Handbook of Drugs in Intensive Care

Fifth Edition

This book is dedicated to Georgina Paw.

Handbook of Drugs in Intensive Care An A-Z Guide

Fifth Edition

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INTRODUCTION

Since the publication of the fourth edition in 2010, 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 is comprised of 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 70 kg 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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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, 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 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 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 key 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

ACE-I	angiotensin converting enzyme inhibitor
ACh	acetylcholine
ACT	activated clotting time
ADH	antidiuretic hormone
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 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	computerised tomography
CVVH	continuous veno-venous haemofiltration
CVVHD	continuous veno-venous haemodiafiltration
DI	diabetes insipidus
DIC	disseminated intravascular coagulation
DVT	deep vein thrombosis
EBV	Epstein Barr virus
ECG	electrocardiogram
EEG	electroencephalogram
EMD	electromechanical dissociation
ESBL	extended-spectrum beta-lactamases
$ETCO_2$	end-tidal carbon dioxide concentration
FBC	full blood count
FFP	fresh frozen plasma
g	gram
GFR	glomerular filtration rate
GI	gastrointestinal
HD	haemodialysis
HOCM	hypertrophic obstructive cardiomyopathy
h	hour
HR	heart rate
ICP	intracranial pressure
ICU	intensive care unit
IHD	ischaemic heart disease
IM	intramuscular
INR	international normalised 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
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
NIV	non-invasive ventilation
NJ	nasojejunal
nocte	at night
NSAID	non-steroidal anti-inflammatory drugs
$PaCO_2$	partial pressure of carbon dioxide in arterial blood
PaO_2	partial pressure of oxygen in arterial blood
PCA	patient controlled analgesia
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)
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
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
SVT	supraventricular tachycardia

TFT	thyroid function tests
TNF	tumour necrosis factor
TPN	total parenteral nutrition
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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RS.