Handbook of Drugs in Intensive Care

Sixth Edition

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An A-Z Guide

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Every effort has been made in preparing this book to provide accurate and up-to-date information that is in accord with accepted standards and practice at the time of publication. Although case histories are drawn from actual cases, every effort has been made to disguise the identities of the individuals involved. Nevertheless, the authors, editors, and publishers can make no warranties that the information contained herein is totally free from error, not least because clinical standards are constantly changing through research and regulation. The authors, editors, and publishers therefore disclaim all liability for direct or consequential damages resulting from the use of material contained in this book. Readers are strongly advised to pay careful attention to information provided by the manufacturer of any drugs or equipment that they plan to use.

This book is dedicated to Georgina Paw

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Introduction

Since the publication of the fifth edition in 2013 and a reprint in 2014, there have been several new drugs introduced to the critical care setting. This book has now been extensively updated. The main purpose of the 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 is comprised of short notes on relevant intensive care topics. Inside the back cover is a fold-out chart showing drug compatibility for IV administration.

While every effort has been made to check drug dosages based on a 70 kg adult and information about every drug, it is possible that errors may have crept in. We would therefore ask readers to check the information if it seems incorrect. In addition, we 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.

HGWP
RS

How to Use this Book

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, the text states which weight should be used for weight-based dosing calculation, where this information is known. Lean body weight tables are provided in 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 0.9% sodium chloride' means that the final volume is 50 ml. In contrast, the instruction 'to dilute with 50 ml 0.9% sodium chloride' could result in a total volume >50 ml. It is recommended that no drug should be stored for >24 hours after reconstitution or dilution.

How not to use . . .

This 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 key drug–drug interactions.

Organ failure

Highlights any specific problems that may occur when using the drug in a particular organ failure.

Common Abbreviations

ACE-I	angiotensin converting enzyme inhibitor
ACh	acetylcholine
ACT	activated clotting time
AF	atrial fibrillation
APTT	activated partial thromboplastin time
ARDS	acute respiratory distress syndrome
AUC	area under the curve
AV	atrioventricular
BP	blood pressure
CABG	coronary artery bypass graft
cAMP	cyclic adenosine monophosphate (AMP)
CC	creatinine clearance
CMV	cytomegalovirus
CNS	central nervous system
CO	cardiac output
COPD	chronic obstructive pulmonary disease
CPR	cardiopulmonary resuscitation
CSF	cerebrospinal fluid
CT	computerized tomography
CVP	central venous pressure
CVVH	continuous veno-venous haemofiltration
d	day
DIC	disseminated intravascular coagulation
DOAC	direct oral anticoagulant
DVT	deep vein thrombosis
ECG	electrocardiogram
EBV	Epstein Barr virus
EEG	electroencephalogram
EMD	electromechanical dissociation
$ETCO_2$	end-tidal carbon dioxide concentration
FBC	full blood count
FFP	fresh frozen plasma

g	gram
GFR	glomerular filtration rate
HIT	heparin-induced thrombocytopenia
HOCM	hypertrophic obstructive cardiomyopathy
h	hour
HR	heart rate
ICP	intracranial pressure
ICU	intensive care unit
IM	intramuscular
INR	international normalized ratio
IOP	intraocular pressure
IPPV	intermittent positive pressure ventilation
IV	intravenous
K^+	potassium
kg	kilogram
l	litre
LFT	liver function tests
LMWH	low molecular weight heparin
MAOI	monoamine oxidase inhibitor
mg	milligram
µg	microgram
MI	myocardial infarction
MIC	minimum inhibitory concentration
min	minute
ml	millilitre
MRSA	methicillin-resistant *Staphylococcus aureus*
NG	nasogastric
ng	nanogram
NIV	non-invasive ventilation
NJ	nasojejunal
NOAC	novel oral anticoagulant
nocte	at night
NSAID	non-steroidal anti-inflammatory drug
$PaCO_2$	partial pressure of carbon dioxide in arterial blood
PaO_2	partial pressure of oxygen in arterial blood
PCA	patient controlled analgesia
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)
PPI	proton pump inhibitor
PR	*per rectum* (rectal route)
PRN	pro re nata (as required)
PT	prothrombin time
PVC	polyvinyl chloride
PVD	peripheral vascular disease
RR	respiration rate
s	second
SC	subcutaneous
SIRS	systemic inflammatory response syndrome
SL	sublingual
SSRI	selective serotonin re-uptake inhibitor
STEMI	ST-segment elevation myocardial infarction
SVR	systemic vascular resistance
SVT	supraventricular tachycardia
TFT	thyroid function tests
TNF	tumour necrosis factor
TPN	total parenteral nutrition
TSH	thyroid stimulating hormone
U&E	urea and electrolytes
VF	ventricular fibrillation
VRE	vancomycin-resistant *Enterococcus faecium*
VT	ventricular tachycardia
WFI	water for injection
WPW syndrome	Wolff–Parkinson–White syndrome

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I would like to thank the staff of UCLH ICU for asking many searching questions about drug therapy; the answers fill these pages. RS.