Case Studies in Pediatric Critical Care

Edited by

Peter J. Murphy
Stephen C. Marriage
Peter J. Davis
Contents

List of Contributors page vii
Foreword xi

1. Respiratory syncytial virus bronchiolitis
   Roddy O’Donnell and Michael Roe 1

2. The infant with meningococcal septicemia
   Mehrengise Cooper and Simon Nadel 13

3. A 2-year-old child with acute bacterial meningitis
   Stephen C. Marriage and Laura J. Coates 27

4. Management of a neonate with hypoplastic left heart syndrome
   Ulf Theilen and Lara Shekerdemian 34

5. Child with a head injury
   Lisa Dyke and Peter Skippen 45

6. Management of diabetic ketoacidosis in a child
   Peter J. Davis 59

7. Tricyclic antidepressant poisoning in children
   Ian A. Jenkins 69

8. Management of hemolytic uremic syndrome
   Gabrielle A. Nuthall 82

9. Management of severe acute asthma in children
   Christian Stocker and Mike South 92

10. The neonate with total anomalous pulmonary venous connection
    Robert Mazor, Gordon Cohen, and Lynn D. Martin 100

11. Critical care for a child with 80% burns
    Heather Duncan 112

12. Coarctation of the aorta in a neonate
    Matt Oram and Andrew Wolf 125

13. The 2-month-old with severe pertussis (whooping cough)
    Emma J. Bould and Mark J. Peters 134

14. Pericardial effusion in a child
    Patricia M. Weir 142

15. Management of non-accidental injury on the Pediatric Intensive Care Unit
    Robert Ross Russell and Duncan McAuley 154

16. Management of a 3-year-old child with drowning
    Margrid Schindler 162

17. Child with dengue hemorrhagic fever
    Adrian Y. Goh 173

18. The child with HIV infection
    Mark Hatherill 183

19. Refractory narrow complex tachycardia in infancy
    Trevor Richens 193

20. The neonate with hyperammonemia
    Stephen D. Playfor and Andrew A.M. Morris 213
Contents

21. **Management of acute heart failure in pediatric intensive care**
    Matthew Fenton and Michael Burch 224

22. **Tetralogy of Fallot**
    Roger Langford 234

23. **The child with thermal injury and smoke inhalation**
    Sanjay M. Bhananker and Sam R. Sharar 251

24. **A child with multiple trauma**
    Joshua C. Uffman and Monica S. Vavilala 268

25. **Management of the patient with a failing fontan – morbidities of a palliative procedure**
    Heather A. Dickerson and Anthony C. Chang 287

26. **Sepsis in a BMT patient admitted to PICU**
    Farhan Bhanji and Sam D. Shemie 299

27. **Management of sagittal sinus thrombosis in a child**
    David J. Grant 311

---

Index 325

Color plates between pp. 212 and 213.
Contributors

Sanjay M. Bhananker
Assistant Professor in Anesthesiology
University of Washington School of Medicine
Harborview Medical Center
Seattle, WA
USA

Farhan Bhanji
Staff Specialist, Critical Care Medicine
The Montreal Children's Hospital
Montreal, Quebec
Canada

Emma J. Bould
Paediatric and Neonatal Intensive Care Units
Great Ormond Street Hospital for Children
London, UK

Michael Burch
Consultant Paediatric Cardiologist
Department of Cardiothoracic Transplant
Great Ormond Street Hospital NHS Trust
London, UK

Anthony C. Chang
Associate Professor & Chief, Critical Care Cardiology
The Lillie Frank Abercrombie Section of Cardiology
Department of Pediatrics
Baylor College of Medicine Director
Pediatric Cardiac Intensive Care Unit
Texas Children's Hospital
Houston Texas USA

Laura J. Coates
Fellow in Paediatric Intensive Care
Bristol Royal Hospital for Children
Bristol, UK

Gordon Cohen
Children's Hospital & Regional Medical Center
Seattle, USA

Mehrengise Cooper
Consultant in Paediatric Intensive Care
PICU
St. Mary's Hospital
London, UK

Peter J. Davis
Consultant in Paediatric Intensive Care
Paediatric Intensive Care Unit
Bristol Royal Hospital for Children
Bristol, UK

Heather A. Dickerson
Assistant Professor, Critical Care Cardiology
Department of Pediatrics, Baylor College of Medicine
The Lillie Frank Abercrombie Section of Cardiology
Texas Children’s Hospital
Houston, TX
USA

Heather Duncan
Consultant in Paediatric Intensive Care
Diana, Princess of Wales Children's Hospital
Paediatric Intensive Care Unit
Birmingham, UK

Lisa Dyke
Division of Emergency Medicine
British Columbia's Children's Hospital
Vancouver, BC
Canada

Matthew Fenton
Department of Cardiothoracic Transplant
Great Ormond Street Hospital NHS Trust
Great Ormond Street
London, UK

Cambridge University Press
978-0-521-87834-0 - Case Studies in Pediatric Critical Care
Edited by Peter J. Murphy, Stephen C. Marriage and Peter J. Davis
Frontmatter
More information
Contributors

Peter J. Fleming
FSID Research Unit
Institute of Child Life and Health
St Michaels Hospital
Bristol, UK

Adrian Y. Goh
Associate Professor in Pediatric Intensive Care
Pediatric Intensive Care
University of Malaya Medical Centre
Kuala Lumpur
Malaysia

David J. Grant
Consultant in Paediatric Intensive Care
Bristol Royal Hospital for Children
Bristol, UK

Mark Hatherill
Consultant Paediatric Intensivist
Red Cross Children’s Hospital and School
of Child & Adolescent Health,
Klipfontein Road, Rondebosch
University of Cape Town
Cape Town
South Africa

Ian A. Jenkins
Consultant in Paediatric Anaesthesia and Intensive Care
Bristol Royal Hospital for Children
Bristol, UK

Roger Langford
Fellow in Paediatric Cardiac Anaesthesia and Intensive Care
Bristol Royal Hospital for Children
Bristol, UK

Stephen C. Marriage
Associate Specialist in Paediatric Intensive Care
Paediatric Intensive Care Unit
Bristol Royal Hospital for Children
Bristol, UK

Lynn D. Martin
Professor of Anesthesiology & Pediatrics (adjunct)
Department of Anesthesiology & Pain Medicine
Children’s Hospital & Regional Medical Center
Seattle, WA

Robert Mazor
Department of Pediatrics
Pediatric Critical Care Medicine
Children’s Hospital & Regional Medical Center
Seattle, WA
USA

Duncan McAuley
Consultant Emergency Medicine,
Addenbrooke’s Hospital,
Cambridge, UK

Andrew A. M. Morris
Consultant in Metabolic Medicine
Royal Manchester Children’s Hospital
Hospital Road, Pendlebury
Manchester, UK

Peter J. Murphy
Consultant in Paediatric Anaesthesia and Intensive Care
Bristol Royal Hospital for Children
Bristol, UK

Simon Nadel
Consultant in Paediatric Intensive Care
PICU
St. Mary’s Hospital
London, UK

Gabrielle A. Nuthall
Consultant,
Paediatric Intensive Care Unit
Starship Children’s Hospital
Auckland
New Zealand
<table>
<thead>
<tr>
<th>Contributors</th>
<th></th>
</tr>
</thead>
</table>
| **Roddy O'Donnell** | Consultant Paediatrician  
Paediatric Intensive Care Unit  
Addenbrooke's Hospital  
Cambridge, UK |
| **Matt Oram** | Consultant Anaesthetist  
Cheltenham General Hospital  
Sandford Road, Cheltenham,  
Gloucestershire, UK |
| **Mark J. Peters** | Consultant in Paediatric Intensive Care  
Paediatric and Neonatal Intensive Care Units  
Great Ormond Street Hospital for Children  
London, UK |
| **Stephen D. Playfor** | Consultant Paediatric Intensivist  
Paediatric Intensive Care Unit  
Royal Manchester Children's Hospital  
Hospital Road, Pendlebury  
Manchester, UK |
| **Trevor Richens** | Consultant Cardiologist  
Royal Hospital for Sick Children  
Yorkhill NHS Trust  
Glasgow, UK |
| **Michael Roe** | Consultant Paediatrician  
Paediatric Intensive Care Unit  
Addenbrooke’s Hospital  
Cambridge, UK |
| **Robert Ross Russell** | Consultant Paediatric Intensive Care Unit,  
Addenbrooke’s Hospital,  
Hill’s Road  
Cambridge, UK |
| **Margrid Schindler** | Consultant in Paediatric Intensive Care  
Bristol Royal Hospital for Children  
Bristol, UK |
| **Sam R. Sharar** | Professor of Anesthesiology  
University of Washington School of Medicine  
Harborview Medical Center  
Department of Anesthesiology  
Seattle, WA, USA |
| **Lara Shekerdemian** | Director  
Paediatric Intensive Care Unit  
Royal Children's Hospital,  
Melbourne, Australia. |
| **Sam D. Shemie** | Staff Specialist, Critical Care Medicine  
The Montreal Children's Hospital  
Montreal, Quebec  
Canada |
| **Peter Skippen** | Staff Specialist  
Division of Critical Care  
British Columbia's Children’s Hospital  
Vancouver, BC  
Canada |
| **Mike South** | Specialist in Intensive Care  
Director, Department of General Medicine,  
Royal Childrens Hospital  
Deputy Head of Paediatrics, University of Melbourne  
Royal Children’s Hospital,  
Parkville, Victoria  
Australia |
| **Christian Stocker** | Staff Specialist  
Queensland Paediatric Intensive Care Service,  
Royal Childrens Hospital,  
Herston Road,  
Herston,  
Australia |
Contributors

Ulf Theilen
Consultant in Paediatric Intensive Care
Paediatric Intensive Care Unit
Royal Hospital for Sick Children,
Edinburgh, UK

Joshua C. Uffman
Acting Assistant Professor
Department of Anesthesiology
University of Washington School of Medicine
Attending Anesthesiologist, Children’s Hospital & Regional Medical Center and Harborview Medical Center
Seattle, WA
USA

Monica S. Vavilala
Associate Professor
Departments of Anesthesiology, Pediatrics, and Neurological Surgery (Adj)
University of Washington School of Medicine
Attending Anesthesiologist, Harborview Medical Center
Attending Emergency Physician, Children’s Hospital & Regional Medical Center
Seattle, WA
USA

Patricia M. Weir
Consultant in Paediatric Anaesthesia and Intensive Care
Bristol Royal Hospital for Children
Bristol, UK

Andrew R. Wolf
Professor of Paediatric Anaesthesia and Intensive Care
Bristol Royal Hospital for Children
Bristol, UK
Foreword

In pediatric intensive care, as in most areas of clinical practice, we learn best by experience. No textbook can hope to replace the learning process that occurs from long hours of clinical practice, the experience of decision-making (whether right or wrong), and the deeply ingrained learning that comes from the process of clinical apprenticeship.

This book, with its very practically oriented chapters dealing with both common and less common clinical problems, and illustrated with structured case studies, goes a long way in helping the novice (or experienced) intensivist to focus, get to grips with, and learn from the experience and knowledge of recognized experts in the field.

The editors and chapter contributors have carefully avoided the usual uninspiring “politically correct” forms used in many publications to present systematic reviews and meta-analyses, but have not sacrificed any of the clinical or epidemiological rigor inherent in those standard forms of presentation.

This book, with its refreshing and helpful emphasis on the human and humane as well as on the scientific aspects of pediatric intensive care will, I believe, have an important role in the training of future intensivists. For those clinicians involved in the care of children, but who are not usually directly involved in the field of pediatric intensive care, this book will also provide the reader with useful insights into the processes of caring for critically ill children.

Professor Peter J Fleming
FSID Research Unit
Bristol UK