Get ahead!

The Prescribing Safety Assessment

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The Prescribing Safety Assessment

Foreword

I am pleased to have the opportunity to write a few words for this new book.

It is very clear that the need for publications which support clinicians in training such as medical students and pharmacists at the undergraduate and preregistration levels as well as beyond, to improve and support their professional practice, is essential. The content can also be of value to other healthcare professionals, for example nurse practitioners who are developing their clinical practice as prescribers.

I'm sure this book will prove invaluable to clinicians in training taking the new forms of preregistration exams in their chosen fields. The format is particularly useable because it is divided into eight clinical specialties of relevance to the newly qualified prescriber. These specialties are then cross populated into six prescribing safety areas: prescribing, prescription review, adverse drug reactions, calculations, interpreting data and how to communicate information effectively.

Throughout my career, I have sought to expand my knowledge and capability as the demands on newly qualified clinicians and indeed clinicians of greater experience have continued to grow. This book speeds up some of that learning and will improve clinical confidence.

I was one of the first pharmacists to train as a prescriber, initially as a supplementary prescriber, and my competency development was based on the limited resources that I had to identify through a personal trawl through documents, papers and assorted books. This book has collated some of that search into a readable and useable format to enhance the journey of learning and development.

I have found the book a delight to read, and I commend the authors on a very useful addition to the library of learning.

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LPN Pharmacy Chair (London)
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Preface

The prescribing of drugs or their antecedents goes back a long way: the journey from the apothecaries of old to the modern delivery of powerful and potentially harmful drugs has taken many hundreds, perhaps thousands, of years. Along the way medicine has developed, and mirrored scientific progress as it has done so.

So the 21st-century doctor has an armamentarium of medicines at her disposal, of which she will develop a knowledge through undergraduate and postgraduate training, and with the expectation that she will administer them safely and with efficacy. The learning that takes place is a complex journey and now is to be formally assessed under UK regulation, in its own right, in addition to the other examination processes regulated by the General Medical Council (GMC).

Drug prescription, having been formalized into a doctor-only process over the last century or so, has now been extended to other professions. So-called non-medical prescribing can be part of the professional development of many other disciplines: nurses, physiotherapists and podiatrists for example. Even pharmacists, whose relationship to medicines might be said to be closer than anyone's, can in the UK prescribe 'over the counter', pharmacist only and now 'prescription only' medicines (where they have done the appropriate training).

For doctors, the prescription of medicines has always been integral to clinical practice, and is assessed at an undergraduate level in final examinations. At the time of writing, medical schools have the option to include a Prescribing Safety Assessment (PSA) within their own assessments, or use the PSA to which this book is directed. Time will tell, but the PSA is likely to be the definitive prescribing assessment in the future. This direction of travel was set in train by *Tomorrow's Doctors*, a publication of the GMC.* Some of the thinking behind the establishment of the PSA by the UK Medical Schools Council and the Royal Pharmaceutical Society was well summarized by Rayburn in, appropriately enough, the *Student BMJ*.†

So the go-ahead young doctor will certainly get ahead by studying this book, which matches the structure of the PSA, examines the content

* GMC 2009. http://www.gmc-uk.org/Tomorrow_s_Doctors_1214.pdf_48905759.pdf

† Sayburn A. *Preparing to prescribe.* http://student.bmj.com/student/view-article.html?id=sbmj.h316

needed to be covered and offers support in examination technique. Having used this resource, or others, and passed the PSA, new doctors can claim to be safer in prescription, or at least to have demonstrated a good knowledge of drug safety. Given the estimated volume of drug-related iatrogenic disease, this is no small claim, and it is of particular relevance to the population health of the Western world, where multi-morbid elderly patients are at particular risk of this problem.*

Doctors when they graduate are taking on an awesome set of responsibilities, of which safe and efficacious prescribing is but one. They may certify death, be privy to very private information, excuse people from work, give professional witness to courts, perform procedures which invade bodily integrity, and see the raw emotion of the distressed patient. This list is not exhaustive, nor can it be, but it is interesting to note that we do not seek to assess the new doctor, by specific examination, in each of these areas of practice. We collate them together with other core knowledge and skills into 'finals'. It is a measure of the importance and risk of drug management that the PSA has been called into existence – and for which these three authors have produced such a comprehensive guide.

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* Permpongkosol S. Iatrogenic disease in the elderly: risk factors, consequences, and prevention. *Clin Interv Aging.* 2011; 6: 77–82.

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Nicholas Fuggle would like to thank his wife Georgina and sons Jasper and Wilber for being eternal sources of inspiration, support and encouragement.

Amar Iqbal would like to extend a heartfelt and sincere appreciation to his family for having supported him throughout this endeavour. More importantly, he would like to praise God for having guided him throughout his career and for always being there when he has needed Him most.

About the Authors

Muneeb Choudhry is a general practitioner (GP) and director of AT Medics. He qualified from St George's, University of London (SGUL), in 1998 and completed his GP training in 2003 in Croydon University Hospital Vocational Training Scheme. He travelled to remote and rural Australia after this as part of the Programme for Aboriginal Health. Following this, he completed a short service commission as a medical officer in the Royal Air Force. He then returned to the NHS to join AT Medics, London's leading Alternative Provider Medical Services (APMS) provider of primary care. He is a GP specialist trainer for the London Specialty School of General Practice and a Foundation Year 2 Clinical Supervisor, and he has also been a GP Hub tutor and Objective Structured Clinical Exam (OSCE) examiner for undergraduate medical students for SGUL. He is currently an appointed South London GP Appraiser and has also lectured at SGUL with an interest in prescribing. Additionally, he has developed practical expertise in minor surgery, joint injections, acupuncture, circumcisions, plastics and aesthetic procedures. Dr Choudhry is qualified in occupational medicine as well as in mediation. He holds additional posts as Learning Disability Lead in two Clinical Commissioning Groups (CCGs) in South London.

Nicholas Fuggle is a rheumatology registrar in Brighton and works with the Musculoskeletal Sciences group at St George's University of London. He qualified from Imperial College in 2009 and since then has completed his Core Medical Training in South London. He is a keen teacher and has held a post as honorary tutor at St George's where he lectured on clinical pharmacology. He has a research interest in the aetiology of inflammatory arthritis and has presented nationally and internationally. His prizes include The St Mary's Association Prize, The Association of Clinical Pathologists Incentives Prize and Scholar of the World Congress of Dermatology.

Amar Iqbal is currently deputy chief pharmacist at Birmingham Women's Hospital, Birmingham, UK. He qualified with first class honours from Aston University, Birmingham, UK, in 2007 and completed his training year with Alliance-Boots, where he went on to become a store manager at the first ever hospital outpatient pharmacy collaboration in the United Kingdom. He switched to the National Health Service (NHS) in 2010, where he gained broad experience in dermatology, adult medical wards, surgical wards, emergency admissions, neurorehabilitation wards and medicines information amongst others whilst at Sandwell and West Birmingham Hospitals NHS Trust. Amar also gained experience in ophthalmology at Birmingham and Midland Eye Clinic.

Amar joined Heart of England NHS Foundation Trust (HEFT) in 2012 as a women's and children's health pharmacist, where he attended to a level 3 neonatal intensive care unit (NICU), general paediatric wards (including high dependency unit), surgical day cases, and obstetrics and gynaecology. He also provided support to the paediatric emergency department, maternity wards and some outpatient clinic areas. He also worked closely on the training and education of doctors and nurses in the NHS. This included working on an in-house prescribing training module (VITAL). During his time with HEFT, Amar was seconded to a teacher–practitioner role, where he worked with students from Aston University on patient-focused learning and assessment within the hospital and university setting. Locally, Amar has created an introductory prescribing module for West Midlands Deanery as part of the SCRIPT eLearning initiative for specialist paediatric trainees.

After leaving HEFT in 2015, Amar was director of a professional consultancy firm and also worked as a locum pharmacist which brought him back to adult medical and surgical specialities.

Amar is a keen advocate of the Royal Pharmaceutical Society and for the past five years has had a dedicated role as pre-registration and student development lead at Birmingham and Solihull Local Practice Forum. Amar has also worked for both professional (RPSGB) and regulatory bodies (GPhC) for pharmacy whilst contributing to local and national initiatives and guidelines.

Introduction

Prescribing forms a major part of the workload of doctors in their foundation years; it is a complex task which requires careful attention and due diligence. It requires you as a prescriber to be familiar with the use, side effect profile and risks and benefits of various medications.

The prescribing process is full of dangers, and literature shows prescribing errors to be part of this. A recent study (EQUIP) found that 9% of hospital prescriptions contained an error. With this in mind, the General Medical Council initially (in 2013) piloted and has now (in 2014) put into place a national prescribing safety assessment that allows you to demonstrate your core prescribing competencies. The assessment is a joint collaboration between the British Pharmacological Society and the Medical Schools Council that aims to allow for safe and effective prescribing for the betterment of patient health.

Core prescribing competencies include, among others:

- Writing new prescriptions
- Reviewing existing prescriptions
- Amending prescriptions to suit individual patient profiles
- Identifying adverse drug reactions
- Identifying and avoiding medication errors
- Calculating doses

Medical schools still have the choice of compiling their own equivalent exam, which has to be of the same or higher level of difficulty, to assess the same competencies (as judged by an external panel). This may be in an electronic or written format which will provide a small degree of variation in technique required to complete the assessment. This is due to the fact that you may be clicking with a mouse on boxes or opening the Electronic British National Formulary (eBNF) on a computer-based exam, as opposed to filling in boxes with a pencil and physically turning the pages of the BNF hard copy, in the written format.

Using the BNF and eBNF as much as possible during the revision period is extremely helpful, as the more familiar you are with the formats and tools embedded within it, the less time you will spend searching during the exam.

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STRUCTURE OF PSA

The PSA is marked as either 'pass' or 'fail'. It assesses the skills, judgement and supporting knowledge that relate to medical prescribing of all final-year medical students. It consists of eight different question types, each of which is defined under seven subsets of clinical activity:

Question type	Clinical activity subset
Prescribing	
Prescription Review	Medicine
Planning Management	Surgery
Communicating Information	Elderly Care
Calculation Skills	Paediatrics
Adverse Drug Reactions	Psychiatry
Drug Monitoring	Obstetrics and Gynaecology
Data Interpretation	General Practice

Each question can be classified in two different ways – either by question type or by the clinical specialty being tested.

LAYOUT OF PSA

Section 1 **Prescribing**	8 items (10 marks each) 80 marks	Questions in each section can relate to any of the following seven subsets of clinical activity: Medicine Surgery Elderly Care Paediatrics Psychiatry Obstetrics and Gynaecology General Practice
Section 2 **Prescription Review**	8 items (4 marks each) 32 marks	
Section 3 **Planning Management**	8 items (2 marks each) 16 marks	
Section 4 **Communicating Information**	6 items (2 marks each) 12 marks	
Section 5 **Calculation Skills**	8 items (2 marks each) 16 marks	
Section 6 **Adverse Drug Reactions**	8 items (2 marks each) 16 marks	
Section 7 **Drug Monitoring**	8 items (2 marks each) 16 marks	
Section 8 **Data Interpretation**	6 items (2 marks each) 12 marks	
TOTAL **8 sections**	**TOTAL** 60 items/200 marks	

- You will have **2 hours** (120 minutes) in which to do the PSA.
- The 'pass' mark will vary depending on the difficulty of the questions. The information pertaining to the 'pass' mark will be included when you log into the PSA examination interface.

QUESTION STRUCTURE AND LAYOUT

Below is a brief summary of the layout of the question types you may encounter in your assessment. In the pages following this is an explanation of each section of the assessment with a list of potential common prescribing issues you may be examined on.

Section	Question type
Prescribing	Write a prescription for ONE drug that will help to [*treat/alleviate/prevent*] [*symptom or problem*]. *(Use the hospital [name of chart type]/general practice prescription chart provided)*
Prescription Review	Select the [*ONE/TWO/THREE prescription/prescriptions*] that [*is/are*] [*most likely* to be] [a cause of/contains a serious dosing error/interact/contraindicated etc.]. *(Mark [it/them] with a tick in column [A/B])*
Planning Management	Select the *most appropriate* management option at this stage. *(Mark it with a tick)*
Communicating Information	Select the *most appropriate* information option that should be provided for the [*patient/mother/staff nurse/GP*]. *(Mark it with a tick)*
Calculation Skills	What is the [*total amount/volume/duration/total dose etc.*] that the patient [*should be given etc.*] ...? *(Write your answer in the box below)*
Adverse Drug Reactions	**Type A** – 'Select the adverse effect that is *most likely* to be caused by this treatment. *(Mark it with a tick)*' **Type B** – 'Select the prescription that is *most likely* to be contributing to [*describe the clinical problem here*]. *(Mark it with a tick)*' **Type C** – 'Select the prescription that is *most likely* to interact with [*the drug specified in the stem*] to [*describe the clinical problem here*]. *(Mark it with a tick)*' **Type D** – 'Select the *most appropriate* option for the management of this adverse drug reaction. *(Mark it with a tick)*'
Drug Monitoring	Select the *most appropriate* monitoring option to assess the [*beneficial/adverse*] effects of this treatment. *(Mark it with a tick)*
Data Interpretation	Select the *most appropriate* decision option with regard to [*the prescription/the treatment of*] based on these data. *(Mark it with a tick)*

CLINICAL SUBSETS EXPLAINED

Clinical subset	Question type
Medicine	This subset will cover the following areas: **Admissions Cardiovascular Gastroenterology Neurology Rheumatology** Common medical emergencies can also be covered here too.
Surgery	This subset will cover pre-operative and post-operative surgery in areas such as: **Colorectal General surgery Trauma and orthopaedics**
Elderly Care	This subset will look at elderly patients and problems such as: **Dementia Incontinence Poly-pharmacy Stroke**
Paediatrics	This subset will look at neonates and children up to the age of 16 years.
Psychiatry	This subset will cover common psychiatric problems such as: **Anxiety Behavioural disturbances Depression Psychotic symptoms**
Obstetrics and Gynaecology	This subset will look at perinatal and antenatal care in women. It will also look at those women using contraception, and common gynaecological problems such as: **Bleeding disorders Infections Menstrual cycle disorders Sexual health issues**
General Practice	This subset will cover common problems encountered in primary care. This will cover areas such as: **Dermatology ENT issues Immunizations Ophthalmology**

HIGH-RISK DRUGS

You will be expected to know about high-risk prescribing drugs as per National Patient Safety Agency (NPSA) advice. High-risk drugs are those which are known to have caused, or have the potential to cause, severe harm and/or death. The assessment will expect you to look at least one of the following agents listed below.

Agent(s)	What you may be expected to know about
Antibiotics	• Different types of antibiotics (including structural similarities – e.g. penicillins vs carbapenems vs cefalosporins – and differences) • Likely effects of missed/omitted doses • Drugs that require therapeutic monitoring • Gentamicin double-checking prompt sheet (for neonates) • Common and/or serious interactions between antibiotics and drugs
Anti-coagulants	• Uses of older and newer anti-coagulants • Likely effects of missed/omitted doses • Side effect profile and monitoring/adjustments required • Warfarin and interactions with other drugs/food and drink • How to deal with excessive anti-coagulation • Heparin products (e.g. strengths) and their uses (including as flushes) • Use of multiple anti-coagulation agents and associated risk/benefit
Insulin	• Different types of insulin (including their profiles) • Likely effects of missed/omitted doses • Safely prescribing insulin products (including sliding scale insulin) • Dosing and monitoring of insulin preparations (including harm of long-term hyperglycaemia that is not adequately managed) • Managing hypoglycaemia
Infusion fluids	• Different types of infusion fluids, when they are used and why • Hypertonic versus hypotonic versus isotonic fluids (e.g. sodium chloride) • Calculating fluid replacement • Prescribing of infusion fluids • Appropriate electrolyte replacement therapy
Opioid analgesics	• WHO analgesic ladder • How to prescribe controlled drugs and PCA drugs • Dose conversions between drugs • Opioid naïve patients • Palliative care prescribing • Side effect and haemodynamic profile • Drug–drug interactions and increased risk of side effects (e.g. respiratory depression)

You will **not** be expected to know about **anaesthetic, chemotherapy** and **antipsychotic agents** as these are normally initiated by a specialist.

SECTION 1: PRESCRIBING

- Eight questions (10 marks each).
- Requires you to prescribe a medication in response to a given clinical scenario.
- You will need to review the clinical situation and any additional information to decide upon:
  - The most appropriate medication to prescribe
  - The most appropriate dose, route and frequency for this medication
- You will be assessed on your ability to write a safe, effective and legal prescription.
- The question will outline a clinical scenario and ask you to write a prescription on an electronic prescription chart. This may be as a regular medication, as a STAT dose, as a PRN dose or as a fluid chart prescription.
- Common conditions or areas that you will need to be aware of (N.B. this is not an exhaustive list) include:

Acute conditions	Acute asthma, acute MI, anaphylaxis, VTE prophylaxis, infections
Chronic conditions	COPD, depression, diabetes, heart failure, hypertension

- You will also be expected to distinguish between **important symptoms** such as pain, breathlessness or headache.
- You will be expected to make an appropriate choice of medication based on
  - The available products
  - The different types of formulations
  - The available access points and routes
  - The dose frequency
- One key tip is that you must utilize the approved name (i.e. the drug name) when prescribing a drug. This is sometimes termed 'generic prescribing' and the drug name is written as a 'generic name', for example prescribing as 'paracetamol' as opposed to 'Panadol®'.

- Only use brand names where clinically necessary:

Reason for using the brand (proprietary) name when prescribing	Example(s)
When there is a significant difference in bioavailability between formulations (i.e. where the fraction of dose available for therapeutic effect will differ from preparation to preparation).	Beclamethasone inhalers (e.g. QVAR®) Carbamazepine (e.g. Tegretol®) Ciclosporin (e.g. Neoral®)
For some narrow therapeutic index drugs where the difference between therapeutic and toxic levels is small.	Lithium (e.g. Priadel®) Theophylline (e.g. Uniphyllin®)
Where you cannot interchange between preparations due to:	
1. The type of formulation (e.g. modified released product where the dosing frequency is different, or insulin products)	Adalat® LA vs Adalat® Retard
2. Availability of various products of a similar type	Betnovate® vs Betnovate-RD®
3. Subtle difference in formulation (e.g. concentrated vs diluted creams)	Humalog® vs Humalog® Mix25 Microgynon®30 vs Ovranette®
Where a product contains more than one ingredient or comes in variable strengths (of differing brands) and a brand name will help to easily identify it.	Gaviscon® vs Peptac® Creon® 10,000 vs Creon® 25,000 Movicol® vs Movicol® Plain

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