

**For**

**ELLIOT S. KRAMES**

Pacific Pain Treatment Center  
2000 Van Ness Avenue, Suite 402  
San Francisco, CA 94109  
(415) 567-1219 (Phone)  
(415) 567-2534 (Fax)

**EDUCATION**

1962-64 University of West Virginia, Morgantown , WV  
1964-66 B.A. University of North Carolina, Chapel Hill, NC  
1967-71 M.D. University of Maryland, Baltimore, MD

**POST GRADUATE EDUCATION**

1971-72 Internship; Mount Zion Hospital, San Francisco, CA  
1972-74 Anesthesia Residency; University of California  
San Francisco, CA, Chief: William Hamilton  
1974-75 Fellowship: Obstetric Anesthesia; University  
California, San Francisco, CA, Chief: Sol Shnider

**POST GRADUATE EMPLOYMENT**

1975-76 Private practice of anesthesia, San Francisco, CA  
1976-81 Coordinator, Obstetrical Anesthesia, Mount Zion Hospital,  
San Francisco, CA  
1976-78 Director, Same Day Surgery, Mount Zion Hospital  
San Francisco, CA  
1981-88 Private practice of anesthesia, San Francisco, CA  
1984-93 Director, Mount Zion Cancer Pain Management Program  
San Francisco, CA  
1988-present Medical Director: Pacific Pain Treatment Centers  
Private Pain Practice in San Francisco with 2 satellite offices  
1996-2003 Medical Director, Functional Restoration Program, Spine and Sports Medicine, Concord  
California

**BOARD CERTIFICATION**

1977 Diplomate of the American Board of Anesthesiology  
1993 Diplomate of the American Board of Pain Medicine  
1993 Subcertified in Pain Medicine by the American Board of Anesthesiology

**PROFESSIONAL LICENSURE**

State of California

3. San Francisco Medical Society
4. International Association for Study of Pain
5. American Pain Society
6. American Academy of Pain Medicine
7. International Neuromodulation Society
8. North American Neuromodulation Society
9. National Pain Foundation

#### **PRESENT TITLES:**

1. Founding Member, National Pain Foundation
2. Founding Member, North American Neuromodulation Society
3. Past Editor-in-Chief, Neuromodulation: Technology at the Neural Interface, journal of the International Neuromodulation Society 1996-2009
4. Past President, the International Neuromodulation Society 2006-2009

#### **BOARD MEMBERSHIPS HELD**

1. American Academy of Pain Medicine, past
2. North American Neuromodulation Society, present
3. International Neuromodulation Society, present
4. National Pain Foundation, present
5. World Institute of Pain, past
6. American Board of Pain Medicine, past

#### **OFFICES HELD**

1. Co-Chairman, National Pain Foundation for Development
2. Chairman, Fellowship Committee, American Board of Pain Medicine, 2000-2003
3. Editor-in-Chief: Neuromodulation, Journal of the International Neuromodulation Society and International Functional Electrical Stimulation Society, present
4. President, International Neuromodulation Society, present

#### **ADVISORY & PROFESSIONAL COMMITTEES SERVED**

1. Committee Member for the American Pain Society
2. Chairman, Fellowship Training Committee, American Board of Pain Medicine
3. Scientific Advisory Committee for Chronic Pain Control; Medtronic Corporation
4. Scientific Advisory Committee, Neurex Corporation
5. Scientific Advisory Committee, Advanced Neuromodulation Systems
6. Scientific Advisory Committee, Durect Corporation
7. Scientific Advisory Committee, Elan Pharma
8. Scientific Advisory Committee, Alza Corporation
9. Scientific Advisory Committee, Johnson and Johnson Corporation
10. Scientific Advisory Committee, Janssen Pharma Corporation
11. Scientific Advisory Committee, Advanced Bionics
12. Scientific Advisory Committee, Codman, Division of Johnson and Johnson
13. Scientific Advisory Committee, Lilly Cymbalta Team
14. Scientific Advisory Committee, Pfizer Celebrex Team

1. Chairman of the Review Course for the American Academy of Pain Medicine 1997
2. Chairman of the Review Course for the American Academy of Pain Medicine 1998
3. Chairman of the Cadaver Course for the American Academy of Pain Medicine 1999
4. Co-Chairman of The Egyptian International Congress on Pain, Sharm-El-Shek, Egypt, November 1999
5. Course Director of the 2nd Annual AAPM Interventional Techniques Workshop and Cadaver Course February, 2000
6. Chairman of the World Wide Pain Conference, July 15 to 21, 2000, San Francisco.
7. Chairman of the Cadaver Course for the American Academy of Pain Medicine 2001
8. Chairman of Pre Conference Meetings: American Academy of Pain Medicine, February, 2002, San Francisco, California
9. Chair, International Consensus "Use of Ziconotide" Hosted by Elan Pharma, Sardegna, Italy, May 9,2002
10. Chairman of the AAPM pre-conference meeting, titled, DIAGNOSIS AND MANAGEMENT OF DISCOGENIC PAIN, New Orleans, February 18<sup>th</sup>, 2003
11. Chairman of the AAPM pre-conference meeting, titled, PRACTICE MANAGEMENT FOR PAIN MANAGEMENT PHYSICIANS, New Orleans, February 19<sup>th</sup>, 2003
12. Co-chairperson of the 6<sup>th</sup> World Congress of the International Neuromodulation Society, June 25-28, 2003, Madrid, Spain
13. Moderator: Implantable Programmable Pumps v. Non Programmable Pumps: Codman Symposia, 6<sup>th</sup> World Congress of the International Neuromodulation Society, June 25, 2003, Madrid, Spain
14. Chairperson, 8<sup>th</sup> Scientific Congress, the North American Neuromodulation Society, Orlando, Florida, April 28<sup>th</sup>-May 1, 2004.
15. Chairperson, 9<sup>th</sup> Scientific Congress, the North American Neuromodulation Society, Orlando, Florida, November, 2005
16. Moderator, Ziconotide, an update, Elan Pharma, Atlanta, Georgia, February, 2005
17. Co-chair: International Neuromodulation Society Meeting, Rome, Italy, June, 2005
18. Chairperson, North American Neuromodulation Society Congress, Washington DC, November, 2005
19. Chairperson, International Neuromodulation Society Congress, Acapulco, Mexico, December 2007
20. Chair, "Ziconotide: Rectifying Troublesome Data", Elan Sponsored Symposia, North American Neuromodulation Society, Las Vegas, Nevada, December 9, 2006
21. Chairman, 8<sup>th</sup> Scientific Meeting, International Neuromodulation Society, December 7<sup>th</sup>-12<sup>th</sup>, 2007
22. Co-chair, 19<sup>th</sup> NAPA Pain Conference/1<sup>st</sup> CMEIA Neuromodulation Meeting, October 3,4,5, Napa CA, 2008
23. Chairman, International Neuromodulation Society Congress, Seoul, Korea, September 12-15. 2009

#### **AWARDS:**

1. Distinguished Service Award, 2001, American Academy of Pain Medicine
2. President's Award for Outstanding Service, North American Neuromodulation Society, 2003
3. Outstanding Achievement Award to "Fellow Status" North American Neuromodulation Society, 2003
4. "Best Doctors" 2004, 2005, 2006, 2007, 2009

#### **EDITOR-IN-CHIEF**

*Neuromodulation: Technology at the Neural Interface*, Journal of the International Neuromodulation Society and the International Functional Electrical Stimulation Society 1996-2009

#### **GUEST EDITOR**

*Journal of Back and Musculoskeletal Rehabilitation*, December 1997 Issue

#### **EDITORIAL BOARD**

## **SPEAKER'S BUREAU MEMBERSHIP**

1. Purdue-Frederick
2. Janssen Pharmaceuticals
3. Knoll Laboratories
4. Medtronic Corporation
5. Dannemiller Memorial Educational Foundation
6. Advanced Neuromodulation Systems
7. Advanced Bionics
8. Elan Pharma

## **VISITING PROFESSORSHIPS**

1. Visiting Traweek Professor, Texas Tech University School of Medicine, April 22-23, 2002
2. Visiting Professor, Department of Anesthesiology, University of Oklahoma School of Medicine, 4/21/05-4/22/05
3. Visiting Professor, University of Maryland, Department of Anesthesiology, 5/3/06-5/4/06
4. Visiting Guest Professor, The University of British Columbia, 10/21/09

## **RESEARCH**

1. Principle investigator, Continuous infusion of spinally administered narcotics for cancer pain, 1981-1983
2. Principle investigator, Alternating use of continuous intrathecal d-ala<sup>2</sup>-d-leu<sup>5</sup>-enkephalin (DADL) with morphine sulfate for control of pain in cancer patients. Funded research, 1984-1992.
3. Principle investigator, Morphological effects of chronic infusion of morphine and d-ala<sup>2</sup>-d-leu<sup>5</sup>-enkephalin (DADL) upon the central nervous system: A post mortem study funded research, 1985-1990.
4. Principle investigator, Pharmacokinetics of intrathecally administered d-ala<sup>2</sup>-d-leu<sup>5</sup>-enkephalin (DADL). Funded research, 1985-1992
5. Principle investigator, Cancer pain management: collaborative multiphasic study testing the World Health Organization's analgesic ladder and the effectiveness of intraspinal opiates. Funded research 1986 - 1992.
6. Principle investigator, Opioid/Bupivacaine Intrathecal Infusion for the Treatment of Nonmalignant Pain - a double blind study. Funded research, 1992 to 1996
7. Principle investigator, A Phase I/II, Open-Label, Rising-Dose, Safety and Feasibility Study of SNX-111 Administered Intrathecally to Terminally Ill Patients Suffering from Chronic Pain. Funded research, 1994 to 1995
8. Principle investigator, Matrix Study (Spinal Cord Stimulation data collection study), Funded Research, 1995 to 1996
9. Principle investigator, A phase II/III double blind, cross-over, placebo controlled study of SNX-111 (95-001) administered intrathecally to terminally ill patients suffering from chronic pain, Funded research, 1996 to 1998
10. Principle investigator, Study PROTOCOL 95-002 An Open-Label, Long-Term Safety And Efficacy Study of SNX-111 Administered Intrathecally To Patients Suffering from
11. Chronic Pain using the SynchroMed<sup>®</sup> Infusion System, Funded research, 1996 to 1997

#### Intrathecal to Patients with Chronic Non-Malignant Pain

14. No. 96-002, Neurex Corporation, Funded Research, 1996 to 1997
15. Principle Investigator, Survey on Catheter problems with intraspinal infusions, 1996 to 1998
16. Principle Investigator, Use of New Implantable SCS Lead: Access Lead, 2001
17. Principle Investigator, Ziconotide, Protocol 301, 302, 352, 501, 2003 Funded Research Elan Pharmaceuticals
18. Principle Investigator, Use of a New Spinal Cord Stimulation System, Advanced Bionics, 2003 Funded Research

#### **PUBLICATIONS:**

1. Ring G, Krames ES, et al. Comparison of nitroprusside and hydralazine in hypertension in pregnant ewes. Obstetrics and Gynecology, 50 (5), 598-602, 1977.
2. Krames ES, Lyons A, Taylor P, et al. Continuous infusion of spinally administered narcotics for the relief of pain due to malignant disorders. In : Intra-spinal narcotic analgesia for acute and chronic pain. Palm Springs, USA, Symposium report, 1983.
3. Krames ES, Gershow J, Glassberg A, et al, Continuous infusion of spinally administered narcotics for the relief of pain due to malignant disorders. Cancer, 56 (3), 696-702, 1985.
4. Krames ES, Wilkie DJ, Gershow J, Intrathecal D-Ala<sup>2</sup>-D-Leu<sup>5</sup>-enkephalin (DADL) restores analgesia in a patient analgetically tolerant to intrathecal morphine sulfate. Pain, 24 (205-209), 1986.
5. Krames ES, Wilkie DJ, Acute and chronic effects of delta-alanine<sup>2</sup>-delta-leucine<sup>5</sup>-enkephalin (DADL) in morphine tolerant cancer. Pain 54, S68, 1987.
6. Krames ES, Intrathecal infusional therapies for intractable pain: patient management guidelines. Monograph published by Medtronic Corporation, Minneapolis, MN, 1991.
7. Rosenbaum EH, Dollinger M, Krames ES, Controlling pain. In: M Dollinger, EH Rosenbaum (Eds.): Everyone's Guide to Cancer Therapy, Andrews and McMeel, Kansas City & New York, 139-143, 1991.
8. Krames ES, Lanning, R.M., Intrathecal infusion analgesia for non malignant pain, Proc Amer Pain Soc. November 1991.
9. Krames ES, Intrathecal infusional therapies for intractable pain. IN: Breaverman M, Tawes RL (Eds) Surgical Technology International: International developments in surgery and surgical research, Century Press, London, 59-66, 1992.
10. Krames ES, Spinal Cord Stimulation (SCS) or Spinally Administered Narcotics (SAN): An algorithm for Decision-Making. Monograph published by Medtronic Corporation, Minneapolis, MN, 1992.
11. Krames ES, Lanning RM; Does the Delta opioid receptor ligand, d-ala-d-leu-enkephalin, restore analgesia in cancer patients unresponsive to mu opioid receptor ligands? Proc Amer Pain Society; p. 115, Oct 1992.
12. Lanning RM, Krames ES; Acute cardio-respiratory effects of the opiate peptide d-ala-d-leu-enkephalin. Proc Amer Pain Society; p. 120, Oct 1992.

14. Krames ES, Interventional Pain Management. Lifeline: National Chronic Pain Outreach Association, Spring 1993.
15. Krames, ES, The chronic intraspinal use of opioid and local anesthetic mixtures for the relief of intractable pain: when all else fails!, Guest Editorial in Pain, 55, 1-4, 1993.
16. Krames ES, Lanning RM. Intrathecal infusional analgesia for nonmalignant pain: analgesia efficacy of intrathecal opioid with or without bupivacaine. Journal of Pain and Symptom Management , 8 (8) November, 1993.
17. Krames, ES, The endogenous neuromodulatory system, IN: Horsch S, Claeys L (Eds) Spinal Cord Stimulation, Steinkopff Verlag, Darmstadt Germany, 19-27, 1994.
18. Krames ES, Lanning R. Analgesia del dolor no maligno por infusion intratecal: Eficacia analgesica de los opiaceos intratecales frente a las combinaciones del opiaceo intracal y bupivacaina. Revista de la soc. Esp. Doror, 1:7-13, 1994.
19. Krames ES. Spinal Cord Stimulation or Spinally Administered Opioids: An Algorithm for Decision-Making Implantable Technologies for Pain Control: IN: Parris Winston CV (Ed) Principles and Practice of Cancer Pain Management, Butterworth Heinemann, Newton, MA 1995
20. Lanning RN, Krames ES. Technique and Formula for Drug Combinations for Use in the Implanted Intrathecal Infusion Pump (Abstract) , American Pain Society , Nov. 1995
21. Krames ES, Schuchard M, Lanning RM. Efficacy, Dose Stability And Safety Of Intrathecal Infusional Opioid Therapy For Non-Malignant Pain Study Of 52 Patients (Abstract) , American Pain Society , Nov. 1995
22. Krames ES. Intraspinal Opioid Therapy for Chronic Nonmalignant Pain: Current Practice and Clinical Guidelines, Journal of Pain & Symptom Management, 1995; 10: 1-xxx
23. Krames ES, Schuchard M. Implantable intraspinal infusional analgesia: management guidelines, Pain Reviews 1995; 2: 224-247.
24. Krames ES, Implantation Techniques for Totally Implantable Drug Administration Systems. IN: Winnie A, Waldman S (Eds) Interventional Pain Management, WB Saunders, Philadelphia, PA, 1996; pp 473 - 482.
25. Krames ES, Spinal Administration of Opioids for Nonmalignant Pain: A United States Experience. IN: Winnie A, Waldman S (Eds) Interventional Pain Management, WB Saunders, Philadelphia, PA, 1996; pp 443 - 446.
26. Krames ES, Mechanisms of Action of Spinal Cord Stimulation. IN: Winnie A, Waldman S (Eds) Interventional Pain Management, WB Saunders, Philadelphia, PA, 1996; pp 407-411
27. Krames ES, The Role of Implantable Pain Management Technologies: An Algorithm for Decision-making. IN: Winnie A, Waldman S (Eds) Interventional Pain Management, WB Saunders, Philadelphia, PA, 1996; pp 501 - 510.
28. Krames, ES, Intraspinal Opioid Therapy for Chronic Nonmalignant Pain: Current Practice and Clinical Guideline. Jour Pain and Sympt Mangement. 1996; 11:6; pp 333-353.
29. Brose W, Bfeifer B, Hassenbusch S, Burchiel K, Krames E, Byas-Smith M, McGuire D, Tich N, Luther R: SNX-111 produces analgesia in patients with intractable pain: phase I/II results. 11th World Congress of Anaesthesiologists symposium, April 1996.

31. Krames ES, Olson K: Clinical Realities and Economic Considerations: Patient Selection in Intrathecal Therapy, *Journal of Pain and Symptom Management*, Proceeding Supplement: Current Status of Intrathecal Therapy for Nonmalignant Pain Management, 14:3S; September, 1997
32. Krames ES: Intraspinal Opioids for Nonmalignant Pain, *Current Review of Pain* 1:98-212, 1997.
33. Krames ES: Pain management: Establishing a role for implantable technologies; *Journal of Back and Musculoskeletal Rehabilitation*, Vol 9, No. 3, 209 - 222; December 1997
34. Krames ES, Rational Use of Opioids for Nonmalignant Pain, *Journal of Pharmaceutical Care in Pain & Symptom Control*, Vol 5, No 3, pp 3-15, 1997
35. Krames ES, Rohira SK, Lanning RM. The Advantages and Adverse Effects of the Addition of Intrathecal Clonidine to Intrathecal Infusions of Opioid (Abstract), *Proceedings of the American Pain Society*; p 190, October 23-26, 1997
36. Wailes R, Krames ES, Gwartz B. Reliability and Clinical Utility of an Implanted Intraspinal Catheter used in the Treatment of Spasticity and Pain., (Abstract) *Proceedings of the American Pain Society*, 1997.
37. Krames ES, Rosenbaum EH, Dollinger M, Controlling pain. In: M Dollinger, EH Rosenbaum, Cable G, (Eds.): *Everyone's Guide to Cancer Therapy*, Andrews McMeel Publishing, Kansas City & New York, Revised 3rd Edition pp 161-167, 1997.
38. Schuchard MS, Krames ES, Lanning RM, Intraspinal analgesia for Nonmalignant Pain - A Retrospective Analysis for Efficacy, Safety, and Feasibility in 50 Patients, *Neuromodulation* 1:1:46-56, 1998.
39. Schuchard MS, Lanning RM, North R, Reig E, Krames ES: Neurologic Sequelae of Intraspinal Drug Delivery Systems: Results of a Survey of American Implanters of Implantable Drug Delivery Systems, *Neuromodulation* 1:3: 137-148, 1998.
40. Krames ES. Controversies in Pain Control: The Use of Implantable Technologies, Part 1; *Pain Medicine Network*, Vol. 13, No. 1, December 1997/January 1998.
41. Krames ES. Controversies in Pain Control: The Use of Implantable Technologies, Part 2; *Pain Medicine Network*, Vol. 13, No. 1, February 1998.
42. Krames ES. Using a Pain Treatment Continuum: A Logical and Cost Effective Approach to the Management of Chronic Pain in *Practical Management of Pain*, 3rd Edition, edited by P.Prithvi Raj, Mosby, 1998.
43. Krames ES, Rohira SK. Complex Interventional Therapies for Intractable Cancer Pain. in *Non-Drug Management of Cancer Pain* , edited by K. Budd and B. Simpson. Oxford University Press, London, Accepted for Publication
44. Krames ES. Cancer Pain Management, Practical Issues When Using Neuraxial Infusion, Supplement to *Oncology*, Vol 13, No 5 (S #2), pp 37-44, May 1999
45. Krames ES. Interventional Pain Management Is Appropriate When Less Invasive Therapies Fail To Provide Adequate Analgesia. Chapter in *Chronic Pain: Medical Clinics of North America.* (83/3 May, 1999, p. 787+, WB Saunders Company
46. Krames ES, Review of Article by Bruera E and Neumann C, entitled "Role of Methadone in the Management of Pain in Cancer Patients", Volume 13, Number 9, September 1999.

48. Krames E. Spinal cord stimulation: Indications, mechanism of action, and efficacy. *Current pain and headache reports*. 1999;3(6):419-426.
49. Krames ES, Chappel I., Reliability and Clinical Utility of an Implanted Intraspinal Catheter Used in the Treatment of Spasticity and Pain, *Neuromodulation*, 2000;3(1):7-14.
50. Krames ES, Overview of SCS with Special Emphasis on a Role for Dual Spinal Cord Stimulators, *Pain Digest* 2000;10:6-12
51. Krames ES, Spinal Cord Stimulation: Indications, Mechanism of Action, and Efficacy, *Current Review of Pain*, 1999;3(6):419-426
52. Krames, ES. Pain and the Elderly. *San Francisco Medicine, Journal of the San Francisco Medical Society* 2000; 73(10): 26-29.
53. Krames, ES. A Case for Establishing Hospital Divisions of Pain Practice, *Pain Medicine* 2000; 1(3):212-216.
54. Krames, ES, Pecoraro, FS, Untreated Pain and Its Cost to Society: What are the Options in *Textbook of Regional Anesthesia*, ed. Prithvi Raj, Churchill Livingstone, Philadelphia, Pennsylvania, 2002, 599-609.
55. Krames, ES, Pecoraro, FS. Intrathecal Therapies for the Treatment of Chronic Pain in *Textbook of Regional Anesthesia*, ed. Prithvi Raj, Churchill Livingstone, Philadelphia, Pennsylvania, 2002, 767-786..
56. Krames, ES, Implantable Devices for Pain Control: Spinal Cord Stimulation and Intrathecal Therapies, accepted for publication *Best Practice and Research Clinical Anaesthesiology*, Vol. 16, No. 4, 2002
57. Krames, ES. An Epidemic of Chronic Pain, a Disease Too Costly to Ignore. *New Diagnosis. Physicians Organizing Committee, San Francisco California*, 15(1) 2001, p2.
58. Krames ES, Millman A: Regional Pain: Abdominal. Accepted for Publication in "Just the Facts: Pain Medicine." Eds. Mark S Wallace and Peter Staats. McGraw-Hill, New York, New York.
59. Hassenbusch S, Burchiel K, Coffee RJ, Cousins MJ, Deer T, Hahn MB, DuPen S, Follett KA, Krames, E, et al. Management of Intrathecal Catheter-Tip Inflammatory Masses: A Consensus Statement, *Pain Medicine*, Vol, 3, No 4, 300-312, 2002.
60. Millman A, Krames ES, Abdominal Pain, in *Just the Facts: Pain Medicine and Management*, (Staats, P and Wallace, M, Eds.), McGraw-Hill, 2004
61. Krames E, Mousad D, Spinal Cord Stimulation Reverses Pain and Diarrheal Episodes of Irritable Bowel Syndrome: a Case Report, accepted for publication, *Neuromodulation*, (7), 2004.
62. Krames, E, Electrical Stimulation and the Relief of Pain; a book review, *Neuromodulation*, 2004.
63. Bradley K, Krames E, Oakley J, Varga C, Real-Time Paresthesia Steering Using Continuous Electric Field Adjustment. Part I: Intraoperative Performance, *Neuromodulation*, 2004;7(3)
64. Varga C, Prager J, Krames E, Oakley J, Bradley K, Grandhe V. A New, Efficient, Patient-Interactive System for Programming Spinal Cord Stimulators. Abstracts of the 8th North American Neuromodulation Society Meeting, 2004, April 28-May 1. Orlando, FL.

Stimulation. Abstracts of the 8th Vienna International Workshop on Functional Electrical Stimulation, 2004, September 10-13. Vienna, Austria.

67. Meadows P, Varga C, Prager J, Krames E, Oakley J, Bradley K, Grandhe V, Whitehurst T. Analysis of Patient-Selected Programs from a New Spinal Cord Stimulation System. Abstracts of the 9th International Workshop on Functional Electrical Stimulation, 2004 September 6-9. Bournemouth, United Kingdom.
68. Oakley J, Prager J, Krames E, Weiner R, Stamos J, Bradley K. Stimulator Program Preferences Using a New Spinal Cord Stimulation System. Abstracts of the American Society of Stereotactic and Functional Neurosurgery Biennial Meeting, Neuromodulation: Defining the Future. 2004 October 1-3. Cleveland, OH.
69. Oakley J, Prager J, Krames E, Weiner R, Stamos J, Bradley K. Variability of Contact Impedance Over Time In Spinal Cord Stimulation. Abstracts of the American Society of Stereotactic and Functional Neurosurgery Biennial Meeting, Neuromodulation: Defining the Future. 2004 October 1-3. Cleveland, OH
70. Alo KM, Varga C, Krames E, Prager J, Holsheimer J, Manola L, Bradley K. Variability of Contact Impedance by Vertebral Placement in Spinal Cord Stimulation. Abstracts of the 54th Congress of Neurological Surgeons, 2004 October 16-21. San Francisco, CA.
71. Beltrutti D, Lamberto A, Barolat G, Bruehl SP, Doleys D, Krames E et al. The psychological assessment of candidates for SCS for chronic pain management. *Pain Practice* 2004;4(3):204-221.
72. Oakley JC, Krames E, Prager J, Weiner R, Rashbaum R, Stamos J, Bradley K. Usefulness of Stimulation and Demographic Parameters for Prediction of Response to Spinal Cord Stimulation. Abstracts of the 73rd Meeting of the American Association of Neurological Surgeons, 2005 April 16-21. New Orleans, LA.
73. Krames E, Editorial policy of *Neuromodulation* assures the protection of humans and animals used for research, an editorial, *Neuromodulation*, 2005;8(2).
74. Harb M, Krames E. Intrathecal Therapies and Implanted Pumps, in *Interventional spine: an algorithmic approach*, eds. Curtis W. Slipman, Richard Derby, Jr., Frederick A. Simeone, Tom G. Mayer, to be published, Elsevier Press, London, UK.
75. Diego Beltrutti; Aldo Lamberto; Giancarlo Barolat; Stephen P. Bruehl; Daniel Doleys; **Elliot Krames**; Mario Meglio; Richard North; Kern Olson, The Psychological Assessment of Candidates for Spinal Cord Stimulation for Chronic Pain Management, *Pain Practice* 2004;4(3):204-221
76. Krames E, Cancer pain demands an integrated approach. *J. Supp Onc.* Nov/Dec 2004. Vol2;6:12-14.
77. Oakley J, Krames E, Weiner R, Rashbaum R, Grandhe V, Bradley K. Patient Use of Spinal Cord Stimulators: Tracking Data from a New Implantable System. Abstracts of the 7th Meeting of the International Neuromodulation Society, 2005 June 10-13. Rome, Italy.
78. Krames, E, Editorial: "Right Place at the Right Time," *Neuromodulation* 2005, 8(3):149-153.
79. Alo K, Varga C, Krames E, Prager J, Holsheimer J, Manola L, Bradley K, Factors Affecting Impedance of Percutaneous Leads in Spinal Cord Stimulation, *Neuromodulation* 2006 9(2):128-135
80. Krames E, Editorial: "Neuromodulatory Devices are Pare of Our "Tools of the Trade.", *Pain Medicine*, 2006, 7(S1): S3-S5.
81. Krames E, Editorial: "the New Look and Feel of Neuromodulation" *Neuromodulation*, 2007; 10(1): 1-4

83. Haddadan K and Krames ES, "Technique that better localizes the dura mater during intrathecal catheterization should reduce inadvertent multiple dural punctures and reduce complications. *Neuromodulation* 2007;10(2):164-166.
84. Deer T and Krames E, Physicians, Industry and Science: Moving forward as Neuromodulation matures, Editorial, *Neuromodulation*, 2007;10(3): 203-206.
85. Krames E, Foreman R. Spinal cord stimulation modulates visceral nociception and hyperalgesia via the spinothalamic tracts and postsynaptic dorsal column pathways: a literature review and hypothesis. *Neuromodulation* 2007;10(3):225-237.
86. Oakley J, Krames ES, Prager JP, Stamatou J, Foster A et al. A new spinal cord stimulation system effectively relieves chronic, intractable pain: a multicenter prospective clinical study. *Neuromodulation* 2007;10(3):262-279.
87. Deer T, Krames ES, Hassenbusch SJ et al. Polyanalgesic Consensus conference 2007: Recommendations for the management of pain by intrathecal (intraspinous) drug delivery: Report of an interdisciplinary panel. *Neuromodulation* 2007;10(4):300-329.
88. North, R. B., Shipley, J., Prager, J., Barolat, G., Barulich, M., Bedder, M., Calodney, A., Caraway, D., Daniels, A., Deer, T., DeLeon, O., Drees, S., Fautsch, M., Fehrenbach, W., Hernandez, J., Kloth, D., Krames, E. S., Lubenow, T., Osenbach, R. Panchal, S. J., Sitzman, T., Staats, P., Tremmel, J., and Wetzell, T. (2007). Practice parameters for the use of spinal cord stimulation in the treatment of chronic neuropathic pain. *Pain Med.* **8** (Suppl. 4), S200-275.
89. Deer TD, Krames ES, Hassenbusch S et al. Management of Intrathecal Catheter-Tip Inflammatory Masses: An Updated 2007 Consensus Statement From An Expert Panel. *Neuromodulation: Technology at the Neural Interface* 2008;11(2):75-89.
90. Deer T, Krames E, Hassenbusch S et al. Future Directions for Intrathecal Pain Management: A Review and Update From the Interdisciplinary Polyanalgesic Consensus Conference *Neuromodulation: Technology at the Neural Interface* 2008;11(2):90-95.
91. Abajon D and Krames E. Peripheral nerve stimulation (PNS) or is it peripheral subcutaneous field stimulation (PSFS); what's in a moniker? An Editorial. Accepted for publication. *Neuromodulation* 2009;12(1):1-4.
92. Krames E. Editorial. Possible Malfunction of Electronic Medical Devices Caused by Computed Tomography (CT) Scanning. (FDA Editorial) Accepted for Publication. *Neuromodulation* 2009;12(1):5-6.
93. Krames E. Editorial. Rethinking algorithms of pain care; the use of the S.A.F.E. principles *Pain Medicine* 2009;10(1):1-5.
94. Keller T and Krames E. On Shoulders of Giants. Accepted for publication. *Neuromodulation* 2009;12(2):77-85
95. Krames E, Poree L, Levy R and Deer T. Implementing the S.A.F.E. principles for the development of pain medicine therapeutic algorithms that include neuromodulation techniques. *Neuromodulation* 2009;12(2):104-113.

2. Operative Neuromodulation: Volume I: Functional Neuroprosthetic Surgery. Editors, Sakas D, Simpson B and Krames E. **in** (Acta Neurochirurgica Supplementum 97/1), Springer-Verlag/Wein 2007
3. NEUROMODULATION: Editors, Krames E, Peckham, PH and Rezai A. in press. Elsevier, London, UK.

## **PRESENTATIONS:**

### **Local**

1. Resuscitation of the Newborn. OB-Pediatric Ground Rounds, Mount Zion Hospital and Medical Center, San Francisco, CA, October, 1976, 1977, 1978.
2. Epidural Anesthesia. Grand Rounds, Mount Zion Hospital and Medical Center, San Francisco, Ca, October, 1978.
3. What's New In Obstetrical Anesthesia. OB Grand Rounds Mount Zion Hospital and Medical Center, San Francisco, CA, 1980.
4. Spinal and Epidural Opiates, The Ideal Anesthetic? OB Grand Rounds; Anesthesia Grand Rounds, Mount Zion Hospital and Medical Center, San Francisco, CA, 1980.
5. Epidural Morphine for Postoperative Pain. Surgical Grand Rounds, Mount Zion Hospital and Medical Center, San Francisco, CA, September, 1981.
6. Spinal Narcotics for Pain Control. Surgical Science Meeting, Providence Hospital, Oakland, CA, April, 1982.
7. Spinal Narcotics. Anesthesia Grand Rounds, Presbyterian Hospital and Medical Center, San Francisco, CA, July, 1982.
8. Spinal Narcotics for Malignant Pain Control. Nurse Education Series, Presbyterian Hospital and Medical Center, San Francisco, CA, November, 1982.
9. Continuous Infusion of Spinal Narcotics for the Relief of Malignant Pain. Koret Visiting Professor Lecture, Presbyterian Hospital and Medical Center, San Francisco, CA, November 19, 1982.
10. Intraspinal Narcotics for Pain Control in Cancer Patients. The East Cancer Program, Emeryville, CA, September 14, 1983.
11. Intraspinal Narcotics for Pain Control in Cancer Patients. Medical and Surgical Grand Rounds, Memorial Hospital/Medical Center, Modesto, CA, September 23, 1983.
12. Pain Pathways and Intraspinal Opiates for the Control of Cancer Related Pain. Cancer Pain Management Workshop, Santa Cruz, CA, June 1, 1985
13. Continuous Infusion of Spinally Administered Narcotics. Grand Rounds, Cancer Research Institute, University of California, San Francisco, CA, July, 1985.
14. History of Spinally Administered Narcotics. Medical Grand Rounds, Mount Zion Hospital and Medical Center, San Francisco, CA, August 9, 1985.

San Francisco, CA, August, 1985.

17. The Pharmacologic Management of Cancer Pain. Medical Grand Rounds, Highland Hospital, Oakland, CA, January, 1986.
18. Spinal Opiates for Cardiovascular Post-operative Pain. Cardiovascular Grand Rounds, Presbyterian Hospital and Medical Center, San Francisco, Ca, January 16, 1986.
19. Chairperson, Conference: Assessment and Management of Cancer Related Pain. San Francisco Regional Cancer Foundation, San Francisco, CA, March 21, 1986.
20. Spinal Opiates for the Treatment of Cancer Pain. Conference: Assessment and Management of Cancer Related Pain, San Francisco Regional Cancer Foundation, San Francisco, CA, March 21, 1986.
21. Pharmacologic Management of Cancer Related Pain. Urology Grand Rounds, Presbyterian Hospital and Medical Center, San Francisco, CA, June 11, 1986.
22. Pharmacologic Management of Cancer Related Pain, Cancer Committee Grand Rounds, St. Luke's Hospital, San Francisco, CA, September 28, 1988.
23. Pharmacologic Management of Cancer Pain. Department of Radiation Oncology, University of California, San Francisco, CA, February 10, 1989.
24. New Advances in Cancer Pain Therapy. Medical Grand Rounds, Marin General Hospital, Greenbrae, CA, March 14, 1990.
25. Spinal Narcotics, Oncology Nurse Rounds, Children's Hospital and Medical Center, San Francisco, CA, June 28, 1990.
26. Medical Intervention for Pain Management in the 90's Quarterly Medical Staff Meeting; Golden State Rehabilitation Hospital, San Ramon, CA, March 21, 1991
27. Pain Management in Cancer and AIDS, Medical Staff Meeting; Ralph K. Davies Hospital, San Francisco, May 10, 1991.
28. Chronic Pain Management in the Orthopedic Patient; Workshop for Orthopedic Nurses, Pacific Presbyterian Hospital; San Francisco, Ca, June, 4, 1991.
29. Pain Management Techniques; Oakland Naval Hospital Anesthesia Department; Oakland, CA, Feb 27, 1992.
30. Implantable Technologies for Reflex Sympathetic Dystrophies, Bay Area RSD Chapter, San Francisco, Ca, April 18, 1992.
31. Cancer Pain Management; UCSF Oncology Nursing Symposium, Mount Zion Hospital, San Francisco, Ca; August 6, 1992.
32. Pain Management: Acute and chronic; CEU Class at Letterman US Army Hospital, San Francisco, CA; October 28, 1992.
33. "Chronic Pain Management: The Treatment Options", Medical Grand Rounds, California Pacific Medical Center - California Campus, January 12, 1993.

Pleasanton, CA; August 30, 1994.

36. "Cancer Pain Management", Brookside Hospital Grand Rounds, San Pablo, CA, January 17, 1995
37. "Opioids for Nonmalignant Pain", presented at Grand Rounds Roseville Hospital, Roseville, CA, May 31, 1995.
38. "Chronic Pain Management - The treatment Options", Grand Rounds at Sutter Hospital Corporation, Sacramento, CA, June 16, 1995.
39. "When All Else Fails - The Role Of Implantable Technology To Treat Intractable Pain", Brookside Hospital Grand Rounds, San Pablo, CA, June 20, 1995.
40. "Pain Management - Acute and Chronic", presented at continuing education meeting for the staff at Family Health Practice-Take Care, Concord CA, June 30, 1995.
41. "Strategies for Pain Management", presented at the Case Management Advisory Committee, Kentfield Rehabilitation Hospital, Sausalito, CA, July 11 1995.
42. "Pain Management in the 90's", presented at Grand Rounds, St. Louise Hospital, Morgan Hill, CA, November 14, 1995.
43. Oral Opioid Therapy presented to Durect Corporation, Mountainview, California, April, 2001
44. "Intrathecal Therapies Today and Tomorrow", presented to fellows of the University of California, SF, Pain Clinic, March, 2001
45. "Pain Management, the Options", presented by Janssen Pharma, SF, CA, March, 2001
46. "Pain Management for the Upper Extremity" November 26, 2001, San Francisco, California
47. "Waddell Signs, Facts or Fantasies", April 19<sup>th</sup>, 2002, Lecture to Attendings and Fellows of the Stanford Pain Clinic, Stanford Universtiy, Palo Alto, California
48. "Intrathecal Therapies for Cancer Pain Management", Lecture to Oncologists, July 24, 2002, San Francisco, California.
49. "Interventional Pain Management, What are the Options", Lecture to primary care physicians and worker's compensation adjusters and nurses, Pleasanton, California, August 1, 2002.
50. "Intrathecal Therapy Guidelines", Lecture to the Sacramento Pain Society, Roseville, California, August 15, 2002
51. "Opioids for the Management of Chronic Non-Malignant Pain", Lecture to Primary Care Physicians, San Francisco, Septemeber 17, 2002
52. "Interventional Pain Management, What are the Options", Video Conference for Kaiser Nurses and Physicians, Oakland, California, September 27, 2002.
53. "Neurobiology of Pain", Pain Medicine for the Practitioner, SF Medical Society, San Francisco, California, October 23<sup>rd</sup>, 2002

Francisco, California, October 23<sup>rd</sup>, 2002

56. "The Management of Chronic Low Back Pain" UCSF Symposium on Pain Care, October 31, 2000, San Francisco, California
57. "Cancer Pain Management", Association of Northern California Oncologists, San Francisco, California, March 5, 2003
58. "The Treatment of Chronic Neuropathic Pain Mimicks the Treatment of Epilepsy and Mood Disorders, Why?" Pain Symposium, Aptos, California, Nov. 2003
59. "Interventional Cancer Pain Management" Pain Symposium, Aptos, California, Nov. 2003
60. "Pain in the Elderly" talk to the Department of Orthopedic Surgery, California Pacific Medical Center, February 13, 2004.
61. The Neurobiology of Pain: Grand Rounds, California Pacific Medical Center, Davies Campus, June, 2004
62. Pain Medicine Treatment Options: Resident in Medicine Education Rounds, California Pacific Medical Center, November, 2004.
63. Pain Management for the Primary Care Physician, California Pacific Medical Center, Grand Rounds, Davies Campus, January, 2005
64. Pain Management for the Primary Care Physicians, Educational Rounds, UCSF General Hospital, February 9, 2005
65. "the Use of Membrane Stabilizers for Chronic Pain, Mood Disorders, and Epilepsy: Common Mechanisms, Common therapies" Grand Rounds, Davies Campus, California Pacific Medical Center, 4/8/05
66. "the Use of Membrane Stabilizers for Chronic Pain, Mood Disorders, and Epilepsy: Common Mechanisms, Common therapies" presented to the Bay Area Psychopharmacology Interest Group, Sausalito, CA, September, 2005
67. "SCS and Refractory Angina" Grand Rounds, California Pacific Medical Center, Davies Campus, October 28, 2005
68. "The Neurobiology of Pain" Mt Diablo Medical Center Pain Series, Concord California, October 29, 2005
69. "Membrane Stabilizers in Chronic Pain, Depression and Epilepsy" Mt Diablo Medical Center Pain Series, Concord California, October 29, 2005
70. "SCS and Refractory Angina" Grand Medical Rounds, Mt Diablo Medical Center, Concord California, November 30, 2005
71. Neurobiology of Pain, Nurse Symposium, JMMC, Concord Campus, March 2007

### **National/International**

- I. The effects of Magnesium Sulphate on Uterine Blood flow and Fetal Well-being in the Pregnant Ewe. Krames, et al. Annual meeting of the American Society of Anesthesiology, 1975.

3. Implantation Techniques for Continuous Infusion of Spinal Narcotics via Epidural and Intrathecal Catheters. University of Michigan Program on Totally Implanted Infusion Pumps, Tampa, FL, March 23, 1983.
4. Continuous Infusion of Spinal Narcotics for Malignant Pain - A Private Hospital's Experience. Dartmouth Medical Center Program, Palm Springs, CA, April 9, 1983.
5. Intraspinal Narcotics For Pain Control in Cancer Patients Invitational Conference, a Professional Briefing. Totally Implantable Pump: Intraspinal Analgesia, CNS Malignancies, Alzheimer's Disease and other Neurotransmitter Disorders, Isle of Palms, SC, September 19-22, 1984.
6. Continuous Infusion of Spinally Administered Narcotics. Western Federation of Neurological Science, San Diego, CA February 22, 1985.
7. Continuous Infusion of Spinally Administered Narcotics-Dosages and Flow Patterns. Federal Drug Administration-Anesthesiology Section, Washington, DC., April 10, 1985.
8. Spinally Administered Narcotics. Anesthesia Grand Rounds, Loma Linda School of Medicine, Irvine CA, December 4, 1985.
9. Poster Presentation: Delta-Alanine-Delta-Leucine Enkephalin for Morphine Tolerant Patients. Conference IV International Association Study Pain, Hamburg, W. Germany, July 1987.
10. Spinal Opiates for Cancer Related Pain Conference and Symposia: Spinal Opiates, Munich, W. Germany, August 1987.
11. Pharmacology of Cancer Pain. Texas Tech University Health Center, Lubbock, Texas, June 2-3, 1990.
12. Spinal Narcotics for Cancer Pain. Texas Tech University Health Center, Lubbock, Texas, June 2-3, 1990.
13. Interventional Techniques for Low Back Pain Patients American Back Society, Fall Symposium on Back Pain, San Francisco, CA, Dec 6, 7, 8, 1990.
14. Infusional Spinally Administered Narcotics. University of Oregon Health Science Center Symposium on Interventional Anesthetic Techniques. San Francisco, CA, Feb 24, 25, 1991.
15. Infusional Spinally Administered Narcotics. University of Oregon Health Science Center Symposium on Interventional Anesthetic Techniques. Portland, OR. May 18, 19, 1991.
16. Spinal Cord Stimulation versus Intraspinal Narcotic Therapy: Patient selection and patient management. National Sales Meeting, Medtronic Neurological Division; Colorado Springs, CO, June 3, 1991.
17. Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Faculty member and speaker. Cape Cod, Mass, August 3, 4, 1991.
18. "Spinal Cord Stimulation-Mechanism of Action" at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Boston, Mass, August 9 - 11, 1991.
19. "Implantable Continuous Infusion Drug Delivery Systems" at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Boston, Mass, August 9 - 11, 1991.

21. Implantable Technologies of Chronic Pain: To Pump or To Stimulate? Denver Neurological Society, Denver Co. September 10, 1991.
22. Spinally Administered Narcotics. Anesthesiology Teaching Rounds, Dept. of Anesthesia, University of Colorado, Denver, Co, September 11, 1991.
23. Physician Approach to Chronic Pain Management. National Sales Meeting, Wyeth-Ayerst Laboratories, Palm Springs, CA, October 1, 1991.
24. Implantable Technology in the Treatment of Pain. Missouri Rehabilitation Professional Meeting, St. Louis, MO., November 6, 1991.
25. Intrathecal Infusion Analgesia for Non malignant Pain. Poster Presentation at the American Pain Society Meeting, November 9, 1991.
26. 26. Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Faculty member and speaker. Phoenix, AZ., Dec 7-9, 1991.
27. "Spinal Cord Stimulation-Mechanism of Action" at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Tampa, FL, Jan 24-26, 1992.
28. "Implantable Continuous Infusion Drug Delivery Systems" at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Tampa, FL, Jan 24-26, 1992.
29. "Spinal Administration of Opioids for Non-Malignant Pain" at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Tampa, FL, Jan 24-26, 1992.
30. Intraspinal Analgesia: Malignant and Non malignant pain. Dallas MetroPlex Spine Society, Dallas, TX, Jan 27, 1992.
31. Intrathecal Infusional Therapies for Intractable Pain. National Sales Meeting for Pfizer Infusaid. Waterville Valley, NH, Feb 9, 1992.
32. Pain Management Techniques - "To Implant or Not to Implant". National Sales Meeting, Medtronic Neurological Division; Keystone, Co, Feb 24, 1992.
33. Course Director and Faculty: Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller
34. 2 1/2 day Conference; Orlando, Florida, March 13-15, 1992
35. "Interventional Pain Management". Presented at Nevada Society of Anesthesiologists, Las Vegas, Nevada, April 10, 1992.
36. Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Faculty member and speaker. San Francisco, CA, May 16-17, 1992.
37. "Spinal Cord Stimulation: Mechanisms of Action" presented at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Chicago, IL, June 19 - 21, 1992.

39. "Implantable Drug Delivery Systems or Spinal Cord Stimulation: Matching the Modality to the Patient" presented at Dannemiller International Anesthesia Conference:
40. INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Chicago, IL, June 19 - 21, 1992.
41. "Spinal Administration of Opioids for Non-Malignant Pain, presented at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Chicago, IL, June 19 - 21, 1992.
42. "Implantation Techniques for Implantable Continuous Infusion Drug Delivery Systems" presented at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Chicago, IL, June 19 - 21, 1992.
43. "Spinal Administered Opioids for Non-Malignant Pain", presented at a Dannemiller conference: The Failed Back: Past Problems and Future Directions - San Francisco, CA July 17 - 19, 1992.
44. "Implantable Drug Delivery Systems or Spinal Cord Stimulation: Matching the Modality to the Patient": presented at a Dannemiller conference: The Failed Back: Past Problems and Future Directions - San Francisco, CA July 17 - 19, 1992.
45. Course Director and Faculty: Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Chicago, IL; July 24 - 26, 1992.
46. "Spinal Cord Stimulation - Mechanisms for Action" presented at *5th International Congress: The Pain Clinic*, Jerusalem, Israel; September 14 - 18, 1992.
47. "Intraspinal Pain Management" NAVAN 6th Annual Conference; New Orleans, September 24, 1992.
48. "Implantable Technologies for Pain Control - Patient Selection and Algorithm for Decision Making", Regional Medical Meeting; Everett, Washington. October 15, 1992.
49. Course Director and Faculty: Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Atlanta, Georgia; November 5 - 8, 1992.
50. "Implantable Treatment Options for Chronic Pain Management - Patient Selection"; Management of Pain - 1992; UC Davis Medical Center; Silverado Country Club; Napa, CA; November 20 - 21, 1992.
51. "Implantable Technologies for Chronic Pain Management", District 6 of the New York Society of Anesthesia; Rochester, New York; December 2, 1992.
52. "Chronic Pain Management: The Treatment Options", Department of Anesthesiology - Grand Rounds, University of Rochester School of Medicine and Dentistry; December 3, 1992.
53. Invited Visiting Professor in Attendance; Pain Treatment Center - University of Rochester School of Medicine and Dentistry; Rochester, NY. Decembe 3-4, 1992.
54. "Spinal Cord Stimulation: Mechanisms of Action" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Scottsdale, Arizona; January 15-17, 1993

56. "Avoiding Technical Difficulties and Trouble-shooting Post-implantation Problems" presented at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Scottsdale, Arizona; January 15-17, 1993
57. "Implantable Drug Delivery Systems or Spinal Cord Stimulation: Matching the Modality to the Patient" presented at Dannemiller International Anesthesia Conference:
58. INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Scottsdale, Arizona; January 15-17, 1993
59. "Spinal Administration of Opioids for Non-Malignant Pain, presented at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Scottsdale, Arizona; January 15-17, 1993
60. "Implantation Techniques for Implantable Continuous Infusion Drug Delivery Systems" presented at Dannemiller International Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Scottsdale, Arizona; January 15-17, 1993
61. Faculty: Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2 1/2 day workshop at San Diego, CA; February 5 - 7, 1993.
62. "Long-term Intrathecal Therapy for Non-Malignant Pain: Current Experience" presented at Dannemiller Conference: OPIOIDS FOR NON-MALIGNANT PAIN - Past Problems, Present Practices, Future Directions, Atlanta, Georgia; April 16-17, 1993.
63. "Intraspinal Therapy vs Oral Therapy: Unresolved Issues" presented at Dannemiller Conference: OPIOIDS FOR NON-MALIGNANT PAIN - Past Problems, Present Practices, Future Directions, Atlanta, Georgia; April 16-17, 1993.
64. "If All Else Fails ...Invasive Approaches for Managing Cancer Pain" presented at The Fifth Annual Hugh Cumming Memorial Teaching Day on Cancer Pain - The Nature of Suffering: Caring For People with Symptomatic Cancer - Rochester NY, May 7, 1993.
65. Course Director and Faculty: Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at San Antonio Texas - May 14-15, 1993.
66. "Cancer Pain Management" presented at PAIN MANAGEMENT: A COLLABORATIVE APPROACH, sponsored by Doctors Medical Center, Modesto, CA. June 5, 1993.
67. "Spinal Cord Stimulation: Mechanisms of Action" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Boston, Mass; July 16 - 18, 1993
68. " Patient Selection for Spinal Cord Stimulation" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Boston, Mass; July 16 - 18, 1993.
69. "New Applications for Spinal Cord Stimulation" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Boston, Mass; July 16 - 18, 1993.

71. "Avoiding Technical Difficulties and Troubleshooting Post Implantation Problems", presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Boston, Mass; July 16 - 18, 1993.
72. "Implantation Techniques for Implantable Continuous Infusion Drug Delivery Systems" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Boston, Mass; July 16 - 18, 1993.
73. "Spinal Administration of Opioids for Non-Malignant Pain, A United States Experience, presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Boston, Mass; July 16 - 18, 1993.
74. "Implantation Techniques for Totally Implantable Drug Administration Systems" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Nice France, August 16-19, 1993.
75. "Spinal Administration of Opioids for Nonmalignant Pain, A United States Experience" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Nice France, August 16-19, 1993.
76. "Mechanisms of Action of Spinal Cord Stimulation" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Nice France, August 16-19, 1993.
77. "Implantable Technologies for Pain Control: Spinal Cord Stimulation or Spinally administered opioids: An Algorithm for Decision-making" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, Nice France, August 16-19, 1993.
78. " Spinal Cord Stimulation versus Drug Delivery Systems", presented at Pain Management Strategies for the Primary Care Physician: Techniques for the Interventionalist, Minneapolis, MN, October 1-2, 1993.
79. " Spinal Cord Stimulation and Drug Delivery System Implant Techniques", presented at Pain Management Strategies for the Primary Care Physician: Techniques for the Interventionalist, Minneapolis, MN, October 1-2, 1993.
80. "Indications for Interventional Pain Management" , presented at Flemish Pain Society, Brugge Belgium, Oct 18, 1993.
81. "Central Nervous System Pain Modulation" presented at International Meeting - Spinal Cord Stimulation, An Innovative Method In The Treatment Of PVD., Cologne Germany, October 21-23, 1993.
82. "Mechanisms for Pain Transmission" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Orlando Florida, Oct 29 - 31, 1993
83. "Therapy Decision Framework" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Orlando Florida, Oct 29 - 31, 1993

Anesthesiologists, National Meeting held at Orlando Florida, Oct 30, 1993

86. "Neuromodulation and Neurobiology of Pain" 3rd Annual University of California - Davis Symposium on Pain Management, UC Davis Medical Center; Silverado Country Club; Napa, CA; November 19 - 20, 1993.
87. "When all else fails - a place for interventional pain management". Sloan Kettering Memorial Hospital; New York, NY; December 9-10, 1993
88. "Neuraxial Narcotics" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Tempe, Arizona. Jan 21-23, 1994.
89. "Therapy Decision Framework" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Tempe, Arizona. Jan 21-23, 1994.
90. "Interventional Pain Control - Complications" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Tempe, Arizona. Jan 21-23, 1994.
91. "Implantable Pump Experience for Pain Management", Pain Meeting; Dublin, Ireland; January 29, 1994.
92. "SCS Overview", Pain Meeting; Dublin, Ireland; January 29, 1994.
93. "Implantable Technologies for Pain Control: Spinal Cord Stimulation or Spinally administered opioids: An Algorithm for Decision-making", Pain Meeting; Dublin, Ireland; January 29, 1994.
94. "Spinal Cord Stimulation Mechanism", Pain Management Board Review Course, Osler Institute, Las Vegas, NV, February 9-13, 1994
95. "Indication for Techniques of Spinal Opioids", Pain Management Board Review Course, Osler Institute, Las Vegas, NV, February 9-13, 1994
96. "When to pump and when to stimulate", Pain Management Board Review Course, Osler Institute, Las Vegas, NV, February 9-13, 1994
97. "Mechanisms for Pain Transmission" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at New Orleans, LA, Jan 11-13, 1994.
98. "Therapy Decision Framework" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at New Orleans, LA, Jan 11-13, 1994.
99. "Mechanisms for Pain Transmission" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Washington DC, May 20-22, 1994.
100. "Therapy Decision Framework" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Washington DC, May 20-22, 1994.

- I02. "Complications: Surgical & Medical Complications; Long-Term Troubleshooting" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Washington DC, May 20-22, 1994.
- I03. "Do Opioids have a role in the management of Nonmalignant Pain?" Comprehensive Pain Management Symposium held at Lehigh Valley Hospital in Allentown, PA, June 16, 1994.
- I04. "Mechanisms of Pain Transmission" Course Director and Faculty: Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Minneapolis, MN; August 12-14, 1994.
- I05. "Therapy Decision Framework", Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Minneapolis, MN; August 12-14, 1994.
- I06. "Patient selection for implantable infusion systems", Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Minneapolis, MN; August 12-14, 1994.
- I07. "Complications of Implantable Technology", Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Minneapolis, MN; August 12-14, 1994.
- I08. "Indications for Drug Administration Systems"; Combined Meeting of Dutch Pain Society and Pain Society of Britain and Ireland; Amsterdam, The Netherlands; September 22-24, 1994.
- I09. "Spinal Cord Stimulation or Spinally Administered Narcotics: Algorithm of Treatment"; Combined Meeting of Dutch Pain Society and Pain Society of Britain and Ireland; Amsterdam, The Netherlands; September 22-24, 1994.
- I10. Panel Director and Speaker: "Intraspinal Opioids"; 4th International Congress of the Israel Pain Association; Tel Aviv, Israel, September 27 - 30, 1994.
- I11. "When All Else Fails: A Place For Interventional Pain Management", 4th International Congress of the Israel Pain Association; Tel Aviv, Israel, September 27 - 30, 1994.
- I12. "Intraspinal Morphine for Cancer Pain"; Spanish Pain Society; Cadiz, Spain; October 5 - 8, 1994.
- I13. "Pharmacological Strategies in Pain Management"; presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, San Diego, CA, November 18-20, 1994.
- I14. "Implantable Drug Delivery Systems or Spinal Cord Stimulation: Matching the Modality to the Patient"; presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, San Diego, CA, November 18-20, 1994.
- I15. "An Overview of Implantable Drug Delivery Systems"; presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, San Diego, CA, November 18-20, 1994.

117. "Current Status of Spinal Opioids for Non-Malignant Pain" presented at Dannemiller Interventional Anesthesia Conference: INTERVENTIONAL PAIN MANAGEMENT - An Advanced Techniques Workshop, San Diego, CA, November 18-20, 1994.
118. "Mechanisms for Pain Transmission" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at San Diego, CA; Dec 9 - 11, 1994
119. "Mechanisms for Neurostimulation" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at San Diego, CA; Dec 9 - 11, 1994
120. "Complications of Implantable Technology" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at San Diego, CA; Dec 9 - 11, 1994
121. "Long term Intrathecal Therapy for Nonmalignant Pain: Current Experience" presented at a meeting OPIOIDS FOR NONMALIGNANT PAIN: PAST PROBLEMS, PRESENT PRACTICES AND FUTURE DIRECTIONS, Tempe, Arizona, January 20-22, 1995.
122. "Intraspinal Therapy for Nonmalignant Pain: Unresolved Issues" presented at a meeting OPIOIDS FOR NONMALIGNANT PAIN: PAST PROBLEMS, PRESENT PRACTICES AND FUTURE DIRECTIONS, Tempe, Arizona, January 20-22, 1995.
123. "Mechanisms for Pain Transmission" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Lake Buena Vista Florida, March 17-19, 1995.
124. "Mechanisms for Neurostimulation" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Lake Buena Vista Florida, March 17-19, 1995.
125. "Therapy Decision Framework" - Implantable Techniques Workshop: Spinal Cord Stimulation and Implantable Drug Infusion - Management of Chronic Pain, Dannemiller 2/1/2 day workshop at Lake Buena Vista Florida, March 17-19, 1995.
126. "The Emerging Role Of The Anesthesiologist In Pain Medicine", presented at the American Association of Neurosurgeons, Orlando Fla, April 26, 1995.
127. "The Role Of Implantable Devices In Malignant And Nonmalignant Pain", presented at the Mercy Neuroscience Institute, Miami, Florida, April 27, 1995.
128. "The Role Of Spinally Administered Narcotics In The Management Of Chronic Non-Malignant Spinal Pain", presented at the INTERVENTIONAL SPINAL DIAGNOSTIC INJECTION AND INTERVENTIONAL SPINE PAIN MANAGEMENT CONFERENCE, Oklahoma City, Oklahoma, May 6-7, 1995
129. "The Role Of Spinally Administered Narcotics In The Management Of Cancer Pain", presented at the INTERVENTIONAL SPINAL DIAGNOSTIC INJECTION AND INTERVENTIONAL SPINE PAIN MANAGEMENT CONFERENCE, Oklahoma City, Oklahoma, May 6-7, 1995
130. "Clinical Pathways in Chronic Pain Management", presented at ADVANCE INVASIVE PAIN MANAGEMENT ROUNDTABLE, King Salmon, Alaska, July 14-17 1995.

132. "Pain Management in the 90's, California Dental Association, San Francisco, CA; September 8, 1995,
133. "Symposium on Spinal Cord Stimulation: Indication, Techniques, & Complications", presented at The Sampson Lipton Memorial Meeting: Pain Mechanisms and Management, Liverpool England, September 21-23 1995.
134. "Symposium on Back Pain", presented at The Sampson Lipton Memorial Meeting: Pain Mechanisms and Management, Liverpool England, September 21-23 1995.
135. "Indications for Implantable Technologies for nonmalignant pain " University of Nejmegen Pain Clinic; Nijmegen in The Netherlands - Europe, September 26, 1995.
136. "Opioids for NonMalignant Pain", University of Maastricht, The Netherlands, November 21, 1995.
137. "Opioids for NonMalignant Pain", University of Amsterdam, The Netherlands, November 24, 1995.
138. "The Role of Fluoroscopy in Spinal Pain Management", The Fifth Annual Practicing Physician's Approach to the Pain Patient, Sponsored by the Dannemiller Memorial Foundation, Palm Springs, Ca., February 10-14, 1996
139. "Cancer Pain: Evaluation and Treatment", The Fifth Annual Practicing Physician's Approach to the Pain Patient, Sponsored by the Dannemiller Memorial Foundation, Palm Springs, Ca., February 10-14, 1996
140. "Spinal Cord Stimulation", The Fifth Annual Practicing Physician's Approach to the Pain Patient, Sponsored by the Dannemiller Memorial Foundation, Palm Springs, Ca., February 10-14, 1996
141. "Spinal Opioids", The Fifth Annual Practicing Physician's Approach to the Pain Patient, Sponsored by the Dannemiller Memorial Foundation, Palm Springs, Ca., February 10-14, 1996
142. "Matching the Patient to the Invasive Therapeutic Modality and the Avoidance of Treatment Complications", The Fifth Annual Practicing Physician's Approach to the Pain Patient, Sponsored by the Dannemiller Memorial Foundation, Palm Springs, Ca., February 10-14, 1996
143. "Intraspinal Narcotics" presented at the European Continuing Medical Training Meeting entitled Implantable Techniques Workshop: Training In Interventional Techniques For Managing Chronic Pain Patients; Paris France; February 16 to 18, 1996.
144. "Therapy Decision Framework" presented at the European Continuing Medical Training Meeting entitled Implantable Techniques Workshop: Training In Interventional Techniques For Managing Chronic Pain Patients; Paris France; February 16 to 18, 1996.
145. "Practice Consideration: Pain Management" presented at the European Continuing Medical Training Meeting entitled Implantable Techniques Workshop: Training In Interventional Techniques For Managing Chronic Pain Patients; Paris France; February 16 to 18, 1996.
146. "Multi-electrode Implant Techniques" Advanced Techniques in Chronic Pain Management" Dannemiller 2/1/2 day workshop at Memphis, Tenn. Feb - 25, 1996.
147. "The Patient with the Implanted Pump: Complications and Management Issues" presented at the Combined International Neuromodulation Society and American Neuromodulation Society, Orlando, Fla, March 6 - 10, 1996.
148. Organizer and Chairman of the Post INS/ANS meeting on Neuromodulatory Technique Issues; Napa Valley CA, May 10 - 13, 1996.

150. "Update on Alternative Drugs for Epidural and Spinal Administration", presented at Interventional Pain Management Meeting, Official Satellite Meeting of the IASP 8th World Congress on Pain , Hamilton, Bermuda, August 11-15, 1996.
151. "Spinal Cord Stimulation: Mechanisms of Action", presented at Interventional Pain Management Meeting, Official Satellite Meeting of the IASP 8th World Congress on Pain , Hamilton, Bermuda, August 11-15, 1996.
152. "Factors in Patient Selection for Spinal Cord Stimulation", presented at Interventional Pain Management Meeting, Official Satellite Meeting of the IASP 8th World Congress on Pain , Hamilton, Bermuda, August 11-15, 1996.
153. "Implantable Drug Delivery Systems or Spinal Cord Stimulation: Matching the Modality to the Patient", presented at Interventional Pain Management Meeting, Official Satellite Meeting of the IASP 8th World Congress on Pain , Hamilton, Bermuda, August 11-15, 1996.
154. "When to Use Spinally Administered Opioids or Spinal Cord Stimulation: An Algorithm for Decision-Making", presented at a Refresher Course at the International Association for the Study of Pain 8th World Congress, Vancouver, Canada, August 17 - 22, 1996.
155. "Intrathecal Drug Delivery in the Treatment of Chronic Pain", presented at International Seminar on Pain Therapy at University Cattolica, Rome Italy, September 27, 1996.
156. "Intraspinal Opioids in the treatment of Cancer Pain", presented at the University of Izmir, Izmir Turkey, on September 30, 1996.
157. "Intrathecal Opioids in the Cancer Pain Patient", A Plenary Session, presented at the 7th International Symposium THE PAIN CLINIC, Istanbul - Turkey, October 2 - 6th, 1996.
158. "The Algorithm Of Implantation Techniques", presented at the 7th International Symposium THE PAIN CLINIC, Istanbul - Turkey, October 2 - 6th, 1996.
159. "Intrathecal Clonidine, Baclofen and SNX-111" presented at First Budapest Interventional Pain Workshop on Pain Procedures for Chronic Pain, Sponsored by the World Institute of Pain, Budapest, Hungary, October 8-11, 1996.
160. "The Role of Opioids in Non-Cancer Pain"; presented at the American College of Osteopathic Internists 1996 Annual Conference; October 31, 1996, San Francisco, CA
161. Spinal Cord Stimulation Workshop Moderator and speaker at Advance Pain Practice Management Workshop, Friday October 31, 1996; San Francisco, CA.
162. "Implantable Technologies for Pain Control" presented at 1997 American Academy of Pain Medicine Review Course, Scottsdale Arizona, Feb 14, 1997.
163. "The role of Fluoroscopy in Spinal Pain Management" presented at the Sixth Annual Practicing Physician's Approach to the Pain Patient, Palm Springs, CA, Feb 15-19; 1997.
164. "The role of Fluoroscopy in Spinal Pain Management" presented at the Sixth Annual Practicing Physician's Approach to the Pain Patient, Palm Springs, CA, Feb 15-19; 1997.

to the Pain Patient, Palm Springs, CA, Feb 15-19; 1997.

167. "Spinal Cord Stimulation" presented at the Sixth Annual Practicing Physician's Approach to the Pain Patient, Palm Springs, CA, Feb 15-19; 1997.
168. "Spinal Opioids" presented at the Sixth Annual Practicing Physician's Approach to the Pain Patient, Palm Springs, CA, Feb 15-19; 1997.
169. "Matching the Patient to Implantable Therapeutic Modality and the Avoidance of Treatment Complications" presented at the Sixth Annual Practicing Physician's Approach to the Pain Patient, Palm Springs, CA, Feb 15-19; 1997.
170. "Mechanisms of Neurostimulation", presented at PAIN FELLOWS Interventional Therapies Workshop, Memphis, Tenn., Jan 10-123, 1997.
171. "Drug Administration Systems: Management of Complications", presented at PAIN FELLOWS Interventional Therapies Workshop, Memphis, Tenn., Jan 10-123, 1997.
172. "The Management of Cancer Pain", presented at the Chattanooga Regional Oncological Society, Chattanooga Tenn., Feb, 24, 1997.
173. "Neural Augmentation", presented at the Family Practice Residents Conference, Chattanooga Tenn., Feb, 24, 1997.
174. "Spinal infusion catheter placement" presented at the American Association of Neurological Surgeons and Congress of Neurological Surgeons Pain Section satellite workshop, Denver, Colo, Feb 7 - 9, 1997
175. "Peripheral ablative techniques (denervations: facet, intercostal, sympathetic) " presented at the American Association of Neurological Surgeons and Congress of Neurological Surgeons Pain Section satellite workshop, Denver, Colo, Feb 7 - 9, 1997
176. "Ablative techniques discussion" presented at the American Association of Neurological Surgeons and Congress of Neurological Surgeons Pain Section satellite workshop, Denver, Colo, 2/7/97 to 2/9/97.
177. "Peripheral nerve ablative techniques" presented at the American Association of Neurological Surgeons and Congress of Neurological Surgeons Pain Section satellite workshop, Denver, Colo, 2/7/97 to 2/9/97.
178. "SCS vs DAS - Algorithm for decision making" presented at INTERVENTIONAL PAIN MANAGEMENT - Practical Anatomy and Surgical Technique Workshop, St. Louis, Mo., May 2-4, 1997.
179. "Intraspinal Opioid Mechanism and Alternative Drugs" presented at INTERVENTIONAL PAIN MANAGEMENT - Practical Anatomy and Surgical Technique Workshop, St. Louis, Mo., May 2-4, 1997.
180. Course Co-Director and Speaker at the First Interventional Techniques for the Management of Pain, Vallodolid, Spain, 9/16 - 9/19, 1997
181. "Chronic Pain Management: My Way Is the Correct Way", at the 16th Annual Scientific Meeting, American Pain Society, New Orleans, October 23-26, 1997.
182. Course Co-Director and Speaker - Professional Development Course "When All Else Fails: Establishing an Appropriate Place for Implantable Technologies in Pain Management at the 16th Annual Scientific Meeting, October 23-26, New Orleans, 1997.

184. "Chronic Pain Management: My Way Is the Correct Way", at the 16th Annual Scientific Meeting, American Pain Society, New Orleans, October 23-26, 1997.
185. Course Co-Director and Speaker - Professional Development Course "When All Else Fails: Establishing an Appropriate Place for Implantable Technologies in Pain Management at the 16th Annual Scientific Meeting, October 23-26, New Orleans, 1997.
186. "A Place for Implantable Technologies: When All Else Fails" presented at Pain and Its Management - An Advanced Course presented at a Dannemiller Review Course on Pain, Palm Springs, CA January 17-21, 1998.
187. "Selection Criteria for Implantable Technologies: Spinal Cord Stimulation vs. Spinally-Administered Analgesics" presented at Pain and Its Management - An Advanced Course presented at a Dannemiller Review Course on Pain, Palm Springs, CA January 17- 21, 1998.
188. "Mechanism of Action of Spinal Cord Stimulation" presented at Pain and Its Management - An Advanced Course presented at a Dannemiller Review Course on Pain, Palm Springs, CA January 17- 21, 1998.
189. "The Pharmacology of Spinal Analgesia: Management Guidelines" presented at Pain and Its Management - An Advanced Course presented at a Dannemiller Review Course on Pain, Palm Springs, CA January 21, 1998.
190. "Outcomes of Implantation Technologies" presented at Pain and Its Management - An Advanced Course presented at a Dannemiller Review Course on Pain, Palm Springs, CA January 21, 1998.
191. Scientific Chair and Speaker - Review Course for the American Academy of Pain Medicine 1998, San Diego, CA Feb 11 - 15, 1998
192. "Management of Neuropathic Pain" presented at Yale University School of Medicine Winter Symposium, 193. Vail, Colo, Feb 3 - 4, 1998.
194. "Interventional Procedures for Neurological Conditions" presented at Yale University School of Medicine Winter Symposium, Vail, Colo, Feb 3 - 4, 1998.
195. Faculty presenter at Advanced Interventional Pain Management Techniques; Maricopa Health System; Palm Springs, California; February 21-22, 1998
196. "A Place for Implantable Technology" presented at the 7th John J. Bonica Maui Winter Pain Conference in Maui, Hawaii, March 24-27, 1998.
197. "An Algorithm for Decision Making in Interventional Pain Management" presented at the 7th John J. Bonica Maui Winter Pain Conference in Maui, Hawaii, March 24-27, 1998.
198. "Mechanisms of Spinal Cord Stimulation" presented at the 7th John J. Bonica Maui Winter Pain Conference in Maui, Hawaii, March 24-27, 1998.
199. "Intraspinal Opioids for Cancer and Non-Cancer Pain" presented at the 7th John J. Bonica Maui Winter Pain Conference in Maui, Hawaii, March 24-27, 1998.
200. "Spinal Opioids for Cancer and Non-Cancer Pain" presented at 8th World Congress The Pain Clinic; May 6 to May 10, 1998, Tenerife, Canary Islands, Spain

Texas, June 5-7, 1998.

203. "Common Problems in Pain Management - Case Discussion", presented at The California Society of Anesthesiologists Annual Meeting and Postgraduate Seminar, San Francisco, CA, June 5-7, 1998
204. "Pain Management in the 90's, Key Issues to Consider", New York Regional Pain Management Seminar, Ithaca, New York, July 24 - 26, 1998.
205. "Pumps and Implantable Stimulator for Pain: What is Their Role and How Are They Best Used", New York Regional Pain Management Seminar, Ithaca, New York, July 24 - 26, 1998.
206. "Physiology of Pain" presented at the 4th International INS Congress; Lucerne, Switzerland, September 16-20, 1998,
207. "Chemical Neuromodulation" presented at the 4th International INS Congress; Lucerne, Switzerland, September 16-20, 1998
208. "Spinal Cord Stimulation" presented at 3rd International Pain Conference, Interventional Procedures for Chronic Pain, Sponsored by World Institute of Pain, Budapest, Hungary. September 20-23, 1998.
209. "Current Interventional Techniques In Pain Management", presented at the Interventional Pain conference and Cadaver Workshop, Sponsored by World Institute of Pain, Athens Greece; Sept 26 to Sept 28, 1998.
210. "Spinal Narcotics", presented at the Interventional Pain conference and Cadaver Workshop, Sponsored by World Institute of Pain, Athens Greece; Sept 26 to Sept 28, 1998.
211. "A role for implantable technologies for pain control", presented at the University of Cairo, Cancer Pain Management Center, Cairo Egypt, Nov 9, 1998
212. "A role for implantable technologies", presented at the 15th Annual Meeting on Pain Research and Therapy; November 12-15, 1998; Zaafarana, Egypt
213. "Spinal Cord Stimulation: Indications, Mechanisms of Action, Efficacy", presented at PAIN MANAGEMENT - TOWARDS 2000, Eilat Israel, Nov 17 - 21, 1998.
214. "Practical issues in the use of neuraxial infusion in patients with pain due to advanced cancer" presented at symposium MANAGING PAIN IN PATIENTS WITH ADVANCED CANCER: THE ROLE OF NEURAXIAL INFUSION, New York Jan 11, 1999.
215. Course Co-Director and Faculty, American Academy of Pain Medicine Hands-On Cadaver Course/Interventional Pain Management Techniques, Palm Springs, CA Feb 10, 1999.
216. Course Co-Director and Faculty, The Egyptian International Congress on Pain, Sharm-El-Sheik, Egypt, October 10 to 13, 1999
217. "The Role of Interventional Strategies in Cancer Pain" The Egyptian International Congress on Pain, Sharm-El-Sheik, Egypt, October 10 to 13, 1999
218. "Introducing The Pain Treatment Continuum" The Egyptian International Congress on Pain, Sharm-El-Sheik, Egypt, October 10 to 13, 1999
219. "Implantable Technology in Pain Practice: What is it?" The Egyptian International Congress on Pain, Sharm-El-Sheik, Egypt, October 10 to 13, 1999

221. "Role of Interventional Strategies in Cancer Pain" The Egyptian International Congress on Pain, Sharm-El-Sheik, Egypt, October 10 to 13, 1999
222. "Implantable Technologies for Pain Control: Appropriate Indications and Management Guidelines" Moderator at Professional Development Course at American Pain Society, Fort Lauderdale, October 21 to October 24, 1999.
223. "Radiofrequency Thermal Neurolysis: A Role in the Treatment of Intractable Pain", presented at the 6th Pan Arab Conference on Anaesthesia and Emergency Medicine, Abu Dhabi, United Arab Emirates, Jan 17 - 21, 2000
224. "Spinal Cord Stimulation: Indications, Mechanism of Action & Efficacy" presented at the 6th Pan Arab Conference on Anaesthesia and Emergency Medicine, Abu Dhabi, United Arab Emirates, Jan 17 - 21, 2000
225. "Chronic Pain and Disability", presented at the 6th Pan Arab Conference on Anaesthesia and Emergency Medicine, Abu Dhabi, United Arab Emirates, Jan 17 - 21, 2000
226. "The Endogenous Neuromodulatory System", presented at John Bonica Pain Conference, Maui, March 29, 2000
227. "Chemical Neuromodulation: New Drugs for the Millennium", presented at John Bonica Pain Conference, Maui, March 29, 2000
228. "Overview of Spinal Cord Stimulation", presented at John Bonica Pain Conference, Maui, March 29, 2000
229. "A Logical Approach to Pain Management", presented at John Bonica Pain Conference, Maui, March 29, 2000
230. "A Simplified Presentation of the Neurobiology of Pain Processing and Modulation", presented at John Bonica Pain Conference, Maui, March 29, 2000
231. "Implantable Technologies: Indications and Use" presented at 5<sup>th</sup> Annual Budapest International Pain Conference, Budapest, Hungary, September, 2000.
232. "Spinal Endoscopy in Clinical Practice" presented at the 1<sup>st</sup> Japanese Society for Spinal Endoscopy, Fukuoka, Japan, October, 2000.
233. "Implantable Technologies: Indications and Use" presented at the Annual Society for Physical Medicine and Rehabilitation, San Francisco, CA, November 2000
234. Participant in International Roundtable: Place of opioids in chronic non-malignant pain, sponsored by Janssen Pharmacia, Rome, Italy, November 15-16, 2000.
235. "Pain Management for the Year 2001" presented at the California Society of Neurosurgeons, San Diego, California, January, 2001
236. "The Neurobiology of Pain" presented at the American Academy of Pain Medicine Annual Conference, February, 2001, Miami Beach, Fl.
237. "Interventional Techniques for the Treatment of Low Back Pain" presented at the American Academy of Pain Medicine Annual Conference, February, 2001, Miami Beach, Fl.
238. "Intrathecal Analgesia Today and the Future" presented at the AAPM Conference, Orlando, Fl., March 2001.

240. "Opioid therapy for non-malignant pain," EULAR Conference, Prague, Czech Republic, June 14, 2001
241. "Patient Selection and Indications for Implantable Devices," Florence, Italy, June 9<sup>th</sup>, 2001.
242. "Clinical Evaluation of Transdermal Fentanyl for Cancer Pain" University of Tokyo, Tokyo, Japan, November 20, 2001.
243. "Proceedures of the Neck and Thoracic Spine", A Skills Course for Pain Physicians, Preconference Activities of the National Meeting of the American Academy of Pain Medicine, February 27, 2002, San Francisco, California
244. "The Neurobiology of Pain", American Academy of Pain Medicine National Conference, February 28, 2002, San Francisco, California
245. "Debate: The Use of Waddell's Signs in Pain Medicine; Con" American Academy of Pain Medicine, February 28, 2002, San Francisco, California
246. "Roundtable Discussion Leader: Ethics in Pain Medicine" American Adademy of Pain Medicine, February 29, 2002, San Francisco, California
247. "Management of Chronic Pain-2002" Texas Tech School of Medicine, Lubbock, Texas, April 22, 2002.
248. "Opioid Guidelines", Texas Tech School of Medicine, Lubbock, Texas, April 23, 2002.
249. "The Neurobiology of Pain for the Pain Clinician", ASRA National Conference, Chicago, Illinois, April 26, 2002.
250. "The Use of IDET and Discography in the Management of Diskogenic Pain", The American Neuromodulation Society and Johns Hopkins Pain Meeting, Orlando, Florida, May, 24, 2002
251. "Intrathecal Therapies, choosing the Right Agent", The American Neuromodulation Society and Johns Hopkins Pain Meeting, Orlando, Florida, May, 25, 2002
252. "Invasive Pain Management Options" CSIMS Meeting, Orange County, California, June 29, 2002
253. "Guidelines for Intrathecal Therapies" Simposio Romano sulla Neuromodulazione, Rome, Italy, December 13,14, 2002
254. "Use of Challenge Diskography, a Cadaver Demonstrations Course": Diagnosis and Treatment of Discogenic Pain, AAPM Meeting, New Orleans, LA, 2/18/03
255. "Intrathecal Therapy Guidelines" French Neurosurgical Society, Perpignan, France, March 26, 2003
256. "When to Use SCS and When to Use Intrathecal Therapies," Greek Neurosurgical Society, Athens, Greece, April 4, 2003
257. "Intrathecal Therapy Guidelines," Greek Neurosurgical Society, Athens, Greece, April 4, 2003
258. "SCS for Novel Indications:" North American Neuromodulation Society Meeting, Orlando, Florida, May 24, 2003

Neuromodulation Society, June 27, 2003, Madrid, Spain

261. "Intrathecal Therapies" talk to Fellows in Pain medicine, Memphis Tennessee, November 1, 2003
262. "Interventions for the Head and Neck" Demonstrations Cadaver Course, Pre-conference, North American Neuromodulation Society 8<sup>th</sup> Annual Scientific Meeting, Orlando Florida, April 28<sup>th</sup>, 2004
263. "Newer Guidelines for Intrathecal Therapies" North American Neuromodulation Society, 8<sup>th</sup> Annual Scientific Meeting, Orlando Florida, April 30<sup>th</sup>, 2004.
264. "Cancer Pain, the Facts," Presentation to Johnson and Johnson Pharma, Internal Education Program, New Brunswick, NJ, June 16, 2004
265. "Cancer Pain Management," Presentation to Johnson and Johnson Pharma, Internal Education Program, New Brunswick, NJ, June 16, 2004
266. "Pain Care for the Primary Care Physician" Presentation to Primary Care Physicians, Billings, Montana, December 3, 2004
267. "Pharmacology of Pain Management" Presentation to Primary Care Physicians, Billings, Montana, December 3, 2004
268. "Complex Regional Pain Syndrome" Presentation to Primary Care Physicians, Billings, Montana, December 3, 2004
269. "Practice of Pain Medicine, a matter of ethics" American Academy of Pain Medicine, Palm Springs, CA, February, 2005
270. "Intrathecal Therapies, the Context," American Academy of Pain Medicine, Palm Springs, CA, February, 2005
271. "Low Back Pain, Diagnostic and Treatment Options," a RoundTable Discussion, American Academy of Pain Medicine, Palm Springs, CA, February, 2005
272. "Cancer Pain Management," American Academy of Pain Medicine, Palm Springs, CA, February, 2005
273. "Implantable Technologies for Pain Control" University of Oklahoma, Department of Anesthesiology, Oklahoma City, 4/21/05
274. "Intrathecal Therapies" University of Oklahoma, Department of Anesthesiology, Oklahoma City, 4/22/05
275. "Intrathecal Therapies," Invited Presentation, Memorial Hospital, Modesto, California, May 5, 2005.
276. "Intrathecal Therapies," Invited Presentation, Memorial Hospital, Modesto, California, May 6, 2005.
277. "SCS for Visceral Disorders" International Neuromodulation Society, Rome, Italy, June 12, 2005
278. "Polypharmacy for Intrathecal Therapies" World Society for Stereotactic and Functional Neurosurgery, Rome, Italy, June 14, 2005.
279. "SCS for Intractable Angina" 9<sup>th</sup> Annual Scientific Meeting, NanS, Washington, DC, November 11<sup>th</sup>, 2005

2006

282. "SCS for Angina" Korean Society for Functional and Stereotactic Neurosurgery, Yonsei University, Seoul, Korea, April 1, 2006.
283. "SCS for Visceral Painful Disorder" Korean Society for Functional and Stereotactic Neurosurgery, Yonsei University, Seoul, Korea, April 1, 2006.
284. "Intrathecal Therapy Guidelines," Canadian Neuromodulation Workshop, Vancouver, Canada, 4/8/06
285. "SCS for Visceral Painful Disorder," Canadian Neuromodulation Workshop, Vancouver, Canada, 4/8/06
286. "SCS for Visceral Painful Disorder," University of Maryland Medical Center, Special Lecture, Baltimore, Maryland, 5/3/06
287. "SCS for Angina" University of Maryland Medical Center, Anesthesia Grand Rounds, Baltimore, Maryland, 5/4/06
288. "Principles of SCS" University of Maryland Medical Center, Special Lecture, Baltimore, Maryland, 5/4/06
289. "SCS for Intractable Angina" 2<sup>nd</sup> Congress, Japanese Neuromodulation Society, Tokyo, Japan, May 20, 2006
290. "SCS for Painful Visceral Disorder" 2<sup>nd</sup> Congress, Japanese Neuromodulation Society, Tokyo, Japan, May 20, 2006
291. "Neurobiology of Pain" American Occupational Health Professionals Congress, Sacramento, California, October 4, 2006
292. "Pain Medicine, a Primer" American Occupational Health Professionals Congress, Sacramento, California, October 4, 2006
293. "Mechanisms of Membrane Stabilization" American Occupational Health Professionals Congress, Sacramento, California, October 4, 2006
294. "Advanced Pain Management Strategies" American Occupational Health Professionals Congress, Sacramento, California, October 4, 2006
295. "SCS for Angina" NANS meeting, Las Vegas, December 7, 2006
296. "Whom do we Serve" NANS meeting, Las Vegas, December 8, 2006
297. "SCS for Visceral Painful Disorder" NANS Meeting, Las Vegas, December 10, 2006
298. "SCS for Angina", International Brain Science Symposium, Beijing, China, April 1, 2007
299. "SCS for Angina" Tangdu Hospital, fourth Military Medical University, Xian, China, April 3, 2007
300. "SCS for Angina" 1<sup>st</sup> Korean Neuromodulation Society Meeting, Seoul, Korea, April 7, 2007
301. Hands on Conference Interventional Workshop. St. Thomas/Guy's Hospital London, UK, October 5-7, 2007
302. "SCS for Visceral Pain Syndromes." INS World Congress, Acapulco, Mexico, December, 2007

CA, October 3, 2008

305. "The Neurobiology of Pain". Napa Pain conference, Napa, CA, October 3, 2008
306. "SCS for Angina". Napa Pain conference, Napa, CA, October 3, 2008
307. Hands on Conference Interventional Workshop. St. Thomas/Guy's Hospital London, UK, October 17-19, 2007
308. "Whom do we Serve in Neuromodulation". Neurotech Leader's Forum. San Francisco, CA, October 24, 2008
309. "S.A.F.E Principles." Seoul Korea, 9<sup>th</sup> World Congress, the INS, Sept 12-15<sup>th</sup>, 2009
310. "Principles of SCS for LBP: Introducing Triangular Stimulation" Seoul Korea, 9<sup>th</sup> World Congress, the INS, Sept 12-15<sup>th</sup>, 2009
311. "Principles of Pain Management" Residency Academic Day, Vancouver BC, 10/21/09
312. "Neuromodulation: Whom do we Serve", Residency Academic Day, Vancouver BC, 10/21/09
313. "Principles of Intrathecal Therapy" Residency Academic Day, Vancouver BC, 10/21/09