PARAMEDIC POCKETBOOK OF PRESCRIPTION MEDICATIONS

ROSE MATHESON

WILEY Blackwell

Paramedic Pocketbook of Prescription Medications

Rose Matheson
Queen Margaret University
Edinburgh, UK

WILEY Blackwell

This edition first published 2024

Registered Offices
John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, USA
John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK

For details of our global editorial offices, customer services, and more information about Wiley products visit us at www.wiley.com.

Wiley also publishes its books in a variety of electronic formats and by print-on-demand. Some content that appears in standard print versions of this book may not be available in other formats.

Library of Congress Cataloging-in-Publication Data applied for
Paperback ISBN: 9781394202492

Cover Design: Wiley
Cover Image: © James Thew/Adobe Stock Photos

Set in 7.5/8.5pt Palatino by Straive, Pondicherry, India

Contents

Foreword

As paramedics, we are entrusted with the immense responsibility of caring for the health and well-being of those in need. Every day, we face countless challenges, potentially making split-second decisions that can have long-lasting effects.

The world of paramedicine continues to evolve at pace, one area that has changed beyond recognition in the last couple of decades is the paramedic's knowledge of pharmacology; no longer is a protocol approach sufficient. The modern paramedic is expected to understand and navigate the complexities presented by medications and drugs.

This remarkable book presents a treasure trove of easily accessible content offering a comprehensive guide to common prescription medications for paramedics working in a variety of environments. Within these pages you will find a wealth of information that will enhance your understanding of prescription medications and empower you to make informed decisions in this field. This book is a testament to the author in ensuring that paramedics have access to up to date and relevant information in this critical aspect of our practice.

What truly sets this book apart is its commitment to accessibility. A talented artist, Rose has presented the information in a visually engaging manner, using graphics to enhance comprehension. This practical approach is suited fabulously to the pragmatic people that we paramedics tend to be; each medication is presented in a concise and easily understandable manner, making it accessible even to those with a limited pharmacological background.

I would like to express my deepest gratitude to Rose, for her dedication and expertise in compiling this essential resource. Her

commitment to excellence is evident in every page, and her passion for advancing knowledge and understanding of pharmacology shines through.

To my fellow paramedics, I encourage you to embrace this text as a companion on your journey to providing the highest standard of care. May this book serve as a trusted ally in navigating the complex arena of medications.

Kirsty Lowery-Richardson, Head of Education – College of Paramedics

Acknowledgements

Thanks to the team at Wiley for helping me write my first book! Specifically, I would like to thank Tom Marriott at Wiley for initially reaching out to me with his idea for this book and Christabel and Valli for their support during the writing stages. Equally I would like to thank my partner Harry and loyal wire-haired pointer Marsco for their pastoral support! Thanks to my mum Fiona Matheson for reading through early drafts for spelling errors just as she used to do for my school essays and Maya Walker who also lent me sharp eye! Most importantly, thank you to my students who have helped me get rid of my imposter syndrome (a bit) and to the students who are reading this book to try and learn more to support the people they treat.

List of Abbreviations

5HT – Serotonin
ACE – Angiotensin Converting Enzyme
AF – Atrial Fibrillation
AIDS – Acquired Immune Deficiency Syndrome
AKI – Acute Kidney Injury
BPH – Benign Prostate Hyperplasia
CCB – Calcium Channel Blocker
CK – Creatine Kinase
CKD – Chronic Kidney Disease
CKD-EPI – Chronic Kidney Disease Epidemiology Collaboration
CNS – Central Nervous System
COPD – Chronic Obstructive Pulmonary Disease
COX – Cyclo-oxygenase
D2 – Dopamine
DIC – Disseminated Intravascular Coagulation
DMARDs – Disease Modifying Anti-Rheumatic Drugs
DOAC – Direct Oral Anti-Coagulant
DPP-4 – Dipeptidyl Peptidase 4
DRESS – Drug Reaction with Eosinophilia and Systemic Symptoms
DVLA – Driving and Vehicle Licensing Agency
DVT – Deep Vein Thrombosis
ECG – Electrocardiogram
FBC – Full Blood Count
GERD – Gastro-oesophageal Reflux Disease
GSL – General Sales List
H@H – Hospital at Home
INR – International Normalised Ratio
JIC – Just In Case

LDL – Low Density Lipoproteins
LFT – Liver Function Tests
MHRA – Medicines and Healthcare Products Regulatory Agency
NG – Nasogastric (tube)
NJ – Nasojejunal (tube)
NSAID – Non-steroidal Anti-inflammatory Drug
OCD – Obsessive Compulsive Disorder
P – Pharmacy
PC – Palliative Care
PCOS – Polycystic Ovary Syndrome
PE – Pulmonary Embolism
PEG – Percutaneous Endoscopic Gastrostomy (tube)
PGD – Patient Group Directive
POM – Prescription Only Medicine
PPCI – Primary Percutaneous Coronary Intervention
PRN – 'pro re nata' (take as required)
QRS – QRS Complex of Electrocardiogram
RAAS – Renin Angiotensin Aldosterone System
RIG – Radiologically inserted gastrostomy (tube)
SCARs – Severe Cutaneous Adverse Reactions
SLE – Systemic Lupus Erythematosus
SNRI – Serotonin and Noradrenaline reuptake inhibitor
STEMI – ST-Elevation Myocardial Infarction
T2DM – Type 2 Diabetes Mellitus
TIA – Transient Ischaemic Attack
URTI – Upper Respiratory Tract Infection
VT – Ventricular Tachycardia

Introduction

'Have You Recently had a Change in Your Medications?'

This is one of my favourite questions to ask a patient. Mainly in the hope that I can use some pharmacological detective skills to find a medication that is causing their symptoms (Figure 1). Maybe their new blood pressure medication is the reason they are feeling dizzy when they stand up? Maybe their insulin dose is causing them to suffer regular hypoglycaemic events? Has their steroid inhaler caused their oral thrush? Has their lidocaine patch sent them into an arrhythmia?

As paramedics, we have a unique knowledge of medications. We have the medications that we are privileged to provide people in an emergency through Schedule 17 and 19 of the Human Medicines Regulation 2012 and then some more that are mutually agreed to be beneficial and included in guidelines from the JRCALC or as a Patient Group Directive. As the role of the paramedic has developed from primarily a transport service to a mobile medical centre, we have developed into expert generalists in urgent and emergency medicine. The role of the paramedic has been less of an emerging profession but an exploding one with a dramatic change in the demands on the profession over the last few decades.

However, a lot of this learning is done post-qualification. Education can still be focused on trauma and life-threatening calls of which the latter is now well expected to make up only 10% of our workload [1]. The other 90% of calls we attend don't always align to our training. This can leave both new and experienced clinicians to suffer from

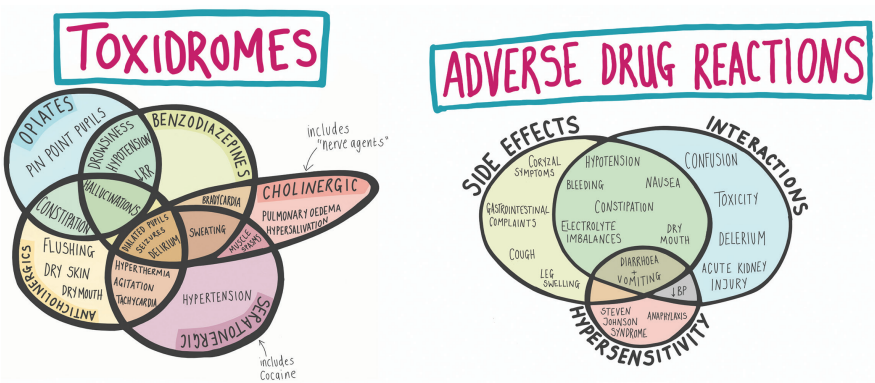

Figure 1 Ambulance call-outs due to medicines can be grouped into different categories which can hide behind common presentations that we might not consider to be related to a person's medication.

regular bouts of uncertainty which when repeated can contribute to burnout [2]. The role of the paramedic involves attending more and more people with urgent presentations and chronic disease which has resulted in paramedics needing a more rounded knowledge of prescription medicines despite this not classically being part of the curriculum for paramedics. That is where I am hoping this book comes in useful, as an easy-to-use resource to familiarise ambulance clinicians with commonly prescribed medications. The list of medications used includes the top prescribed medications in England [3] but with a greater focus on medications in a primary care setting as these are more commonly encountered by ambulance clinicians in the pre-hospital environment.

Due to my location and training, this book focuses on UK-based practice and legislation. However, in the main list, the drug names have been used rather than brand names and many of the uses, side effects and data will still be applicable elsewhere in the world. This pocketbook aims to provide an additional reference for ambulance staff and other non-prescribers in order to familiarise themselves with commonly prescribed medications. It is not meant to be used as an alternative to the British National Formulary (BNF) or a discussion with a prescriber.

References

1 The Nuffield Trust. Ambulance Response Times [internet]. 2023. The Nuffield Trust: London. [cited 2023 08 29]. Available at: https://www.nuffieldtrust.org.uk/resource/ambulance-response-times

2 Alzahrani, A., Keyworth, C., Wilson, C. and Johnson, J. Causes of stress and poor mental wellbieng among paramedic students in Saudi Arabia and the United Kingdom: a cross-cultural qualitative study BMC Health Serv Res 2023 5 (23). [cited 2024 03 15]. Available at: https://doi.org/10.1186/s12913-023-09374-y

3 Audi, S., Burrage, DR., Lonsdale, DO., Pontefract, S. Coleman, JJ., Hitchings, AW. and Baker, EH. The 'top 100' drugs and classes in England: an updates 'starter formulary' for trainee prescribers Br J Clin Pharm 2018 84 (11) p2562–2571. [cited 2023 06 01]. Available at: https://doi.org/10.1111/bcp.13709

Drug Legislation and Paramedic Practice

Paramedics are able to administer several medications to patients autonomously, meaning without a discussion with a prescriber, but these medications do not all fall under the same legislation.

Schedule 19 of the Human Medicines Regulations 2012

These are medications that **anyone** can administer in an emergency [1]. This is why anyone can give an EpiPen® to someone suffering from suspected anaphylaxis and there is increasing training in 'Take Home Naloxone' for opiate overdoses. Medications under this legislation include:

- Adrenaline 1:1000 up to 1 mg for intramuscular use in anaphylaxis
- Atropine sulphate and obidoxime chloride injection
- Atropine sulphate and pralidoxime chloride injection
- Atropine sulphate injection
- Atropine sulphate, pralidoxime mesylate and avizafone injection
- Chlorphenamine injection
- Dicobalt edetate injection
- Glucagon injection
- Glucose injection
- Hydrocortisone injection
- Naloxone hydrochloride
- Pralidoxime chloride injection
- Pralidoxime mesylate injection
- Promethazine hydrochloride injection

Paramedic Pocketbook of Prescription Medications, First Edition. Rose Matheson.

- Snake venom antiserum
- Sodium nitrate injection
- Sodium thiosulphate injection
- Sterile pralidoxime

Note that the only indication here is for anaphylaxis and there is no clear guidance on when other medications should be indicated. Regulation 214 [2] may also be quoted in reference to paramedics which suggests prescription-only medications can only be administered parenterally in the presence of an 'appropriate practitioner' of whom paramedics are not identified. However, Regulation 238 states that Regulation 214 should be disregarded in the instance of Schedule 19 medicines in order to save a life in an emergency. Therefore, these medications can still be given by anyone; however, the indication for giving them is not clear.

Schedule 17 of the Human Medicines Act (Part 3.8)

These prescription medications can be given by paramedics for the 'necessary' treatment of sick people [2]. This schedule covers different professions that have their own exemptions to allow them to provide certain prescription medications. These may be referred to as 'exemption medications'. Not all medications we use are covered by this legislation and some of the medications here have fallen out of favour (e.g. streptokinase). Some medications are listed but not indicated for the use that they are now mainly given – for example, heparin is only stated to be used as a flush and not as part of cardiac thrombolysis. Again, there are no indications stated for all these medications.

These medications include:

- Adrenaline acid tartrate
- Adrenaline hydrochloride

- Amiodarone
- Anhydrous glucose
- Benzylpenicillin
- Compound sodium lactate (Hartmann's Solution)
- Diazepam 5 mg/ml
- Ergometrine 500 mcg
- Ergometrine maleate 500 mcg and oxytocin 5 units (Syntometrine®)
- Furosemide
- Glucose
- Heparin sodium (only to flush a cannula)
- Lidocaine hydrochloride
- Metoclopramide
- Morphine sulphate
- Nalbuphine hydrochloride
- Naloxone hydrochloride
- Ondansetron
- Paracetamol
- Reteplase
- Sodium chloride
- Streptokinase
- Succinylated modified fluid gelatin
- Tenecteplase

Patient Group Directives

Patient Group Directives (PGDs) are legislation that allows for a certain group of health care professionals to administer a specific medication to a specific patient group [3]. An example is heparin; ambulance services create a PGD to allow paramedics to administer heparin to people expecting Primary Percutaneous Coronary Intervention (PPCI) treatment or thrombolysis. Different ambulance services will have different medications available as PGDs

and this can include a 'new' medication for paramedics such as codeine for moderate pain or a medication we use but in a different form or route, e.g. nebulised adrenaline for croup. What is important to understand is that these medications can only be given for the presentations mentioned on the PGD and if you change employment to another ambulance service or trust you cannot give this medication unless it is also a PGD in your new service.

Associate of Ambulance Chief Executives Protocols

The Joint Royal College Ambulance Liaison Committee (JRCALC) list medications that ambulance services and trusts have generally agreed will benefit people if paramedics are able to administer them. These medications are more colloquially known as 'JRCALC medicines'. This includes medications such as clopidogrel. Individual ambulance trusts may have their own specific guidelines for these medications through PGD, or they will follow JRCALC guidance.

Prescribing

Some paramedics will choose to do additional training to gain their Non-Medical Prescribing qualification at Bachelors or Masters level. This allows them to prescribe medications from the BNF and they will be listed as an independent or supplementary prescriber on the Health and Care Professions Council (HCPC). However, at the time of writing, paramedic prescribers are only able to prescribe a limited list of controlled drugs [4].

Controlled Drugs

Since I've mentioned it, let's talk about controlled drugs.

Paramedics can autonomously administer a selection of what are known as 'controlled' medications such as morphine sulphate and benzodiazepines through various forms of legislation. The Misuse of Drugs Act 1971 [5] places drugs in different 'classes' which are organised on a scale based on the potential harm when misused and includes both prescription drugs and illicit drugs.

Class A – Includes cocaine, heroin, LSD, MDMA, morphine, methadone.
Class B – Includes oral amphetamines, cannabis, codeine, dihydrocodeine, ketamine and barbiturates.
Class C – Includes buprenorphine, benzodiazepines, tramadol, zopiclone, androgenic and anabolic steroids, gabapentin, pregabalin and most recently nitrous oxide.

The Misuse of Drugs (Safe Custody) regulations 1973 is related to the safe storage of controlled drugs and the Misuse of Drugs Regulations 2001 discusses who can provide controlled drugs and the requirements for supply, prescribing and record keeping (Table 1). This is where the terminology of having different 'schedules' of controlled medications comes in. This is why morphine and midazolam need to be double locked in a safe whereas diazepam does not.

This legislation originates from attempts to prevent misuse of drugs to cause harm. The knowledge behind drug misuse is evolving and a greater understanding of life experiences that contributes to drug use is becoming clearer. There is greater appreciation that drug use and addiction is a coping mechanism for early childhood trauma which can be supported through appropriate rehabilitation. Legislation is yet to reflect this; however, there is growing acceptance within the medicine and psychology fields that to tackle drug misuse legislation needs to be supportive not punitive [6].

Table 1 Controlled Drug Schedules

SCHEDULE	EXAMPLES	REQUIREMENTS	PREHOSPITAL EXAMPLES
Schedule 1	Hallucinogenic drugs, ecstasy-like drugs, opium, cannabis	Home office licence required for production, possession+supply. Controlled drugs register kept with pharmacy details.	NONE
Schedule 2	Opiates, stimulants, cocaine, ketamine, medicinal cannabis products	Controlled drugs register to be kept detailing administration of supply. Must be stored in a locked safe.	Morphine sulphate (IV preparation) Ketamine
Schedule 3	Most barbituates, gabapentin, pregabalin, midazolam, temazepam	Some groups must be stored in a locked safe. Retention of invoices for 2 years	Midazolam
Schedule 4	other benzodiazepines, Z-drug, anabolic + androgenic steroids	Retention of invoices for 2 years	Diazepam
Schedule 5	Codeine phosphate, oral preparations of morphine	Retention of invoices for 2 years	Codeine, oramorph®