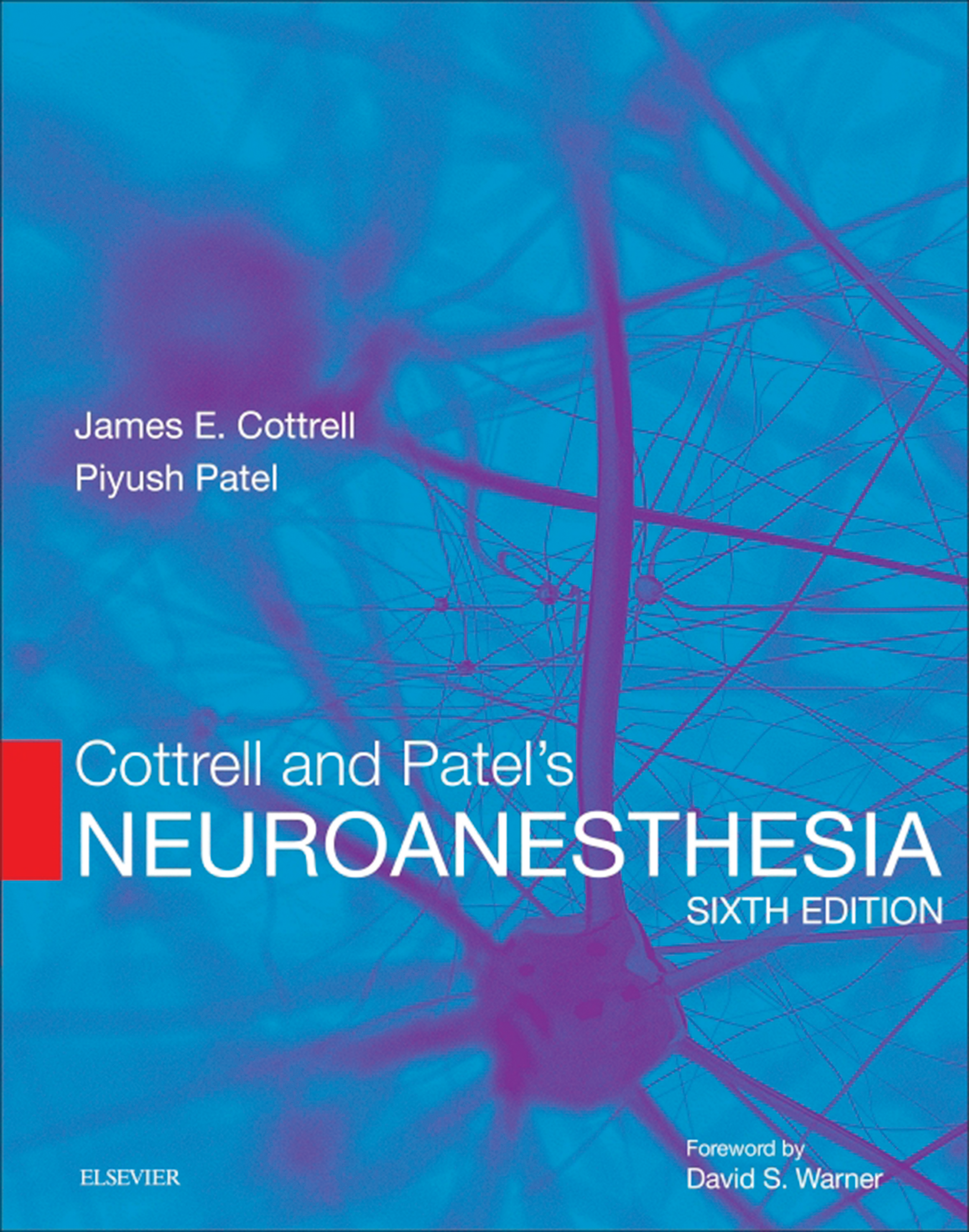
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Cottrell and Patel's
NEUROANESTHESIA
SIXTH EDITION
ELSEVIER
Foreword by
David S. Warner

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Cottrell and Patel's

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Cottrell and Patel's NEUROANESTHESIA

SIXTH EDITION

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Dedication to William L. Young, MD (1954 – 2013)

William (Bill) Young served as co-editor of the previous edition. Working with Bill was like having problems solved before I noticed them.

Bill was a remarkable clinician scientist who made a number of seminal contributions. Chief amongst these was the fundamental change in our understanding of the pathogenesis and treatment of arteriovenous malformations. Bill proposed a radical hypothesis wherein he posited that AVMs are an acquired postnatal phenomenon in patients who have an underlying genetic susceptibility and that vascular growth factors are key to the unregulated vessel growth. With the support of preclinical data, generated primarily by Bill, he initiated Phase I trials of bevacizumab for high-risk patients with AVMs for whom conventional therapy was not feasible. This was the first new *medical* treatment of AVMs for two decades. A logical extension of the premise that AVMs are acquired in genetically susceptible individuals is genetic screening to identify at-risk patients and the development of biomarkers for purposes of risk stratification. Bill organized an international collaboration to evaluate gene loci associated with AVM development and identification of risk factors for AVM rupture. This is a remarkable record of achievement. Bill was one of the few clinician scientists able to bring basic discoveries in the laboratory to the clinic for the difficult management of patients with AVMs.

I first met Bill at NYU when he started as a resident, all hungry for knowledge and with a relentless energy. Bill's many contributions were outlined in a tribute by David S. Warner and William Lanier in the *Journal of Neurosurgical Anesthesiology* Vol. 26, #1, January 2014. Perhaps his greatest contribution was bringing like-minded people together, whether it was in music, science, travel or simply friendship.

Thank you, Bill.

Acknowledgment

We thank our respective departments of anesthesiology, each of which has provided, despite recent economic adversity, the practical and intellectual background that makes it possible for colleagues like ourselves to write, assemble, and edit such books as *Cottrell and Patel's Neuroanesthesia*. Special thanks are also due to David S. Warner for the new Foreword; Theon Doobay for editorial assistance; Tania Baron for coordinating the project; the publishing staff at Elsevier, Helen Leng and William R. Schmitt; and especially the contributing authors whose expertise has been particularly important in making this edition possible. We also thank our families for helping us find time to complete such an undertaking.

James E Cottrell, MD, FRCA
Piyush Patel, MD

Contents

Foreword

I have generally believed that textbooks present a suboptimal medium for communicating the science and practice of medicine. They are not peer-reviewed, the writing is often relegated to authors just entering the field, and publication delays may allow an out-of-date perspective while the ink is still drying. Hence, the authoritative nature of textbook content can be easily questioned. *Cottrell and Patel's Neuroanesthesia* refutes this view in that it offers an example of how a textbook can serve as a valid foundation for learning and practice at all levels of experience.

The subspecialty of neuroanesthesiology has always prided itself on pursuing and inculcating scientific evidence into our practice and educational endeavors. Science is different from art in that art is intended to present a personal perception and interpretation of a real or imagined existence. It is for the viewer to determine validity and that determination cannot be tested. In contrast, science is an assemblage of physical properties that should hold true through time, space, and for all individuals, regardless of persuasion. But science and art share a precious element. Beauty. Beauty can be immediately apparent or may require knowledge of the structure and history behind a project to understand its significance. After reviewing the galley proofs for *Cottrell and Patel's Neuroanesthesia*, I must call it a beautiful work.

As an erudite neuroanesthesiologist, I approached the galley proofs for *Cottrell and Patel's Neuroanesthesia* with skepticism. It became clear within moments that this work is exceptional. The reader is instantly drawn to the high-quality images and the progression of concepts from the most elementary principles to complex and state-of-the-art science and implications. The book is comprehensive, detailed, and wholly relevant to the practice of neuroanesthesiology. There simply is no other source for this level of organization of our knowledge. It will enable the initiate to quickly grasp key concepts, while experienced clinicians and scientists can not only refresh but also extend their understanding of how and why we do what we do for our patients. It is a must read for all.

There are bastions that define our specialty including the Society for Neurosciences in Anesthesiology and Critical Care and the Journal of Neurosurgical Anesthesiology, both of which James Cottrell served to found. These entities represent the best and brightest of our scientists and clinicians. The authorship of *Cottrell and Patel's Neuroanesthesia* reflects the same population and is edited by two of the most longstanding and innovative authorities in our field. The 5th edition of *Neuroanesthesia* was substantially advanced by the inclusion of William L. Young, M.D. as co-editor. Dr. Young was a paramount scientist and set the tone for evidence-based medicine the reader will encounter in the current edition of *Cottrell and Patel's Neuroanesthesia*. Dr. Young's untimely passing left a space almost impossible to fill. Having known Bill closely, I am certain that he would be thrilled that Piyush Patel accepted the challenge of maintaining a quality of scientific excellence worthy of our specialty in this authoritative text. Dr. Patel has succeeded. Congratulations to all of the authors for providing this superb compendium of knowledge that can only serve to advance patient care.

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Preface

With a new co-editor, Piyush Patel, twenty-three new authors, five new chapters, eight chapters with all new authors, fifteen new chapters with one or more new authors and the incorporation of suggestions made in reviews of the fifth edition, this edition of *Cottrell and Patel's Neuroanesthesia* is both track-tested and up to date.

We have added a new chapter on neurocritical care issues, added a section on diagnosis and management of brain death and end-of-life care, added a section on neuroanatomy, and added more on multimodality monitoring, brain tissue oxygenation, oximetry, microdialysis and depth of anesthesia monitors. Sections were also added on stereotactic surgery, deep brain stimulation, brain biopsy, and gene therapies. There was, of course, no option. Ours is a fast moving field.

As the Red Queen said to Alice in Wonderland, "Now, *here* you see, it takes all the running you can do, to keep in the same place." In this case, "*here*" is neurosurgical anesthesiology, and "*the same place*" is state-of-the-art knowledge.

Medicine advances through a sort of trickle-down process. Information flows from basic scientists to laboratory animal researchers to clinical investigators to scientific journals to clinical textbooks, and finally, to clinicians. The closer the connections between the first four way stations and the textbook, the better clinicians are served. We have kept those connections tight by gathering authors who are, in various combinations, basic scientists, laboratory researchers, clinical investigators, journal authors, journal editors, and of course, clinicians.

The emphasis of this book has always been clinical application of tested basic science principals and that focus has only been sharpened in this sixth edition. We want this book to serve its readers by helping them serve their patients.

James E. Cottrell, MD, FRCA
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