

Timothy R. Deer  
Jason E. Pope  
*Editors*

# Atlas of Implantable Therapies for Pain Management



Second Edition

 Springer

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Timothy R. Deer, MD  
The Center for Pain Relief  
Charleston, WV  
USA

Jason E. Pope  
Summit Pain Alliance  
Santa Rosa, CA  
USA

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*To Melissa Deer, my partner in all things and loving wife, who has inspired me for almost 30 years. I look forward to the next 30 years of love and success.*

*To my children, Morgan, Taylor, Reed, and Bailie, I also dedicate this book. They are my inspiration for life and daily reminders of the blessings I have been given.*

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*This book is dedicated to those who struggle against chronic pain and suffering. The patient–doctor relationship is a special one that touches the soul of the physician, who experiences the success and failure of achieving the desired result.*

*Most importantly, eternal thanks and glory for all things to God. My daily life is enhanced by my relationship with God, and I know that all success is by his grace.*

*Timothy R. Deer, MD*

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*To Springer for their continued precision and timeliness in making this second edition a reality.*

*To the many people who battle chronic pain: you are not alone in this fight—this atlas is an effort to arm your physician partners with more tools in their bag of tricks, improving outcomes and management of your needs.*

*And finally, thank you to God for making all things possible.*

*Jason E. Pope*

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## Preface

In this second edition, we refine and expand our teaching in the area of pain treatment using neuromodulation, which we believe is critical to reduce the global epidemic of opioid abuse, societal dysfunction, and the malaise of suffering that so many experience.

Added improvements in this edition include new techniques, new targets, new waveforms, and new concepts in neurostimulation. We also update the brain and spine sections for the neurosurgical treatment of pain via neural bioelectric delivery. The use of intrathecal drug delivery is updated with a focus on safety. We add a section of infection control and reduction of bleeding risks. We have added new drawings, photographs, and tables to further make this a more comprehensive Atlas and to make it more applicable in daily use by our readers.

In the past 5 years, much has evolved in the field of neuromodulation. In addition to pain, we are making great advances in the area of urinary and gastrointestinal health, cardiovascular diseases, Parkinson's disease, inflammatory diseases of the body, and neurological diseases that are life altering and very expensive to society. We expect the third volume of this Atlas in a few years to focus on all of these areas of interest and neuromodulation for the treatment of pain to play a smaller yet important role in a vastly expanding field.

This book is intended to complement fellowship training, peer-to-peer experiences, and hands-on continuing medical education. By giving the visual description of each technique, we intend to improve physician practice and enhance outcomes. The physicians who have collaborated on this book are world class in their research, clinical acumen, and ethics of practice.

We are hopeful that this book becomes a daily reference for students, residents, fellows, and experienced physicians as they strive to help ease suffering.

Charleston, WV, USA

Timothy R. Deer





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## Contributors

**David Abejón** Hospital Universitario Quirón Madrid, Madrid, Spain

**Marina V. Abramova** Department of Neurosurgery, Louisiana State University Health Sciences Center, New Orleans, LA, USA

**Kasra Amirdelfan** IPM Medical Group, Inc., Walnut Creek, CA, USA

**Kenneth M. Aló** The Methodist Hospital Research Institute, Houston, TX, USA

**Greg A. Bara** Department of Neurosurgery, University Hospital Dusseldorf, Düsseldorf, Germany

**Giancarlo Barolat, MD** Barolat Neuroscience, Presbyterian St. Lukes Medical Center, Denver, CO, USA

**Richard Bowman, MD** The Center for Pain Relief, Charleston, WV, USA

**Veronica Carullo** Pediatric Pain Management Service, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA

**Timothy R. Deer, MD** The Center for Pain Relief, Charleston, WV, USA

**Zi-Ping Fang** Neuros Medical, Inc., Willoughby Hills, OH, USA

**Claudio A. Feler** Semmes-Murphey Clinic, Memphis, TN, USA

**Stanley Golovac** Florida Pain, Merritt Island, FL, USA

**Karina Gritsenko** Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA

**Mayank Gupta** Overland Park Regional Medical Center, Overland Park, KS, USA

**Nameer R. Haider, MD** Minimally Invasive Pain Institute, Washington, DC, USA

**Corey W. Hunter** Ainsworth Institute of Pain Management, New York, NY, USA

**Darnell Josiah, MD** Department of Neurosurgery, West Virginia University Hospitals, Morgantown, WV, USA

**Matthew Kaplan** Preferred Spine and Pain, Round Rock, TX, USA

**Shivanand P. Lad** Division of Neurosurgery, Department of Surgery, Duke University Medical Center, Durham, NC, USA

**Eric T. Lee** Ainsworth Institute of Pain Management, New York, NY, USA

**Robert M. Levy** Harvey Sandler Department of Neurosurgery, Marcus Neuroscience Institute, Boca Raton, FL, USA

**Paul Lynch** Arizona Pain Specialists, Scottsdale, AZ, USA

**Jimmy Mali** Department of Physical Medicine and Rehabilitation,  
University of North Carolina School of Medicine, Chapel Hill, NC, USA

**Andrew Marky** Division of Neurosurgery, Department of Surgery,  
Duke University Medical Center, Durham, NC, USA

**Robert Masone** Fairfield Medical Center, Lancaster, OH, USA

**W. Porter McRoberts** Division of Interventional Spine, Pain, and Neurosurgery,  
Holy Cross Hospital, Fort Lauderdale, FL, USA

**Tory McJunkin** Arizona Pain Specialists, Scottsdale, AZ, USA

**Erika A. Petersen** Department of Neurosurgery, University of Arkansas  
for Medical Sciences, Little Rock, AR, USA

**Jason E. Pope** Summit Pain Alliance, Santa Rosa, CA, USA

**David A. Provenzano** Pain Diagnostics and Interventional Care, Pittsburgh, PA, USA

**Louis J. Raso** Jupiter Interventional Pain Management, Jupiter, FL, USA

**Erich O. Richter** Department of Neurosurgery, West Virginia University Hospitals,  
Morgantown, WV, USA

**Amol Soin, MD, MBA** Greene Memorial Hospital, Wright State University School  
of Medicine, Centerville, OH, USA

**C. Douglas Stewart** The Center for Pain Relief, Charleston, WV, USA

**Jonathan Velasco** Dayton Surgeons Inc., Dayton, OH, USA

**Michael H. Verdolin** Verdolin Pain Specialists, Chula Vista, CA, USA

**Paul Verrills** MetroPain Group, Caulfield, South VIC, Australia