Handbook of Drugs in Intensive Care
Fourth edition
This book is dedicated to Georgina Paw
Handbook of Drugs in Intensive Care
An A–Z Guide
Fourth edition

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CONTENTS

Introduction vii
How to use this book viii
Abbreviations x
Acknowledgements xiii

DRUGS: An A–Z Guide

SHORT NOTES

Routes of administration 229
Loading dose 231
Drug metabolism 233
Enzyme systems 234
Drug excretion 234
Drug tolerance 235
Drug interactions 235
Therapeutic drug monitoring 236
Target range of concentration 237
Pharmacology in the critically ill 238
Cardiopulmonary resuscitation 240
Drugs in advanced life support 241
Management of acute major anaphylaxis 243
Management of severe hyperkalaemia 244
Management of malignant hyperthermia 245
Sedation, analgesia and neuromuscular blockade 247
A practical approach to sedation and analgesia 249
Management of status epilepticus 253
Treatment of status epilepticus 255
Reasons for treatment failure 256
Pseudostatus 256
Prevention of delerium tremens and alcohol withdrawal syndrome 257
Prevention of Wernicke–Korsakoff syndrome 258
Anti-arrhythmic drugs 259
Inotropes and vasopressors 260
Bronchospasm 267
Anti-ulcer drugs 268
Immunonutrition in the ICU 268
Corticosteroids 269
Short synacthen test 270
Bone marrow rescue following nitrous oxide 270
Antioxidants 271
Post-splenectomy prophylaxis 272
Anti-microbial drugs 274
Bacterial Gram staining 278
Antibiotics: sensitivities 279
Renal replacement therapy 281
Extracorporeal drug clearance: basic principles 284
Drug doses in renal failure/renal replacement therapy 285
Chemical pleurodesis of malignant pleural effusion 290

APPENDICES
Appendix A: Creatinine clearance 293
Appendix B: Weight conversion (stones/lb to kg) 296
Appendix C: Body mass index (BMI) calculator 297
Appendix D: Lean body weight charts 298
Appendix E: Infusion rate/dose calculation 300
Appendix F: Drug compatibility chart 301
Appendix G: Omeprazole administration record 302
Appendix H: Drotrecogin prescribing criteria 304
Appendix I: Drotrecogin administration 307
Appendix J: Drotrecogin administration record 310
Appendix K: Vancomycin by continuous infusion 314
Appendix L: Child–Pugh score 316

DRUG INDEX 317
INTRODUCTION

Since the publication of the 3rd edition in 2006, there have been several new drugs introduced to the critical care setting. This book has now been extensively updated. The main purpose of this book is to provide a practical guide that explains how to use drugs safely and effectively in a critical care setting. Doctors, nurses, pharmacists and other healthcare professionals caring for the critically ill patient will find it useful. It is not intended to list every conceivable complication and problem that can occur with a drug but to concentrate on those the clinician is likely to encounter. The book should be seen as complementary to, rather than replacing, the standard textbooks.

The book is composed of two main sections. The A–Z guide is the major part and is arranged alphabetically by the non-proprietary name of the drug. This format has made it easier for the user to find a particular drug when in a hurry. The discussion on an individual drug is restricted to its use in the critically ill adult patient. The second part comprises short notes on relevant intensive care topics. Inside the back cover is a colour fold-out chart showing drug compatibility for intravenous administration.

I am very fortunate to have on board a senior ICU pharmacist for this edition. While every effort has been made to check drug dosages based on a 70kg adult and information about every drug, it is still possible that errors may have crept in. I would therefore ask readers to check the information if it seems incorrect. In addition, I would be pleased to hear from any readers with suggestions about how this book can be improved. Comments should be sent via e-mail to: henry.paw@york.nhs.uk.

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York 2009
European law (directive 92/27/EEC) requires the use of the Recommended International Non-proprietary Name (rINN) in place of the British Approved Name (BAN). For a small number of drugs these names are different. The Department of Health requires the use of BAN to cease and be replaced by rINN, with the exceptions of adrenaline and noradrenaline. For these two drugs both their BAN and rINN will continue to be used.

The format of this book was chosen to make it more ‘user friendly’ – allowing the information to be readily available to the reader in times of need. For each drug there is a brief introduction, followed by the following categories:

- **Uses**
  This is the indication for the drug’s use in the critically ill. There will be some unlicensed use included and this will be indicated in brackets.

- **Contraindications**
  This includes conditions or circumstances in which the drug should not be used – the contraindications. For every drug, this includes known hypersensitivity to the particular drug or its constituents.

- **Administration**
  This includes the route and dosage for a 70 kg adult. For obese patients, estimated ideal body weight should be used in the calculation of the dosage (Appendix D). It also advises on dilutions and situations where dosage may have to be modified. To make up a dilution, the instruction ‘made up to 50 ml with sodium chloride 0.9%’ means that the final volume is 50 ml. In contrast, the instruction ‘to dilute with 50 ml sodium chloride 0.9%’ could result in a total volume >50 ml. It is recommended that no drug should be stored for >24 h after reconstitution or dilution.

- **How not to use . . .**
  Describes administration techniques or solutions for dilution which are not recommended.

- **Adverse effects**
  These are effects other than those desired.

- **Cautions**
  Warns of situations when the use of the drug is not contraindicated but needs to be carefully watched. This will include drug-drug interactions.
Organ failure
Highlights any specific problems that may occur when using the drug in a particular organ failure.

Renal replacement therapy
Provides guidance on the effects of haemofiltration/dialysis on the handling of the drug. For some drugs, data are either limited or not available.
# ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ACE-I</td>
<td>angiotensin-converting enzyme inhibitor</td>
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<tr>
<td>ACh</td>
<td>acetylcholine</td>
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<tr>
<td>ACT</td>
<td>activated clotting time</td>
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<tr>
<td>ADH</td>
<td>antidiuretic hormone</td>
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<tr>
<td>AF</td>
<td>atrial fibrillation</td>
</tr>
<tr>
<td>APTT</td>
<td>activated partial thromboplastin time</td>
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<tr>
<td>ARDS</td>
<td>acute respiratory distress syndrome</td>
</tr>
<tr>
<td>AUC</td>
<td>area under the curve</td>
</tr>
<tr>
<td>AV</td>
<td>atrioventricular</td>
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<tr>
<td>BP</td>
<td>blood pressure</td>
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<tr>
<td>CABG</td>
<td>coronary artery bypass graft</td>
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<tr>
<td>cAMP</td>
<td>cyclic AMP</td>
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<tr>
<td>CC</td>
<td>creatinine clearance</td>
</tr>
<tr>
<td>CMV</td>
<td>cytomegalovirus</td>
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<tr>
<td>CNS</td>
<td>central nervous system</td>
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<tr>
<td>CO</td>
<td>cardiac output</td>
</tr>
<tr>
<td>COPD</td>
<td>chronic obstructive pulmonary disease</td>
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<tr>
<td>CPR</td>
<td>cardiopulmonary resuscitation</td>
</tr>
<tr>
<td>CSF</td>
<td>cerebrospinal fluid</td>
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<tr>
<td>CT</td>
<td>computerised tomography</td>
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<tr>
<td>CVP</td>
<td>central venous pressure</td>
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<tr>
<td>CVVH</td>
<td>continuous veno-venous haemofiltration</td>
</tr>
<tr>
<td>CVVHD</td>
<td>continuous veno-venous haemodiafiltration</td>
</tr>
<tr>
<td>DI</td>
<td>diabetes insipidus</td>
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<tr>
<td>DIC</td>
<td>disseminated intravascular coagulation</td>
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<tr>
<td>DVT</td>
<td>deep vein thrombosis</td>
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<tr>
<td>EBV</td>
<td>Epstein–Barr virus</td>
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<tr>
<td>ECG</td>
<td>electrocardiogram</td>
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<tr>
<td>EEG</td>
<td>electroencephalogram</td>
</tr>
<tr>
<td>EMD</td>
<td>electromechanical dissociation</td>
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<tr>
<td>ETCO₂</td>
<td>end-tidal carbon dioxide concentration</td>
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<tr>
<td>FBC</td>
<td>full blood count</td>
</tr>
<tr>
<td>FFP</td>
<td>fresh frozen plasma</td>
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<tr>
<td>g</td>
<td>gram</td>
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<tr>
<td>GCS</td>
<td>Glasgow Coma Scale</td>
</tr>
<tr>
<td>GFR</td>
<td>glomerular filtration rate</td>
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<tr>
<td>GH</td>
<td>growth hormone</td>
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<tr>
<td>GI</td>
<td>gastrointestinal</td>
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<tr>
<td>h</td>
<td>hour</td>
</tr>
<tr>
<td>HOCM</td>
<td>hypertrophic obstructive cardiomyopathy</td>
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<tr>
<td>HR</td>
<td>heart rate</td>
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<tr>
<td>ICP</td>
<td>intracranial pressure</td>
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<td>ICU</td>
<td>intensive care unit</td>
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<tr>
<td>IHD</td>
<td>ischaemic heart disease</td>
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<tr>
<td>IM</td>
<td>intramuscular</td>
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<tr>
<td>INR</td>
<td>international normalised ratio</td>
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</table>
IOP  intraocular pressure
IPPV  intermittent positive pressure ventilation
IV  intravenous
K+  potassium
kg  kilogram
l  litre
LFT  liver function test
LH  luteimising hormone
LMWH  low-molecular-weight heparin
MAOI  monoamine oxidase inhibitor
MAP  mean arterial pressure
M6G  morphine-6-glucuronide
mg  milligram
MH  malignant hyperthermia
MI  myocardial infarction
MIC  minimum inhibitory concentration
min  minute
ml  millilitre
MRSA  meticillin-resistant Staphylococcus aureus
NG  nasogastric route
ng  nanogram
NJ  nasojejunal
nocte  at night
NSAID  non-steroidal anti-inflammatory drug
PaCO2  partial pressure of carbon dioxide in arterial blood
PaO2  partial pressure of oxygen in arterial blood
PCAS  patient-controlled analgesia system
PCI  percutaneous coronary intervention
PCP  Pneumocystis carinii pneumonia
PCWP  pulmonary capillary wedge pressure
PD  peritoneal dialysis
PE  pulmonary embolism
PEA  pulseless electrical activity
PEG  percutaneous endoscopic gastrostomy
PEJ  percutaneous endoscopic jejunostomy
PO  per orum (by mouth)
PR  per rectum (rectal route)
PRN  pro re nata (as required)
PVC  polyvinyl chloride
PVD  peripheral vascular disease
RR  respiratory rate
s  second
SC  subcutaneous
SIRS  systemic inflammatory response syndrome
SL  sublingual
SSRI  selective serotonin re-uptake inhibitors
STEMI  ST-segment elevation myocardial infarction
SVR  systemic vascular resistance
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>SVT</td>
<td>supraventricular tachycardia</td>
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<tr>
<td>TFT</td>
<td>thyroid function test</td>
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<tr>
<td>TNF</td>
<td>tumour necrosis factor</td>
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<tr>
<td>TPN</td>
<td>total parenteral nutrition</td>
</tr>
<tr>
<td>U&amp;E</td>
<td>urea and electrolytes</td>
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<tr>
<td>VF</td>
<td>ventricular fibrillation</td>
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<tr>
<td>VRE</td>
<td>vancomycin-resistant <em>Enterococcus faecium</em></td>
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<tr>
<td>VT</td>
<td>ventricular tachycardia</td>
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<tr>
<td>WFI</td>
<td>water for injection</td>
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<tr>
<td>WPW syndrome</td>
<td>Wolff–Parkinson–White syndrome</td>
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ACKNOWLEDGEMENTS

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