

**SECOND EDITION**

# **NEUROMODULATION**

---

**COMPREHENSIVE TEXTBOOK OF PRINCIPLES,  
TECHNOLOGIES, AND THERAPIES**

**VOLUME 3**

**EDITED BY**

---

**ELLIOT S. KRAMES  
P. HUNTER PECKHAM  
ALI R. REZAI**



# NEUROMODULATION

Comprehensive Textbook of Principles,  
Technologies, and Therapies

---

SECOND EDITION

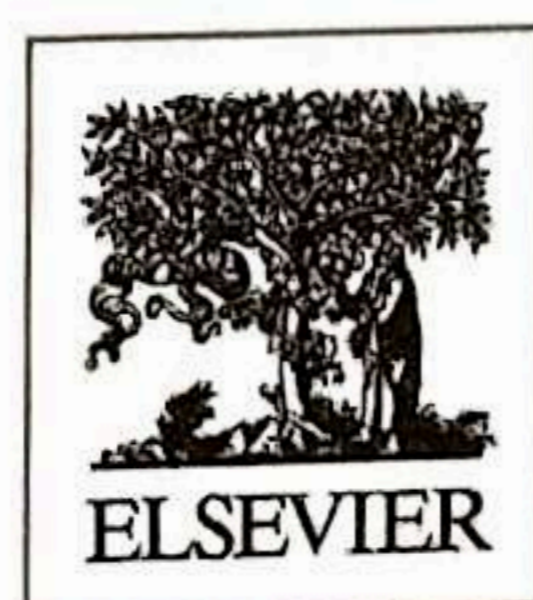
Volume 3

*Edited by*

ELLIOT S. KRAMES

P. HUNTER PECKHAM

ALI R. REZAI



**ACADEMIC PRESS**

An imprint of Elsevier

Academic Press is an imprint of Elsevier  
125 London Wall, London EC2Y 5AS, United Kingdom  
525 B Street, Suite 1800, San Diego, CA 92101-4495, United States  
50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States  
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom

First edition 2009

Copyright © 2018 Elsevier Ltd. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: [www.elsevier.com/permissions](http://www.elsevier.com/permissions).

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

#### **Notices**

Knowledge and best practice in this field are constantly changing. As new research and experience broaden our understanding, changes in research methods, professional practices, or medical treatment may become necessary.

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds, or experiments described herein. In using such information or methods they should be mindful of their own safety and the safety of others, including parties for whom they have a professional responsibility.

To the fullest extent of the law, neither the Publisher nor the authors, contributors, or editors, assume any liability for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

#### **Library of Congress Cataloging-in-Publication Data**

A catalog record for this book is available from the Library of Congress

#### **British Library Cataloguing-in-Publication Data**

A catalogue record for this book is available from the British Library

ISBN: 978-0-12-805353-9 (Set)

ISBN: 978-0-12-802766-0 (Volume 1)

ISBN: 978-0-12-802765-3 (Volume 2)

ISBN: 978-0-12-814714-6 (Volume 3)

For information on all Academic Press publications visit our website at  
<https://www.elsevier.com/books-and-journals>



Working together  
to grow libraries in  
developing countries

[www.elsevier.com](http://www.elsevier.com) • [www.bookaid.org](http://www.bookaid.org)

*Publisher:* Nikki Levy

*Acquisition Editor:* Melanie Tucker

*Developmental Editor:* Kathy Padilla

*Production Project Manager:* Sujatha Thirugnana Sambandam

*Cover Designer:* Mathew Limbert

Typeset by TNQ Books and Journals

# Reimbursement for Neuromodulation Therapies and Technologies

Elliot S. Krames<sup>1</sup>, Alon Y. Mogilner<sup>2</sup>, Rui V. Duarte<sup>3</sup>, Simon J. Thomson<sup>4</sup>,  
Fabian Piedemonte<sup>5</sup>

<sup>1</sup>Pacific Pain Treatment Center, San Francisco, CA, United States; <sup>2</sup>New York University Langone Medical Center, New York, NY, United States; <sup>3</sup>University of Liverpool, Liverpool, United Kingdom; <sup>4</sup>Basildon and Thurrock University Hospitals, Basildon, United Kingdom; <sup>5</sup>Fundación CENIT para la Investigación en Neurociencias, Buenos Aires, Argentina

## OUTLINE

Introduction	1688	Sweden	1694
Reimbursement Structure for Neuromodulation Therapies and Technology in the United States of America	1688	Germany	1695
Regulatory and Insurance Approval for the Technique	1688	Conclusion	1695
Background	1688	Reimbursement Structure for Neuromodulation Therapies and Technology in South America	1695
From US Food and Drug Administration (FDA)	1688	South America in the World	1695
Approval to Insurance Approval: "On-Label"	1689	Economy and Health	1695
Indications	1689	Types and Distribution of Health Coverage	1696
Financial Reimbursement for the Procedure	1689	Special Coverage Programs in High-Cost Therapies	1697
Hospital/Facility Reimbursement	1689	Health Public Spending Distribution	1697
Physician Reimbursement	1690	Health Adjudication	1697
Bundled Payments	1690	The Role of Neuromodulation Societies Regarding the Reimbursement of Neuromodulation Devices	1697
The Affordable Care Act (ACA) and the Future	1690	Sistema Único de Reembolso (SUR) or Unique Reimbursement System	1698
Final Thoughts	1690	Programa Provincial de Neuromodulación (PPN), Neuromodulation Provincial Program	1698
Reimbursement Structure for Neuromodulation Therapies and Technology in the United Kingdom and Europe	1690	Optimization in the Allocation and Use of Resources	1699
Introduction	1691	References	1700
United Kingdom	1691		
Belgium	1692		
The Netherlands	1694		