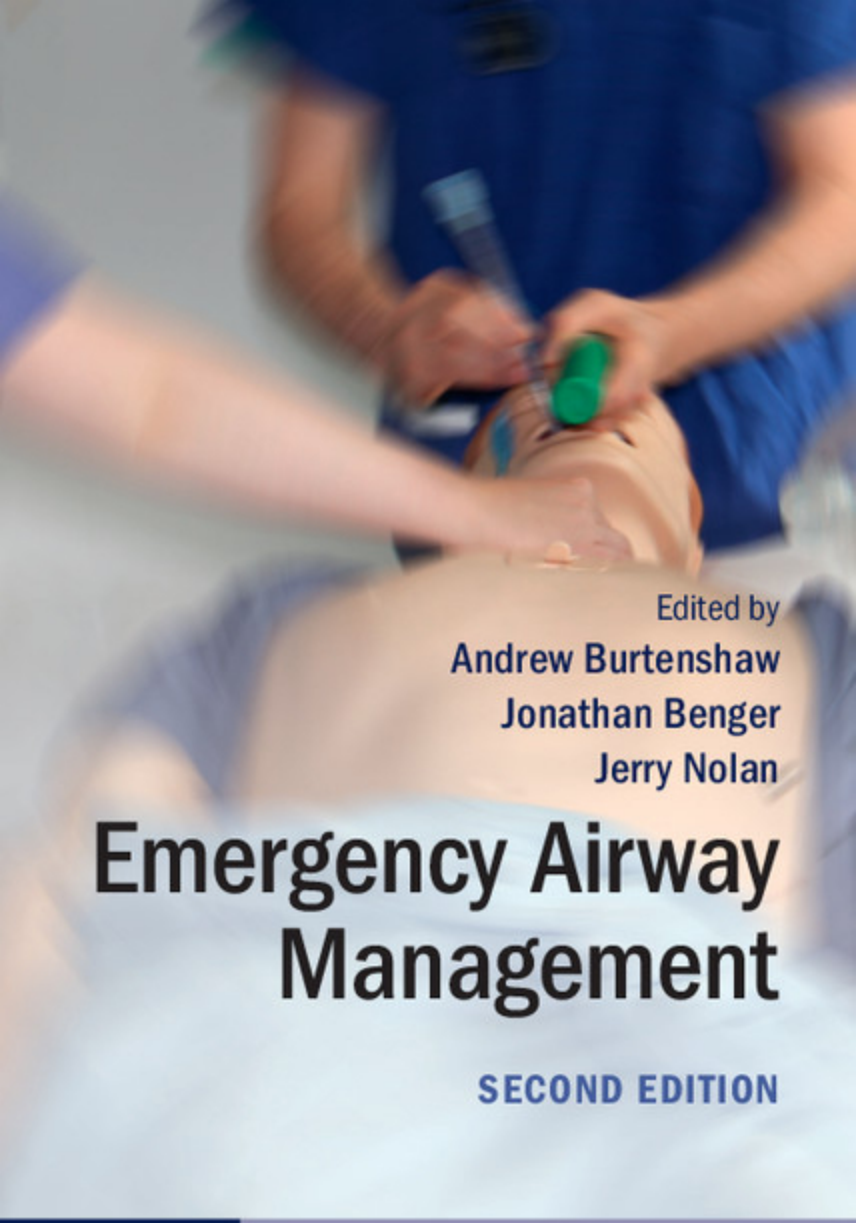

Edited by
Andrew Burtenshaw
Jonathan Benger
Jerry Nolan

Emergency Airway Management

SECOND EDITION

CAMBRIDGE Medicine

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Second Edition

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Edited by:

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Foreword

When the first edition of this book was published in 2008 it heralded a new approach to the way in which management of the airway in emergency situations was taught. The emphasis was placed firmly on competency rather than specialty. Both the book and the course it accompanies have achieved considerable success, delivering a didactic yet pragmatic approach to the management of the compromised airway.

As ever competence can only be achieved through both the acquisition of knowledge and practical skills and can only be maintained through regular practice and experiential learning. This book is a companion to these endeavours but not a substitute.

The essence of safe airway management is the decision-making process that achieves safety with effectiveness, thereby minimizing iatrogenic error whilst attaining airway security and optimizing ventilation and oxygenation.

The book lays the foundations for achieving these competencies with clear and concise descriptions of the anatomy, physiology and pharmacology of emergency airway management. This is complemented by discussions on the detailed management of some commonly encountered clinical scenarios.

The book has been extensively updated and revised since the first edition and now contains a new chapter examining the importance and influence of non-technical human factors. The introduction of and more widespread use of videolaryngoscopy is reflected by a description and discussion of its role as an aid to airway management. Also of major significance is the fact that the book now reflects the findings and conclusions of the National Audit of Major Airway Complications in the UK published in 2011 (NAP4).

The book should be an essential accompaniment to any trainee involved in the acute care of the patient with a potentially compromised airway including anaesthetists, emergency physicians and acute physicians in a variety of environments from pre-hospital care through to the emergency department, operating room and critical care unit.

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Note

This book and the course it accompanies have been prepared by a group of clinicians from the specialties of anaesthesia, intensive care and emergency medicine.

The UK TEAM Course, this manual and all course materials are the intellectual property of these individuals, who are listed in the contributor list. However, the course has been developed and refined by the group as a whole, through a process of ongoing discussion and collaboration.

This manual has been edited by Andrew Burtenshaw, Jonathan Benger and Jerry Nolan, to whom all comments should be addressed.

July 2014

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Abbreviations

ABCD Airway, breathing, circulation and disability
ANTS Anaesthetic non-technical skills
APL Adjustable pressure limiting (valve)
ARDS Acute respiratory distress syndrome
ATLS Advanced trauma life support
BMI Body mass index
BMV Bag-mask ventilation
BTS British Thoracic Society
BURP Backwards, upwards, rightwards pressure
CICO Can't intubate, can't oxygenate
CMV Continuous mandatory ventilation
CO_2 Carbon dioxide
COPD Chronic obstructive pulmonary disease
CPAP Continuous positive airway pressure
CPP Cerebral perfusion pressure
CPR Cardiopulmonary resuscitation
CSI Cervical spine injury
CT Computed tomography
ECG Electrocardiograph
ED Emergency department
ENT Ear, nose and throat
EPAP Expiratory positive airway pressure
E_TCO_2 End tidal carbon dioxide
FEV_1 Forced expiratory volume over one second
FG French gauge
FGF Fresh gas flow
F_iO_2 Inspired oxygen concentration
FRC Functional residual capacity
GABA Gamma-amino butyric acid
GCS Glasgow Coma Scale
HAFOE High-airflow oxygen enrichment
HME Heat and moisture exchanger
ICNARC Intensive Care National Audit And Research Centre
ICP Intracranial pressure
ICU Intensive care unit
ILMA Intubating laryngeal mask airway
IOP Intraocular pressure
IPAP Inspiratory positive airway pressure
IPPV Intermittent positive pressure ventilation
LED Light-emitting diode
LMA Laryngeal mask airway
MAP Mean arterial pressure
MET Medical emergency team
MMC Modernizing medical careers
MV Minute volume
NAP4 Fourth National Audit Project of the Royal College of Anaesthetists and the Intensive Care Society
NEAR National Emergency Airway Registry
NIBP Non-invasive blood pressure
NICE National Institute for Health and Care Excellence
NIPPV Non-invasive positive pressure ventilation
NIV Non-invasive ventilation
NMJ Neuromuscular junction
NTSP National Tracheostomy Safety Project
O_2 Oxygen
P_ACO_2 Partial pressure of carbon dioxide (alveolar)
P_AO_2 Partial pressure of oxygen (alveolar)

P_aCO_2 Partial pressure of carbon dioxide (arterial)
P_aO_2 Partial pressure of oxygen (arterial)
PEEP Positive end expiratory pressure
PICU Paediatric intensive care unit
PLMA ProSeal laryngeal mask airway
P_{max} Peak (maximum) inspiratory pressure
PO_2 Partial pressure of oxygen
$\dot{Q}$ Perfusion
RR Respiratory rate
RSI Rapid sequence induction (of anaesthesia)
SAD Supraglottic airway device
SBAR Situation, Background, Assessment, Recommendation
SIGN Scottish Intercollegiate Guidelines Network
SIMV Synchronized intermittent mandatory ventilation
S_aO_2 Oxygen saturation (arterial)
S_pO_2 Oxygen saturation by pulse oximetry
TBI Traumatic brain injury
TRM Team resource management
$\dot{V}$ Ventilation
$\dot{V}/\dot{Q}$ Ventilation/Perfusion ratio
VALI Ventilator associated lung injury
V_T Tidal volume