Script

An eLearning programme to improve prescribing competency

A Guide for Non-Medical Prescribers in the West Midlands working in the secondary care setting

Health Education England

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CONTENTS

1.0 BACKGROUND

There are an estimated 237 million medication errors occurring in England every year[1] and approximately one in ten patients are harmed while receiving hospital care. Medication errors can be defined as ***'a failure in the treatment process that leads to, or has the potential to lead to, harm to the patient'*** [2]. Medication prescribing errors are those that have specifically occurred during the prescribing process, where there is a failure to order the right drug at the right dose at the right frequency for the right patient. In the United Kingdom, medication errors account for 10–20% of all adverse events in the National Health Service (NHS) and the estimated cost of 'probably avoidable' Adverse Drug Reactions (ADRs) is £1.6 billion per annum[1].

In 2010, Health Education West Midlands (then the Strategic Health Authority) commissioned the development of an online eLearning programme to improve the prescribing competency of Foundation trainee doctors. The overall aims of the project were to:

- Encourage safe, effective, and rational prescribing by developing learning modules that reflect current prescribing practice in the NHS.
- Improve the prescribing knowledge and skills of newly qualified doctors during the formative years of their professional development, in order to reduce medication errors and improve patient safety.

SCRIPT *(Standardised Computerised Revalidation Instrument for Prescribing and Therapeutics)* was created in 2011 by a team of clinical pharmacists and clinical pharmacologists working in both education and healthcare together with eLearning experts from OCB Media Ltd. The **'Medicine and Surgery'** version of the programme was fully integrated into the West Midlands Foundation doctor curriculum in 2012, and since August 2017 has been available to every Foundation trainee doctor in England, Wales and Northern Ireland. It has also been implemented as a remedial resource for junior doctors who have failed the national Prescribing Safety Assessment (PSA)[3]. In addition, several medical schools have acquired the programme to support their undergraduate teaching relating to prescribing and therapeutics, and to provide a resource that can aid preparation for the national PSA.

Following the success of SCRIPT for Foundation trainee doctors, versions have been commissioned for other healthcare professionals. Modules are now available to Dentists (8 modules), Paediatric Specialist Trainees (24 modules), Qualified Nurses (18 modules relating to medicines management and optimisation) and Primary Care staff (24 modules when portfolio complete). Since March 2020 (during COVID-19) all SCRIPT modules have been freely available to anyone with an NHS email address.

SCRIPT has been identified as a valuable educational resource for non-medical prescribers (NMPs) to support effective and appropriate prescribing practice. This user guide is most applicable to NMPs working in the secondary care setting and will discuss registering with the **'Medicine and Surgery'** version of the programme. NMPs should register with the version of SCRIPT most relevant to their practice, please visit www.safeprescriber.org for further information.

[1] Elliott RA, Camacho E, Campbell F, Jankovic D, et al. Prevalence and Economic Burden of Medication Errors in the NHS in England. Policy Research Unit in Economic Evaluation of Health and Care Interventions. Sheffield, United Kingdom: University of Sheffield and University of York; 2018.

[2] Ferner RE, Aronson JK. Clarification of Terminology in Medication Errors: Definitions and Classification. Drug Safety. 2006;29(11):1011-22.

[3] Reygate, K., Prescribing Safety Assessment Guide for Foundation Doctors. 2016, Health Education England.

2.0 REGISTRATION

To register with the 'Medicine and Surgery' version of the programme:

1. Go to www.safeprescriber.org, and select **'Medicine & Surgery'.**
2. Click **'Sign up',** then under member select **'Sign up'** again.
3. Select **'NHS Trusts',** then **'West Midlands NHS Trusts'**
4. Under **'Register'** enter your email address and click '**Get started'**
5. During registration, you will be asked to provide the following information:
    i. Name
    ii. Email address
    iii. Telephone Number
    iv. Profession
    v. Professional Number (i.e. NMC number)
    vi. Professional Title
    vii. NHS Trust
    viii. Password
6. When you have entered your details, you will need to agree to the terms and conditions.
7. You will receive an email confirming your registration. When this is complete, you can login and access all the modules.
8. When you have completed a module, a certificate will be made available which you can download as evidence.

Your registration information is not shared with a third party and is maintained on a secure server.

3.0 THE RESOURCE

The **'Medicine and Surgery'** programme comprises 49 web-based eLearning modules relating to prescribing and therapeutics across a wide range of subject areas (Appendix 1). The modules have been authored by specialist healthcare professionals and externally peer reviewed to ensure accuracy and relevance to practice.

The 49 modules are divided into seven categories:

- Principles of Prescribing
- Prescribing in Medical Emergencies
- Managing the Risks of Prescribing
- Prescribing in Special Circumstances
- Therapeutic Groups
- Clinical Governance
- Advanced Prescribing

3.1 Structure of the modules

Each module has the same core components, commencing with a pre-test of 10 questions, designed to allow you to determine your baseline knowledge on the subject area. You will be given a score out of 10 at the end of the test, but will not be provided with feedback at this stage. The learning starts with a brief 'Module Overview', recommendations for any reading that may facilitate progress through the module ('Pre-requisites') and 'Learning Outcomes'.

In most modules, a 'Case Vignette' introduces some key concepts covered in the module content. In-module activities are included throughout the modules to discuss complex patient scenarios and embed learning. Note that some of the key learning points may be provided within the feedback to these cases.

At the end of the module, you will sit a post-test of the same 10 questions presented in the pre-test. These will be asked in a random order, and as the resource develops, the post-test questions may be different for some modules. In order for the post-test to be activated, you must have viewed all content in each module. Guidance on this is given in the 'Post-test' page in the 'Summary' section of each module.

3.2 Certification

Upon completion of the module, a certificate will be made available as a PDF stating:

- Your name
- The module title
- The learning outcomes of the module
- The date and time the certificate was generated

3.3 The pre/post-test score

The pre/post-test is intended to help you determine your baseline knowledge on the module subject and be a measure of knowledge acquisition. They also add an element of interactivity.

The questions have not been reviewed by an examination board. As such, the SCRIPT team has not set a pass mark and the post-test score is not generated onto your module certificate. However, your local Trust may set a pass mark for the modules. This information will be communicated to you by your organisation.

However, whether or not a pass mark has been set, your progress through the modules may be monitored by your organisation, and consistent low scores throughout may call for modules to be re-set and for the test to be re-taken.

4.0 THE RESOURCE IN PRACTICE

4.1 Mandatory modules

Some NHS Trusts, institutions or organisations may choose to mandate specific SCRIPT modules. This will be communicated to you from local leads, and not regionally from HEE or the SCRIPT team. Should modules be mandated, the certificates provided at the end of the module can serve as evidence of module completion.

4.2 How is my progress monitored?

SCRIPT eLearning has a dedicated management site that is accessed by named individuals in your organisation to monitor user progress. This serves two purposes:

1. We can ensure that you are taking steps to develop your prescribing knowledge in postgraduate education
2. We can encourage discussion about prescribing in workplace education and during your appraisals

A designated person in your organisation will see the following information about your progress through the eLearning modules:

- When you have completed the modules (day of week and time of day)
- How long you spent on the learning
- Your pre- and post-test scores

4.3 Re-taking the pre/post-test

Named individuals monitoring your progress through the learning can re-set the module and request that you re-take the test. This is a local decision and one that should be taken in discussion with yourself. In addition, you can also re-set the module yourself.

4.4 Probity

Probity is at the heart of any healthcare profession. Probity means being honest, trustworthy and acting with integrity.

Since the launch of SCRIPT, we have monitored its use by healthcare professionals. This has been conducted for quality assurance and to ensure that users are interacting with the resource as intended. Importantly, our research has informed how to integrate the learning into postgraduate education[4,5].

At the beginning of each module, you are reminded about probity. This is because we have found evidence of dishonest behaviours to 'work around' the modules. This includes fraudulently creating certificates for modules that have not been completed and completing multiple modules simultaneously by opening a number of tabs on the computer. These behaviours can now be identified from the management site, as can modules that are completed in less than 10 minutes (the average time to complete a module is 30-40 minutes).

[4]Brooks, H. L., Pontefract, S. K., Hodson, J., et al. (2016) An evaluation of UK foundation trainee doctors' learning behaviours in a technology-enhanced learning environment. BMC Medical Education, 16: 133.

[5]Brooks, H. L., Pontefract, S. K., Vallance, H. K., et al. (2016) Perceptions and Impact of Mandatory eLearning for Foundation Trainee Doctors: A Qualitative Evaluation. PLoS ONE, 11 (12): e0168558.

5.0 FREQUENTLY ASKED QUESTIONS

5.1 Technical problems

What do I do if I have forgotten my password?

On the login page, click to indicate you have forgotten your password. Enter your email address and click submit. You will receive an email that contains a link to change your password.

What do I do if I have forgotten the email address I registered with?

Email us at info@safeprescriber.org or click 'Contact/Feedback' in the bottom right hand corner of the homepage. The technical team will respond accordingly.

5.2 Content queries and feedback

Who do I contact if I spot an error on the site?

Email us at info@safeprescriber.org or click 'Contact/Feedback' in the bottom right hand corner of the homepage. The editorial team will respond accordingly.

5.3 SCRIPT Requirements

What are the requirements for module completion in my organisation?

Each organisation decides locally which (if any) modules you are required to complete.

How do I know which modules are mandated?

Each organisation decides which (if any) modules you are required to complete. This will be communicated to you locally.

How long do the modules take to complete?

Each module takes an average of 30-40 minutes to complete.

Is there a pass mark for the post-test?

The SCRIPT team does not set a pass mark. However, your organisation may have assigned a pass mark to the modules. This information will be communicated to you locally.

How do I get the module certificate?

A certificate is generated upon completion of all elements of the module. This includes the pre- and post-test. This certificate will always be available on your profile to download.

What should I do with the certificates?

If modules are mandated by your organisation, it is important that you save your certificates. You may also wish to use it as evidence of learning or as the focus of a reflection.

6.0 APPENDICES

APPENDIX 1: Module titles and learning outcomes

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Category	The Principles of Prescribing
Module Title	Learning Outcomes
Prescription Documentation	At the end of this module, and with reference to 'The Ten Principles of Good Prescribing' (accessible via the British Pharmacological Society website: www.bps.ac.uk), you should be able to: • Describe the legal aspects of prescribing, including the prescribing of drugs subject to control under the Misuse of Drugs Act 1971. • List the different types of prescription documentation available in both primary and secondary care. • Explain unlicensed and off-label prescribing and the role of any applicable good practice guidelines. • Describe the standards expected of both hand-written and computer-generated prescriptions. • Discuss the importance of prescribing within the limits, knowledge, skills and experience of the prescriber.
Prescribing and Therapeutics in Foundation Training	By the end of the session, you should have an understanding of: • Discuss the Foundation Programme Curriculum outcomes (i.e. 'Foundation professional capabilities') and descriptors relating to safe prescribing. • Describe the key aspects of the General Medical Council's (GMC) guidance on 'Good practice in prescribing and managing medicines and devices'. • List the restrictions relating to the prescribing of medicines at Foundation level.
Clinical Pharmacology	At the end of this module, you should be able to: • Define the following terms: agonist, antagonist, partial agonist, and allosteric modulator. • Define, and explain the differences between affinity, efficacy and potency. • Be able to understand and use graphical methods to relate dose and response. • Define up-regulation and down-regulation of receptors and using examples, explain how this can affect the response to drugs or alter physiological behaviour. • Define, using key examples, how drugs can act on different types of chemically sensitive sites, including: G-protein coupled receptors, ion channels, nuclear receptors, carrier molecules, and enzymes.
Taking a Safe and Effective Drug History	At the end of this module, you should be able to: • Describe the information needed to complete a safe and effective drug history. • Describe the different information sources available when obtaining or confirming a drug history, and their limitations. • Be able to overcome difficulties in eliciting a drug history. • Identify non-adherence and the impact this can have on the drug treatments prescribed. • Understand what is meant by Medicines Reconciliation, and their role and responsibility in this process. • Understand the importance of effective communication at the transfer of patient care.
Adherence and Concordance	At the end of this module, you should be able to: • Understand medicines adherence and discuss the importance of informed choice and shared decision-making in optimising the safe and effective use of medicines. • Define adherence and how this differs to compliance in relation to drug treatment. • Discuss the influences that affect patient adherence to medicines. • Describe interventions to actively support adherence to medicines and treatment regimens. • Discuss the implications of non-adherence to both the patient and the National Health Service (NHS).

Category	The Principles of Prescribing
Module Title	**Learning Outcomes**
Clinical Kinetics	At the end of this module, you should be able to: ▪ Know the different routes of drug administration. ▪ Know how a change in route can influence pharmacokinetic parameters. ▪ Define 'bioavailability', 'volume of distribution', 'half-life', and 'clearance', and the factors that can affect these. ▪ Using graphical representation, discuss simple models of pharmacokinetics. ▪ Discuss the main processes of drug metabolism in the body and the factors affecting it. ▪ Relate the pharmacokinetics of a drug to the adjustments in dose, frequency and choice of formulation.
Dosing and Calculation	At the end of this module, you should be able to: ▪ Describe the different dose units and their equivalencies (e.g. milligrams and grams). ▪ Demonstrate the different ways a dose may need to be calculated, including those based on Actual Body Weight (ABW), Ideal Body Weight (IBW) and Body Surface Area (BSA). ▪ Understand the dose adjustments that may be required in hepatic or renal dysfunction. ▪ Calculate complex dose regimens and intravenous infusions. ▪ Understand the importance of a second-check when undertaking dose calculations. ▪ Apply simple mathematics to day to day prescribing scenarios.
Formulation and Administration	At the end of this module, you should be able to: ▪ Describe how different formulations of a drug can differ in their pharmacokinetic properties and how this can affect dosing. ▪ Understand which route or formulation should be prescribed to achieve an optimum therapeutic response and avoid harm. ▪ Describe how formulation change can help patients take their medicines and appreciate the value of sharing decisions with the patient when choosing suitable formulations. ▪ Understand how the timing of administration can be crucial for therapeutic response and safety. ▪ Describe the factors that should be considered when prescribing and administering unlicensed medicines. ▪ Describe the relevance of consent in relation to drug administration.
Prescribing in Infection	At the end of this module, you should be able to: ▪ Describe the different classes of antibacterials available and their site of action on a microorganism. ▪ Describe how bacteria can be resistant to antibacterials. ▪ Explain why certain antimicrobials might be restricted in a Trust, and how access to them could be obtained. ▪ Know where to look for guidelines on treating infections and why adherence is important.
Utilising the BNF(C)	At the end of this module, you should be able to: ▪ Describe the basic layout and structure of the BNF and BNFC. ▪ Navigate the smartphone mobile app, online and printed book versions. ▪ Describe the information contained within the *General Guidance* section. ▪ Find and accurately interpret the dose, route, frequency and indication for a given medicine. ▪ Find information on the licensed status of a medicine. ▪ Find information about the different formulations available for a medicine, and identify excipients contained within these. ▪ Find instructions on the administration of medicines given via intravenous infusions. ▪ Describe the information available in the appendices and indices of the BNF and BNFC.

Category	Prescribing in Medical Emergencies
Module Title	**Learning Outcomes**
Drug Allergy and Anaphylaxis	At the end of this module, you should be able to: • Take an accurate history of any previous reactions to drugs, medicinal and related products and non-drug allergies. • Examine a drug chart, and decide which drugs might pose a risk to the patient in light of known allergies. • Recognise the signs and symptoms of allergic reactions to drugs. • Distinguish allergic reactions from other adverse drug reactions. • Manage acute allergic reactions to drugs. • Arrange appropriate follow up in cases of suspected drug reactions.
Poisoning	At the end of this module, you should be able to: • Describe the risks associated with taking specific drugs in overdose. • Manage a patient presenting with poisoning. • Describe the role of the National Poisons Information Service (NPIS). • Describe the information available on TOXBASE and how to access this.
Cardiac Arrest	At the end of this module, you should be able to: • Explain the steps involved in the management of an adult in cardiac arrest. • Recall the reversible causes of cardiac arrest. • Describe the modifications to practice when resuscitating a pregnant woman. • Manage the care of patients post-resuscitation.
Fluids	At the end of this module, you should be able to: • Describe the signs and symptoms of hypovolaemia and hypervolaemia. • Calculate fluid loss, gains and requirements. • Calculate electrolyte requirements. • Explain the difference between crystalloid and colloid fluid replacement therapy and when each might be appropriate for use. • Monitor fluid replacement therapy effectively to avoid adverse effects and achieve optimal response.
Diabetic Emergencies	At the end of this module, you should be able to: • Manage hypoglycaemia in a conscious, semi- or unconscious patient. • Take appropriate samples for unexplained episodes of hypoglycaemia. • Describe the characteristic features of Diabetic Ketoacidosis (DKA). • Initiate appropriate fluid replacement and a fixed rate intravenous insulin infusion for a patient with DKA. • Effectively monitor a patient with DKA and know when to request senior review. • Identify and treat any precipitating factors for an episode of DKA. • Distinguish between DKA and Hyperosmolar Hyperglycaemic State (HHS). • Describe the characteristic features of HHS. • Describe the principles of treatment of HHS and initiate immediate management.
Sepsis in Hospital	At the end of this module, you should be able to: • By the end of the module, the trainee should have an understanding of Discuss the spectrum of infection and continuum of sepsis. • Know where to find and how to use tools to help you to recognise the acutely ill patient with sepsis. • List situations where patients may not manifest the traditional signs and symptoms of sepsis. • Discuss the factors to consider when prescribing for the septic patient. • List the six elements of the Sepsis Six® Care bundle and the time frame in which these should be administered. • Discuss good antimicrobial stewardship relating to the management of sepsis. • Discuss the ongoing management of the patient with sepsis, including the importance of source control.

Category	Managing the Risks of Prescribing
Module Title	**Learning Outcomes**
Adverse Drug Reactions	At the end of this module, you should be able to: • Define an ADR and the classification of ADRs. • Identify susceptibility factors that place patients at increased risk of ADRs. • Discuss the concepts of pharmacovigilance and its importance for public health. • Explain the role and function of the Yellow Card scheme. • Identify sources of information on ADRs.
Medication Errors	At the end of this module, you should be able to: • Define medication errors, including subtypes. • Identify individual and systems factors leading to error. • Describe how medication errors are reported. • Describe the role and impact of electronic prescribing.
Monitoring Drug Therapy	At the end of this module, you should be able to: • Understand why it is important to monitor drug therapy. • Identify the commonly prescribed drug therapies that require monitoring before, during and after treatment. • Understand the strategies for monitoring drug therapy, and the criteria that will determine whether such a strategies will be clinically accepted. • Identify common drugs that require Therapeutic Drug Monitoring (TDM) during treatment to avoid sub-therapeutic plasma concentrations and toxicity.
Drug Interactions	At the end of this module, you should be able to: • Demonstrate knowledge of potential drug-drug interactions (DDIs) mechanisms (pharmacodynamic and pharmacokinetic). • List patient factors that may intensify drug-drug interactions, related to age, gender, metabolising enzyme profile (sometimes related to ethnicity), disease, diet, smoking and illicit drug use. • Describe some of the common drug interactions seen in clinical practice and strategies for minimising their occurrence. • Know where to find information on potential drug interactions. • Highlight the importance of identifying and reporting 'suspected' drug interactions and Adverse Drug Reactions (ADRs) to the Medicines and Healthcare Products Regulatory Agency (MHRA).
Toxic Tablets	At the end of this module, you should be able to: • Describe the risks of drugs and how harm from the most dangerous drugs can be minimised. • Discuss the general methods used to limit harm from drugs. • Describe how the prescribing of dangerous drugs requires a concordant approach to therapy to avoid serious harm and adverse drug reactions. • Describe the role of policy and protocol in preventing serious untoward medication errors. • Understand the importance of monitoring drug therapy.
Parenteral Poisons	At the end of this module, you should be able to: • Describe the risks of drugs and how harm from the most dangerous drugs can be minimised. • Discuss the general methods used to limit harm from drugs. • Describe how the prescribing of dangerous drugs requires a concordant approach to therapy to avoid serious harm and adverse drug reactions. • Describe the role of policy and protocol in preventing serious untoward medication errors. • Discuss the importance of monitoring drug therapy.

Category	Prescribing in Special Circumstances
Module Title	**Learning Outcomes**
Perioperative Prescribing	At the end of this module, you should be able to: • Describe the elements of the drug history that are important for preoperative patients. • Examine a preoperative drug history, and decide which drugs to continue and/or omit. • Define the drug classes where alternative treatments are required perioperatively. • Explain the potential for adverse drug reactions (ADRs) and adverse drug-drug interactions in the perioperative period. • Describe the actions to be taken when a surgical patient is discharged with regards to prior chronic therapy and new take home medicines.
Prescribing in Hepatic Dysfunction	At the end of this module, you should be able to: • Describe the principles of safe prescribing in patients with hepatic dysfunction. • Explain the effect of disease in hepatic dysfunction when prescribing. • Discuss the important adverse effects of commonly prescribed drugs on the liver. • Describe the metabolism of drugs by the liver. • Describe the effect of some drugs on liver metabolism. • Rationalise drug treatments in hepatic dysfunction, and make dose adjustments where necessary. • Know where to access up-to-date and reliable information on the prescribing of drugs in hepatic dysfunction.
Prescribing in Renal Dysfunction	At the end of this module, you should be able to: • Show how impaired renal function alters the pharmacokinetics of drugs. • Know how to assess renal function and the limitations of the available methods. • Know which drugs and agents can be nephrotoxic and how these can cause AKI. • Identify common drugs that need dose adjustment in kidney disease. • Demonstrate effective management of (a) intravenous fluid therapy (b) hyperkalaemia (c) antihypertensive therapy and (d) diuretics in kidney disease. • Know where to find information to guide prescribing in kidney disease.
Prescribing in Older Adults	At the end of this module, you should be able to: • Explain the processes of absorption, distribution, metabolism and excretion of drugs in the older patient. • Describe how age-related physiological and pathological processes affect how the body reacts to drugs. • Describe how physical, cognitive and social aspects may affect an older patient's ability to adhere to treatment. • List the factors that make older adults more at risk of developing adverse drug reactions (ADRs). • Develop strategies to reduce problems with medication in the older population.

Category	Prescribing in Special Circumstances
Module Title	**Learning Outcomes**
Prescribing in Pregnancy	At the end of this module, you should be able to: • Explain how the physiological changes during pregnancy can alter the pharmacokinetics of a drug, and therefore require dose adjustment. • Discuss the risks/benefits of prescribing in pregnancy and how this risk changes depending on the trimester. • Describe how to minimise the risk of harm to the fetus when prescribing in pregnancy. • Describe the key drugs (or drug groups) to avoid during pregnancy and why. • Describe how to minimise risks in women of child bearing potential. • Provide examples of drugs where concurrent contraceptive use is essential and why. • Identify the main sources of information to guide prescribing in pregnant women or women of child bearing potential.
Prescribing in Breastfeeding	At the end of this module, you should be able to: • Discuss the risks and benefits of prescribing in patients who are breastfeeding. Considering the gestational age of the infant and both infant and mother's comorbidities. • Describe the ways in which exposure to drug therapy via breast milk may be minimised. • List some drugs known to suppress lactation and describe how they may be used therapeutically. • Identify the sources of advice available to guide decision-making when prescribing for this group of patients.
Paediatric Prescribing	At the end of this module, you should be able to: • Explain how children and neonates handle drugs differently from adults and how this influences prescribing. • Calculate maintenance and rehydration fluid requirements for children of all weights and ages. • Prescribe safely for children, avoiding medication errors, communicating effectively and encouraging good adherence. • List some common medicines for children that are prescribed off-label or are unlicensed, and understand the legal position of this practice. • Be familiar with common prescribing scenarios in paediatrics, including pain relief.
Dementia Friendly Prescribing	At the end of this module, you should be able to: • Describe the common presentations and causes of dementia. • Describe how to assess a patient for suspected dementia, and know which investigations are relevant. • Identify which patients require referral to specialist services, and what these services will offer. • Describe rational treatment choices to slow the progression of dementia, including NICE guidance on when these treatments should be prescribed. • Choose suitable treatments for the behavioural and psychological symptoms of dementia (BPSD), including assessing the risk of the harm and benefit of antipsychotic use.

Category	Therapeutic Groups
Module Title	Learning Outcomes
Respiratory Medicine	At the end of this module, you should be able to: •Prescribe oxygen safely in both the acute and long-term settings. •Counsel patients about the options available for smoking cessation and prescribe appropriate nicotine replacement therapy. •Know the different devices available for delivering inhaled therapy, and be able to choose the most suitable device for the patient. •Manage both acute and chronic COPD and asthma. •Choose appropriate management strategies for patients with common respiratory infections.
Diabetes	At the end of this module, you should be able to: •Describe the onset and duration of action of different insulins available in the UK. •Discuss when a Variable Rate Intravenous Insulin Infusion (VRIII) is indicated. •Know how to set up a VRIII insulin regimen. •Know how to make the safe transition from intravenous insulin, to regular diabetes treatment. •Know the importance of self-management, and the points to consider when educating a patient on their treatment. •Know when to refer a patient to the specialist diabetes team.
Psychiatric Symptom Management in General Hospital Settings	At the end of this module, you should be able to: •Assess and treat depression in a person suffering from a chronic physical illness. •Understand the place in therapy, major adverse effects and interactions of key antidepressants. •Know what the available options are for the treatment of anxiety. •Know what the most effective interventions are for insomnia. •Describe the aims of Rapid Tranquilisation (RT) together with the various treatment options available. •Explain the risks of abrupt antidepressant withdrawal and benzodiazepine dependence. •Emphasise the importance of good adherence in preventing relapse, together with the need for physical health monitoring where appropriate in severe mental illness.
Anticoagulation (1)	At the end of this module, you should be able to: • Describe the basic pharmacology of Vitamin K Antagonists (VKAs). • Discuss the indications for treatment, the recommended dosing regimens and duration of treatment. • List the cautions and contraindications of treatment. • Discuss the importance of balancing the risk of harm with the benefits of treatment. • Discuss the potential complications of therapy. • Describe the monitoring requirements. • List the common drug-drug and drug-food interactions. • Counsel patients prescribed a VKA in order to support adherence and minimise the risk of harm. • Describe role of the anticoagulant clinic and the importance of communication at transitions of care.
Anticoagulation (2)	At the end of this module, you should be able to: • Describe the basic pharmacology of Direct Oral Anticoagulants (DOACs), unfractionated heparin and Low Molecular Weight Heparins (LMWHs). • Discuss the indications for treatment, the recommended dosing regimens and duration of treatment for each. • List the cautions and contraindications of therapy. • Discuss the potential complications of therapy. • Describe the monitoring requirements. • List some common drug-drug interactions. • Counsel patients prescribed a DOAC or a LMWH in order to support adherence and minimise the risk of harm.

Category	Therapeutic Groups
Module Title	**Learning Outcomes**
Infection in Secondary Care	At the end of this module, you should be able to: • Select the most appropriate drug, dose, route and duration of treatment for commonly encountered infections in secondary care. • Describe which antibacterials are contraindicated in patients who are pregnant or breastfeeding, or who have hepatic or renal dysfunction. • Recall the common drug-drug interactions encountered when prescribing in infection. • Explain how and why to monitor and review treatment. • Describe where to look for information regarding the safe and effective management of infection, both locally and nationally.
Management of Pain	At the end of this module, you should be able to: • Describe how the WHO Pain ladder assists in rational prescribing of analgesic therapy for both acute and chronic pain. • Understand the risks associated with paracetamol and NSAIDs, and how these may be minimised. • Identify weak opioid analgesics and when they are appropriate for use. • Identify strong opioid analgesics, and how to minimise the risks when switching between different opioid analgesics and titrating doses to meet individual patient requirements. • Describe the indications and cautions of Patient Controlled Analgesia (PCA). • Recall the stepwise management of neuropathic pain, and understand when a referral to the specialist Pain team is necessary. • Describe the use of local anaesthetics in secondary care setting, and how to recognise and manage toxicity. • Identify patients with complex analgesic requirements where input may be required from specialist teams.
Heart Failure	At the end of this module, you should be able to: • With reference to national and international guidelines, discuss the pharmacological management of heart failure. • Discuss how drug treatment regimens are monitored to avoid harm and optimise therapeutic effect. • Describe the cautions and contraindications of treatment regimens in patients with comorbidities. • Discuss the risks of fluid replacement therapy in this patient group.
Cardiac Dysrhythmias	At the end of this module, you should be able to: • Describe the common arrhythmias that are likely to present to secondary care. • Recall cardiovascular physiology relevant to arrhythmia management. • Recall the evidence-base for the management of common arrhythmias, and where best to find this evidence. • Describe the pharmacological agents used in the management of different arrhythmias and know their cautions and contraindications for use. • Describe how to reduce the risk of thromboembolic events in patients with AF and the importance of balancing this with the risk of bleeding.

Category	Therapeutic Groups
Module Title	**Learning Outcomes**
Epilepsy	At the end of this module, you should be able to: • Discuss the aims and objectives of drug treatment in the long-term management of epilepsy. • Discuss the factors governing the choice of AED treatment including the adverse effects associated with them. • Discuss the management options of epilepsy in women of child-bearing potential and during pregnancy. • Describe some of the common drug-drug interactions associated with AEDs. • Discuss the role of therapeutic drug monitoring (TDM) for AEDs. • Describe the pharmacological management of status epilepticus in secondary care, and the monitoring requirements following the administration of drug treatment.
Drugs of Misuse	By the end of the session, you should be able to: • List both the psychological and physical signs and symptoms of dependence and withdrawal. • Describe the pharmacological mechanisms of dependence and withdrawal. • List common legal and illegal substances of abuse. • Discuss the impact of drug abuse on mental and physical health. • Discuss pharmacological interventions for the management of substance misuse. • Discuss non-pharmacological interventions for the management of substance misuse. • Refer the patient for appropriate support and follow-up.
Rheumatology	By the end of the session, you should be able to: • Understand how disease activity is measured and used to guide therapy. • List the commonly prescribed non-biologic and biologic disease modifying drugs and explain how these are monitored for both their beneficial and adverse effects. • Discuss the cautions and contraindications to treatments, including use during pregnancy and breastfeeding. • List the adverse effects of disease modifying drugs and be able to evaluate symptoms in a patient on unfamiliar drug treatments to determine potential problems. • Describe the principles of safe vaccination practice in patients on disease modifying drugs. • Describe important errors that can arise from methotrexate prescribing. • List the important extra-articular manifestations of rheumatoid arthritis and common clinical and radiological signs that suggest an extra-articular manifestation. • Discuss the purpose of effective shared care agreements and the requirements of practitioner should responsibility be shared.
Cannabis-Based Products for Medicinal Use	By the end of the session, you should be able to: • Describe the basic pharmacology of cannabinoids. • Discuss the legislative changes that occurred in 2018. • List the potential therapeutic indications for CBPMs. • List the prescribing restrictions relating to CBPMs. • Discuss some of the key considerations for the prescribing and supply of a CBPM. • Describe the CBPMs that are available in the UK and their licensed status. • Know where to find reputable, reliable and up-to-date guidelines relating to the prescribing and supply of CBPMs.

Category	Clinical Governance
Module Title	**Learning Outcomes**
Rational Drug Choice	At the end of this module, you should be able to: • Describe the need for evidence-based practice (EBP). • Explain how EBP can improve patient safety and outcomes. • Describe the principles of evidence-based medicine and levels of evidence. • Explain the difference between Relative Risk Reduction (RRR) and Absolute Risk Reduction (ARR). • Define and be able to calculate the Number Needed to Treat (NNT). • Determine if a trial is statistically significant, using P-values and confidence intervals. • Describe the principles of critical appraisal, and the tools required to review industry advertising critically. • Seek appropriate evidence and interpret it effectively to aid prescribing decisions. • Describe how evidence-based medicine is crucial in the development of healthcare policies, protocols and Trust formularies. • Describe the role of clinical audit and the stages involved.
Root Cause Analysis	At the end of this module, you should be able to: • Discuss the importance of 'being open' when a patient safety incident occurs. • Discuss the tools used in the Root Cause Analysis (RCA) of incidents. • Explain how the tools for RCA help identify ways of improving patient safety.

Category	Advanced Prescribing
Module Title	**Learning Outcomes**
Prescribing at the Interface and Team Prescribing	At the end of this module, you should be able to: • Explain the aims and objectives of Effective Shared Care Agreements and when and why they may be necessary. • Describe the role of the Independent Prescriber (IP) and how their role relates to that of a medical practitioner. • Describe the role of the Supplementary Prescriber (SP) and how their role relates to that of a medical practitioner. • Describe the function of Patient Group Directions (PGDs).
Managing Complications of Anticancer Therapies	At the end of this module, you should be able to: • Describe the differences between the main groups of Systemic Anticancer Therapies (SACT). • Explain the aims of SACT - maintaining the balance between maximised effect and minimised risk. • Identify and formulate initial treatment plans for common oncological emergencies. • Identify adverse effects of SACT and formulate simple treatment plans to deal with these complications. • Know that only those practitioners who are identified on the local intrathecal register may be involved in any process surrounding the prescribing, supply and administration of intrathecal chemotherapy.
Palliative and End-of-Life Care	At the end of this module, you should be able to: • Describe the principles of palliative care. • Discuss the importance of shared decision-making in providing palliative care to patients, taking into account the priorities of the individual and their close family. • Describe the principles of pain management in palliative care, including breakthrough pain. • Commence morphine for a patient in chronic pain and how to alter the dose safely. • Appreciate how a change in the route of administration can affect dose, and identify when dose conversion is necessary. • Understand when to give a drug by continuous subcutaneous infusion using a syringe driver. • Explain which drugs can be given by subcutaneous infusion using a syringe driver, and where to find information about compatibilities. • Describe the pharmacological options available to provide comfort and well-being for the symptomatic relief of nausea and vomiting, terminal restlessness and agitation, respiratory secretions, and breathlessness.

Category	Prescribing in Medical Emergencies
Module Title	**Learning Outcomes**
COVID-19	At the end of this module, you should be able to: • Define the Public Health England criteria for a possible inpatient case of COVID-19. • Discuss the symptoms of mild, moderate and severe disease. • Describe the patients who are at high-risk of moderate to severe infection. • Discuss the scores that can be used to inform ceiling of treatment decisions. • List the Personal Protective Equipment that must be worn for all patient contact in those with suspected or confirmed COVID-19, and describe in what order these should be donned and doffed. • List aerosol generating procedures, and discuss this in the context of administering cardiopulmonary resuscitation in a patient with suspected or confirmed COVID-19.