, 4th Edition (2010)*.

SIGNIFICANT SUPPORTING ACTIVITIES

TEACHING AND EDUCATIONAL LEADERSHIP: I am devoted to establishing the highest international standards for the education of physicians in anesthesiology and pain medicine. I led a multidisciplinary task force that redesigned pain medicine education in the United States and authored the new fellowship training requirements implemented by the Accreditation Council for Graduate Medical Education (ACGME) in 2007. The requirements govern pain subspecialty training for all physicians, including anesthesiologists, physiatrists, neurologists, and psychiatrists. I am the immediate past Vice Chair of the ACGME Review Committee for Anesthesiology, where I helped guide the implementation of these new standards. I serve on the Board of Directors of the American Board of Anesthesiology (ABA), assuring close coordination between ACGME and ABA as we redesign the board certification examination in pain medicine to reflect the new curriculum. I am Course Director for the 4th year medical student course Pharmacology and Therapeutics (Harvard Medical School), and have served as Associate Dean for Admissions (University of Vermont College of Medicine), on numerous committees within leading international pain organizations, and on the scientific program committees of each leading pain society. I am currently Executive Vice Chair of the Department of Anesthesia, Critical Care and Pain Medicine (MGH), where I oversee all clinical operations for the department in the operating rooms, pain clinics, intensive care units and at our numerous affiliated institutions.

INVESTIGATION: I have designed, conducted, and published numerous international, multicenter clinical trials examining novel analgesic agents and devices. I serve as an Executive Editor for *Anesthesiology* and previously as Associate Editor-in-Chief of *Regional Anesthesia and Pain Medicine (2003-2014)*, both with impact factors ranking them among the world's top 5 pain journals.

ADMINISTRATION AND INSTITUTIONAL SERVICE: I have developed respected and fiscally sound academic pain centers known for their excellence in patient care: Fletcher Allen Health Care's Center for Pain Medicine in Burlington, Vermont and the MGH Center for Pain Medicine in Boston, Massachusetts. As Executive Vice Chair (MGH), I have led efforts to redesign the preoperative evaluation program in a patient-centered way institution-wide; I have also planned and executed a department-wide, fiscally-responsible reform of staffing and deployment for our physicians, nurse anesthetists, and support personnel that assures that we have the right number of personnel available in all clinical locations every day.

SUMMARY: The goal of my career is to assure that the specialty of anesthesiology emerges at the forefront of health care reform by providing collaborative leadership in patient care, education, and scientific research for intra-operative anesthesiology, critical care and pain medicine.