5

Clinical prescription management problems

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Chapter 5 is focused on problem-solving around everyday prescription issues such as drug interactions; the selection of appropriate treatment; drug monitoring and choice of treatment in patients with a chronic condition. You will be asked to apply your knowledge of medicines to clinical practice.

Within an OSCE scenario it is important to identify the most appropriate source of information quickly, retrieve the information and apply it to the patient's prescription. Chapter 5 applies the material covered in Chapter 4 on data retrieval and interpretation.

Before attempting the scenarios in Chapter 5 you should revise your notes on the management of common conditions.

Take 5 minutes now to consider some of the key information resources used in everyday practice and list when you might use which resource. Many of these resources are available online.

Key references

Baxter K, ed. (2010). *Stockley's Drug Interactions*, 9th edn. London: Pharmaceutical Press.

Joint Formulary Committee. *British National Formulary*. London: BMJ Group and Pharmaceutical Press.

Sweetman S, ed. (2011). *Martindale: the Complete Drug Reference*, 37th edn. Pharmaceutical Press.

Summaries of Product Characteristics

Patient Information Leaflets

Sample chapter from *Pharmacy OSCEs*

You can see that these references are the same as those listed in Chapter 4. This is because this chapter focuses on clinical application.

Learning objectives

The following scenarios assess clinical problem-solving skills. By the end of this chapter you should be able to:

■ review prescriptions and identify clinical management problems
■ choose appropriate reference materials in order to answer the questions
■ retrieve appropriate material in order to solve the problem(s) identified
■ interpret laboratory data
■ apply information to the scenario
■ communicate recommendations and advice to patients and prescribers.

For each of the following scenarios, remember to read the scenarios fully and think about the topic before you consider tackling the issue.

Scenario 5.1 Managing interactions (hyperkalaemia)

Format: Written station

Supporting material available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 3, 4; pre-registration.

Knowledge and skills tested

■ Prescription management and interpretation of data
■ Problem-solving.

Task

As a hospital pharmacist you are making your daily visit to a medical ward. You are given a prescription to prepare for Mr S to go home. Mr S was taking co-amilozide before coming in to hospital, for water retention. He has since been started on lisinopril to treat heart failure. His serum potassium level is 5.4 mmol/L, which has increased from 4.3 mmol/L on admission to hospital. (Normal potassium range 3.5–5.0 mmol/L.)

His prescription for taking home is:

- co-amilozide 5/50 mg i mane
- lisinopril 20 mg i mane.

1. Is this prescription clinically appropriate? Explain your answer
2. What action(s) would you recommend? Explain your answer.

Scenario 5.1 feedback

1. Is this prescription clinically appropriate? Explain your answer

No, there is an interaction between co-amilozide and lisinopril. Co-amilozide is a combination of a thiazide diuretic (hydrochlorothiazide) and a potassium-sparing diuretic (amiloride) which leads to potassium retention. ACE inhibitors also cause potassium retention, therefore there is a risk of hyperkalaemia. From the laboratory results it is clear that there is evidence of the interaction, with the potassium level already exceeding the upper limit of normal.

2. What action(s) would you recommend? Explain your answer

What are the guidelines for the treatment of heart failure? When an interaction is identified you need to decide which medicine, if any, to adjust or change. Here, both drugs are recommended for heart failure. In addition the patient is retaining fluid. You know that ACE inhibitors may cause hyperkalaemia, so the most sensible option is *not* to use a potassium-sparing diuretic. The

best solution here is to choose a loop diuretic only, such as furosemide in place of co-amilozide.

It is important that you mention how to monitor whether your suggestions have solved the clinical problem. Here you would recommend that serum potassium levels are monitored. Many students lose marks in OSCEs by failing to follow-up recommendations suggested. Your solution can only be considered successful if the patient recovers!

You need to be familiar with Appendix 1 of the *BNF* (Interactions), especially the subheadings. Here you needed to know that co-amilozide is a combination of amiloride and hydrochlorothiazide (and what type of diuretic each of these is) in order to search for an interaction with lisinopril, an ACE inhibitor.

You are not expected to know all guidelines! Brief summaries for many conditions are found in the *BNF*.

Suggested revision points

- Mechanism of potassium-sparing effects of ACE inhibitors
- Heart failure management
- Patient monitoring.

Scenario 5.2 Advising how to use lamotrigine

Format: Written or interactive station

Supporting material available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 2–4; pre-registration; postgraduate.

Knowledge and skills tested

- Data retrieval and interpretation
- Providing advice to a GP
- Application of information to the patient scenario.

Task

You are working as a pharmacist in a hospital medicines information department when a GP calls for advice regarding initiating lamotrigine tablets for a 40-year-old female patient with a diagnosis of epilepsy. The GP is on a home visit, has no access to a *BNF* and cannot remember the dose for lamotrigine. The patient is currently taking sodium valproate tablets 600 mg twice daily.

1. What is lamotrigine used for in this patient?
2. How should lamotrigine be initiated?
3. Suggest a typical maintenance dose of lamotrigine
4. What other essential information would you give the GP (and patient)?

Scenario 5.2 feedback

1. What is lamotrigine used for in this patient?

Lamotrigine is used as monotherapy and adjunctive treatment of focal seizures and generalised seizures, including tonic-clonic seizures. Use the terminology in the *BNF* to answer this type of question, it is easy to lose marks.

2. How should lamotrigine be initiated?

Here you should advise on dosage titration, including time intervals. Specific dosage information should be given. Drugs used for the treatment of some conditions, such as epilepsy, are also used for a number of other indications (not all licensed). You must be careful when using the *BNF* index to select the correct indication – dosages may vary. Do not 'reinterpret' this information – read it as it is. It is so easy to lose marks here too!

3. Suggest a typical maintenance dose of lamotrigine

Usual maintenance, 100–200 mg daily in 1–2 divided doses.

4. What other essential information would you give the GP (and patient)?

The *BNF* lists two cautions/warnings for lamotrigine. Both must be communicated with the GP/patient:

- Patients should be alert for symptoms and signs that may suggest bone marrow failure, such as anaemia, bruising or infection. This is because aplastic anaemia, bone marrow depression and pancytopenia have been associated rarely with lamotrigine.
- Look out for a rash, particularly in the first eight weeks of treatment. Serious skin reactions including Stevens–Johnson syndrome and toxic epidermal necrolysis (rarely with fatalities) have developed, especially in children. Rash is sometimes associated with hypersensitivity syndrome and is more common in patients with history of allergy or rash from other antiepileptic drugs. Consider withdrawal if rash or signs of hypersensitivity syndrome develop. Factors associated with increased risk of serious skin reactions include concomitant use of valproate, higher initial lamotrigine dosing and more rapid dose escalation than is recommended.

Suggested revision points

- Have a look at classification in epilepsy, this has a significant impact on choice of treatment
- Remind yourself of the impact of liver enzyme induction/inhibition on treatment choice.

Scenario 5.3 Managing interactions (St John's Wort)

Format: Written or interactive station

Supporting material available to student: *BNF*, *Stockley's Drug Interactions*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 2–4; pre-registration; postgraduate.

Knowledge and skills tested

- Data retrieval and interpretation
- Providing advice to a GP
- Application of information to the patient scenario.

Task

An elderly patient wishes to speak to you about their cough and wheeze, which they have experienced for a few days now. The cough is 'dry' and as they have been feeling wheezy, they have needed to use their asthma inhalers more often than usual over the last few days. When asked about medication, the patient states that apart from the inhalers, he takes Uniphyllin Continus® (for the last year), his dose having gone up to 400 mg every 12 hours last month. Also for the last three months he has been taking St John's Wort, as he has been feeling 'low' since a friend passed away, although that is not a medicine but something 'natural' he states.

1. What is the most likely cause of the patient's symptoms?
2. What mechanism of interaction could be involved here, and what are the consequences of the interaction?
3. Should the patient just stop taking the St John's Wort? Explain your answer.

Scenario 5.3 feedback

1. What is the most likely cause of the patient's symptoms?

There is an interaction between theophylline (Uniphyllin Continus®) and St John's Wort. This results in a reduction in plasma concentration of theophylline, allowing symptoms of asthma to reappear/break through. That is, the lower plasma level of theophylline is not controlling asthma/breathing.

2. What mechanism of interaction could be involved here, and what are the consequences of the interaction?

St John's Wort is an enzyme inducer, resulting in increased theophylline metabolism and consequently reduced plasma concentration of theophylline. This lower plasma theophylline level is insufficient to control the patient's symptoms.

Note each stage of the answer to part 2. Students frequently lose marks by missing a stage of the explanation. Read questions carefully and make sure you address each element.

3. Should the patient just stop taking the St John's Wort? Explain your answer

No, the patient should contact his GP in order to manage this clinical situation. There is potential for withdrawal symptoms from St John's Wort and toxicity from raised theophylline levels if St John's Wort is stopped suddenly.

The patient's theophylline levels need to be monitored. (The usual interval is 5 days after adjusting treatment, the plasma level being taken 4–6 hours post dose.)

As with Scenario 5.1, it is easy to lose marks by not mentioning how you will monitor the patient's response to treatment adjustment.

Did you use the *BNF* to answer this question? Could you answer all parts of the question using the *BNF*? The *BNF* provides basic information on drug interactions. More detailed information is available in *Stockley's Drug Interactions*. You can save time in an OSCE by using this text first, if it is provided.

Suggested revision points

- Make a list of drugs with narrow therapeutic indices, these are the most likely to be affected by the addition of an enzyme inducer/inhibitor
- Identify the drugs that are monitored by measuring serum levels – there are not very many!

Scenario 5.4 Choosing antibiotic therapy

Format: Written or interactive station

Supporting material available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Undergraduate year 4, pre-registration, postgraduate.

Knowledge and skills tested

- Signs and symptoms of penicillin allergy
- Decision-making.

Task

On your daily ward visit you are approached by a junior doctor who asks about suitability of therapy for a 5-year-old child who has been diagnosed with meningitis thought to be caused by meningococci. Lumbar puncture cultures have been taken and the infection is sensitive to benzylpenicillin, which the doctor would like to prescribe. Other microbial sensitivities are not yet known.

The child's medicine chart notes that the patient is allergic to penicillin. The nature of the allergy is documented as 'rash (more than 72 hours after previous administration), no sign of anaphylaxis'.

1. Which antibiotic therapy would you recommend for the patient?
2. Why would you recommend this choice? Explain your answer with reference to the information you have been given.
3. What advice would you give to the nursing staff about monitoring this patient with reference to allergic reactions?

Sample chapter from *Pharmacy OSCEs*

Scenario 5.4 feedback

1. Which antibiotic therapy would you recommend for the patient?

Benzylpenicillin can be given to this patient, although it is a penicillin antibiotic. You can find information about which antibacterials are recommended for which infection in the *BNF*.

2. Why would you recommend this choice? Explain your answer with reference to the information you have been given

It is easy to make decisions based on 'the patient is allergic, find something else'. This is the type of case that demonstrates the role of the pharmacist in a clinical team. This patient is seriously ill, with a life-threatening condition. At this stage the only antibiotic that you *know* to be effective is benzylpenicillin. A rash that develops more than 72 hours after previous administration does not constitute an allergic reaction. Your professional judgement should lead you to the conclusion that the risk associated with not starting treatment with the penicillin antibiotic (as soon as possible) outweighs the benefits of avoiding the drug because of worries around allergy.

3. What advice would you give to the nursing staff about monitoring this patient with reference to allergic reactions?

Nursing staff should monitor for signs of worsening allergy, such as early rash or anaphylaxis. Adrenaline should be available on the ward, with information on administration readily available to nursing and medical staff.

Did you use the *BNF* to answer this question? Could you answer all parts of the question using the *BNF*? You might need to refer to the *BNF for Children* to confirm information on paediatric dosage.

Suggested revision points

■   Be certain that you know the definitions of the terms
    'allergy' and 'sensitivity'. Many students confuse the two
    terms
■   Antibacterial treatment options for different infections.

Scenario 5.5 Managing interactions (ibuprofen)

Format: Written or interactive station

Supporting material available to student: *BNF*; *Stockley's Drug Interactions*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 2–4; preregistration; postgraduate.

Knowledge and skills tested

■   Data retrieval and interpretation
■   Knowledge of reference sources
■   Identification of clinical problems
■   Problem-solving.

Task

You are working in your community pharmacy and are approached by Mr P, a 40-year-old man with a history of depression. Your records show that he is currently prescribed sertraline 100 mg daily. He has hurt his back while playing rugby. One of his friends has suggested ibuprofen 200 mg tablets, which helped him when similarly injured. He asks your advice about dosage.

   What advice will you give Mr P?

Scenario 5.5 feedback

Mr P is currently prescribed sertraline to treat depression. This is a selective serotonin reuptake inhibitor (SSRI) antidepressant. Ibuprofen is a non-steroidal anti-inflammatory drug (NSAID). There is an increased risk of bleeding when NSAIDs are given with SSRIs ('black dot' interaction).

Mr P should be advised not to take ibuprofen.

Of course Mr P still has a bad back! At this point you should ask questions in order to determine the severity of pain. Then you could recommend paracetamol 1 g q.d.s. or co-codamol 8/500 mg, two tablets/capsules q.d.s.

Did you use the *BNF* to answer this? *BNF* Appendix 1 is a quick and easy source of interaction information (*Stockley's Drug Interactions* provides more detailed information). Using Appendix 1 is often dependent on knowing the class of a drug, for example that sertraline is an SSRI. If you look up the drug in the *BNF* index and find the main citation, this lists drugs according to the classification.

Remember you must ask customers/patients questions about other medicines. In this type of scenario, where information about prescribed medicines is given, students frequently forget to ask about over-the-counter (OTC) medicines.

Suggested revision points

■ Some medicines, such as NSAIDs, lithium, erythromycin, warfarin and carbamazepine, are frequently implicated in interaction scenarios. Familiarise yourself with these drugs and look at the mechanism(s) of the interaction(s). This will enable you to identify these interactions more easily.

Scenario 5.6 Initiating warfarin therapy

Format: Interactive station

Supporting information available to student: *BNF*, information on loading regimens (depending on year of study)

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 3, 4; pre-registration; postgraduate.

Knowledge and skills tested

- Anticoagulation regimens
- Use of warfarin
- Common drug interactions.

Task

A junior doctor has called you for advice regarding a male patient, aged 50 years, for whom the consultant has requested warfarin be started. The patient has had a mechanical mitral valve replacement inserted and requires anticoagulation. His past medical history includes hypertension, type 2 diabetes and ischaemic heart disease. He has no known drug allergies and none of his medicines interacts with warfarin.

1. What dose would you recommend for initiation of warfarin?
2. What INR range would you recommend and why?
3. What maintenance dose would you recommend?

Scenario 5.6 feedback

1. What dose would you recommend for initiation of warfarin?

There are a number of different warfarin loading dose regimens, ranging from 10 mg, 10 mg, 5 mg on days 1, 2, 3 (Fennerty *et al*., 1988) to 5 mg, 5 mg, 5 mg (Tait and Sefcick, 1998; Crowther *et al*., 1997, 1999). The key is to ensure the INR is tested on day 3 and the warfarin dose adjusted accordingly.

2. What INR range would you recommend and why?

The recommended INR range is 2.5–4.5 depending on local guidelines, the number of mechanical heart valves and other

patient risk factors. The higher INR is because mechanical mitral valves have a higher risk of clotting so therefore require more anticoagulation.

3. What maintenance dose would you recommend?

The maintenance dose of warfarin is dependent on the INR and, in this scenario, it would be unwise to recommend a specific warfarin dose. There are a number of nomograms and local guidelines for adjusting doses of warfarin. Patients have different sensitivities to warfarin so one patient may require a much higher dose of warfarin to achieve the same INR as another patient. There are also a number of drug interactions and foods that may affect the INR.

Suggested revision points

- Review your local warfarin guidelines and identify the different loading regimens
- From the guidelines, list the different conditions that require warfarin anticoagulation and their corresponding INR ranges
- List the drugs that interact with warfarin and identify whether the INR would be increased or decreased.

Scenario 5.7 Drug-induced hypercalcaemia

Format: Written station

Supporting material available to student: *BNF* and SPC for One-Alpha® capsules

Time allowed: 5 minutes

Suggested years of study: Undergraduate year 4; pre-registration; postgraduate.

Knowledge and skills tested

■ Identification and management of drug-induced
    problems
■ Interpretation of laboratory data
■ Problem-solving.

Task

On your daily hospital ward visit you come across a patient
who has been admitted because of severe nausea and vomit-
ing. The patient has hypertension and hypoparathyroidism.
His current medication is bendroflumethiazide 2.5 mg in the
morning and One-Alpha® 1 microgram daily. The labora-
tory test results shown in Table 5.1 have just been returned
to the ward.

Answer the following questions:

1. Comment on the laboratory test results, identifying any
   that are of concern.
2. What might be the cause of any observations you made
   in response to question 1?
3. What action(s) would you recommend?

Table 5.1 Laboratory results for Scenario 5.7

Test (normal range)	Result
Sodium (137–145 mmol/L)	139
Potassium (3.6–5.0 mmol/L)	4.8
Calcium (2.15–2.65 mmol/L)	2.9
Phosphate (0.8–1.4 mmol/L)	1.3

Scenario 5.7 feedback

1. Comment on the laboratory test results, identifying any that are of concern

The calcium level is raised, that is, higher than the upper limit of the normal range.

2. What might be the cause of any observations you made in response to question 1?

There are two potential causes:

- the bendroflumethiazide, a thiazide diuretic, may increase the risk of hypercalcaemia
- alfacalcidol (One-Alpha®), being converted to 1,25-dihydroxyvitamin D (which regulates calcium metabolism), results in increased absorption of calcium. Since hypercalcaemia is observed, it is possible that the dose of alfacalcidol is too high.

3. What action(s) would you recommend?

Stop One-Alpha® treatment until the plasma calcium concentration returns to normal. Then restart alfacalcidol at half the dose, which is 0.5 microgram daily in this patient. In addition, calcium levels should be monitored.

Many students panic when they encounter a term with which they are unfamiliar, such as in this case hypoparathyroidism. Here the term is used to explain the need for One-Alpha®. You will not be expected to know every clinical condition!

Which resource did you use to help you answer the questions? Some relevant information is available in the *BNF*, but may be time consuming to find. You will need to look in the side-effects section in the classification part of the citation. If you are given an SPC for One-Alpha® the information is more easily found, and is particularly useful for what to recommend if hypercalcaemia occurs during treatment. You can practise

looking at SPCs (and Patient Information Leaflets – PILs) at www.medicines.org.uk/emc/ (accessed 6 June 2012).

Suggested revision points

Practise looking at SPCs and PILs, so that you do not waste time looking to find where specific information is located.

Are you familiar with the terminology such as hypo/hyperkalaemia, hypo/hypernatraemia? If not, revise these terms, which are used frequently.

Scenario 5.8 Drug choice in nursing mothers

Format: Interactive station

Supporting material available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 3, 4; pre-registration; postgraduate.

Knowledge and skills tested

- Data retrieval and interpretation
- Knowledge of reference sources
- Identification of clinical problems
- Problem-solving.

Task

Mrs C, a patient who is known to you, attends the pharmacy wishing to purchase ibuprofen 400 mg t.d.s. to treat back pain. Mrs C gave birth two months ago.

1. What questions do you need to ask Mrs C?
2. What advice would you offer Mrs C?

Scenario 5.8 feedback

1. What questions do you need to ask Mrs C?

In addition to the standard WWHAM (remind yourself of what this is – see Chapter 1), you need to ask Mrs C if she is breastfeeding.

2. What advice would you offer Mrs C?

The *BNF* states that the amount of ibuprofen secreted into breast milk is too small to be harmful. Nevertheless, some manufacturers advise avoiding ibuprofen, including topical application, while breastfeeding.

If you choose to advise that Mrs C does not take ibuprofen, you need to suggest an alternative analgesic. Paracetamol is considered safe in breastfeeding.

This scenario requires you to retrieve a single piece of information. Many of the marks available will be for how you communicate the information to the patient.

A more complex OSCE may require you to make a decision about a medicine for which there is no obvious alternative, or perhaps a condition which is more life threatening. In these situations, you may have to consider suggesting that the mother discontinues breastfeeding, particularly if there is little published evidence that breastfeeding is safe while taking a particular medicine. Alternatively it may be advisable for the mother to express breast milk and discard for the duration of treatment, then continue once treatment is no longer required.

Did you use the *BNF* to answer this? The information required to answer this question is available in the *BNF*. The SPC also contains information about pregnancy and breast-feeding.

Suggested revision points

- Familiarise yourself with your *BNF*. Where can you find information about breastfeeding, pregnancy and use of drugs in hepatic or renal failure?

Scenario 5.9 Managing interactions (warfarin)

Format: Written or interactive station

Supporting material available to student: *BNF*, *Stockley's Drug Interactions*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 3,4; pre-registration; postgraduate.

Knowledge and skills tested

- Data retrieval and interpretation
- Knowledge of reference sources
- Identification of clinical problems
- Problem-solving.

Task

You are a hospital pharmacist. A junior doctor is asking your advice. Ideally she would like to prescribe clarithromycin for one of her patients, however the patient takes warfarin. The junior doctor is aware of the interaction between clarithromycin and warfarin and would like your opinion on whether treatment could be initiated.

   What is your advice?

Scenario 5.9 feedback

How did you approach this type of scenario? First, you need to find out about the details of the interaction between the two drugs. Does the interaction mean that you cannot use the two drugs together? If you do use the drugs together what, if any, monitoring may be required?

Sample chapter from *Pharmacy OSCEs*

Clarithromycin interacts with warfarin, which increases the anticoagulant effect. The importance is established and potentially serious. The mechanism of action is inhibition of the liver enzymes CYP450. This reduces clearance of warfarin, resulting in increased levels of warfarin in the blood, resulting in an increase in the INR, and an increased risk of bleeding.

Clarithromycin can be taken by patients on warfarin if it is the most appropriate treatment, but the INR must be monitored closely. You need to identify through discussion with the prescriber whether clarithromycin is the most appropriate treatment in this case, or whether there is a safer alternative. If clarithromycin is to be prescribed, you need to offer advice on managing the interaction.

Remember that OSCEs assess your ability to communicate appropriately. Here you are responding to another healthcare professional, so language and detail must reflect this. It would be inappropriate (and you would lose marks) to simply respond saying 'there is an interaction'. You would be expected to offer a solution. In this case you would recommend initiating treatment and monitoring to reduce risk.

- Did you use the *BNF* to answer this question?
- Could you answer the question in enough detail using the *BNF*?

This scenario clearly demonstrates the importance of choosing the most appropriate source of information. *BNF* Appendix 1 gives insufficient information to answer this question in detail; *Stockley's Drug Interactions* is the most appropriate reference source here.

Suggested revision points

- Are you confident on the use of prothrombin times? What does a raised INR mean? What does an INR of 2 mean, and how would you explain this to a patient?

Scenario 5.10 Clopidogrel for percutaneous coronary intervention

Format: Written station

Supporting information available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Pre-registration; postgraduate.

Knowledge and skills tested

■ Interventional cardiology
■ Percutaneous coronary intervention (PCI) stent types
■ Antiplatelet therapy.

Task

You are in the dispensary and receive a call from a local GP who has a hospital referral letter for a 60-year-old woman which recommends prescribing clopidogrel 75 mg to be taken daily. The patient was admitted to hospital for a PCI and had a stent inserted. The GP is unsure how long the treatment with clopidogrel should be continued for and wants your advice.

1. What types of stents are routinely used in hospitals?
2. How does the type of stent affect the length of treatment?
3. What length of course is appropriate for each type of stent?

Scenario 5.10 feedback

1. What types of stents are routinely used in hospitals?

The first thing you will need to find out from either the GP or the hospital is the type of stent that the patient has had

Sample chapter from *Pharmacy OSCEs*

inserted. The common stents are either 'bare metal stents' or 'drug-eluting stents'. Post-procedural management of patients with coronary stents is focused on prevention of stent thrombosis and secondary prevention of the underlying vascular disease.

2. How does the type of stent affect the length of treatment?

3. What length of course is appropriate for each type of stent?

The duration of clopidogrel therapy is determined by the clinical setting. Patients whose stents – bare metal stents or drug-eluting stents – were implanted for a non-ST elevation myocardial infarction should be treated for 12 months. Patients with stable angina treated with a bare metal stent should take clopidogrel for at least one month and patients receiving a drug-eluting stent should continue clopidogrel therapy for 6–12 months.

Suggested revision points

- Guidance on PCI and use of stents and antiplatelet therapy
- Identify the types of stents commonly used and patient risk factors in terms of when to use them.

Scenario 5.11 Managing therapy (ciprofloxacin)

Format: Interactive station

Supporting information available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 3, 4; pre-registration; postgraduate.

Sample chapter from *Pharmacy OSCEs*

Knowledge and skills tested

- Antibiotics and their indications
- Drug interactions
- Patient counselling.

Task

You are in a community pharmacy and receive a prescription for a 65-year-old male patient for ciprofloxacin 500 mg to be taken twice daily for seven days. You note from his patient medication record (PMR) that the patient has previously had numerous courses of trimethoprim. You also note that the patient currently takes the following medicines:

- Aspirin 75 mg daily
- Rampiril 5 mg daily
- Simvastatin 40 mg daily
- Sodium valproate (Epilim Chrono®) 300 mg daily.

He has no known drug allergies.

1. What is the likely indication for the ciprofloxacin?
2. Which, if any, of his medicines may interfere with ciprofloxacin?
3. What counselling points are important for this patient?
4. What discussion might you want to have with the patient or his doctor?

Scenario 5.11 feedback

1. What is the likely indication for the ciprofloxacin?

There are a number of indications for ciprofloxacin but in this case it is most likely to be urinary tract infections (UTIs); the use of trimethoprim provides a clue that the patient may be experiencing recurrent UTIs.

2. Which, if any, of his medicines may interfere with ciprofloxacin?

There are no direct drug–drug interactions with ciprofloxacin for this patient.

3. What counselling points are important for this patient?

Specific counselling points for patients who are prescribed ciprofloxacin are that the medicine may impair performance of skilled tasks (e.g. driving), and that the effects are enhanced by alcohol.

4. What discussion might you want to have with the patient or his doctor?

Patients with epilepsy should be advised to use ciprofloxacin with caution because there is a risk that the seizure threshold may be reduced. Any decision needs to be discussed with the patient and ciprofloxacin used after weighing up the risks and benefits to the patient.

The *BNF* advises that tendon damage, including rupture, has been reported with quinolones. Tendon rupture may occur within 48 hours of starting treatment, although some cases have been reported months after stopping a quinolone. Quinolones are contraindicated in patients with a history of tendon disorders related to quinolone use. Prescribers should also be reminded that patients over 60 years of age are more prone to tendon damage; the risk of tendon damage is increased by the concomitant use of corticosteroids; and that if tendinitis is suspected, the quinolone should be discontinued immediately.

Suggested revision points

- List the common drug interactions with ciprofloxacin
- List the important counselling points, paying particular attention to any *BNF* warnings/advice.

Sample chapter from *Pharmacy OSCEs*

Scenario 5.12 Ibuprofen in asthma

Format: Interactive station

Supporting information available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 3, 4; pre-registration; postgraduate.

Knowledge and skills tested

- Pain relief
- Management of drug–patient interactions.

Task

A young female patient comes into your pharmacy and wants to buy over-the-counter ibuprofen for her headache. You know this patient well and know that she suffers from moderate asthma and has inhalers for this condition. Your counter assistant is about to make the sale after having established the need for the medicine but does not consult with you. You know that the patient is known to be allergic to aspirin.

The patient is prescribed the following medicines:

- salbutamol 100 microgram metered dose inhaler (MDI), two puffs four times a day when required
- Seretide® 250/50 MDI, two puffs twice daily
- theophylline modified release (Uniphyllin Continus®) 400 mg twice daily.

What would be your advice to the patient and why?

Scenario 5.12 feedback

If the patient is allergic to aspirin, it is important to establish the nature of the allergy. If it is a 'true' allergy which results in

anaphylaxis-type reactions (e.g. lip and throat swelling) then she may have similar reactions with other NSAIDs. There is a risk that if the patient is allergic she may suffer from bronchospasm, which would result in a worsening of her asthma. In this case ibuprofen may not be an appropriate choice. Simple analgesics such as paracetamol-based preparations would be a good first choice to start with.

Suggested revision points

- Identify the mechanism of action of NSAIDs
- Identify how NSAIDs may result in bronchospasm
- List the drugs that may be appropriate for this patient.

Scenario 5.13 Managing tuberculosis treatment regimens

Format: Interactive station

Supporting information available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 3, 4; pre-registration; postgraduate.

Knowledge and skills tested

- Infectious diseases
- Treatment regimens for tuberculosis.

Task

A 45-year-old African patient who has been taking treatment for tuberculosis for two months comes to the hospital pharmacy with the following repeat prescription. He weighs 60 kg.

The prescribed items are:

- Rifater® 6 tablets daily
- Ethambutol 1100 mg daily.

1. Why would you not be able to dispense the prescription?
2. What information will you need from the patient?
3. What recommendation will you make to the prescriber?

Scenario 5.13 feedback

1. Why would you not be able to dispense the prescription?

The first thing to do in this scenario is to identify from the *BNF* which regimen the patient is currently prescribed. He appears to be taking the recommended dosage for 'standard unsupervised six-month treatment'.

The regimen listed in the scenario is for the initial two months period only and needs to be changed for the next four months.

2. What information will you need from the patient?

The doses of the medicines are based on the patient's weight so it is important that these are adjusted accordingly. The initial doses are based on the patient weighing over 70 kg and his weight seems to have dropped by more than 10 kg over the last two months.

The patient's weight needs to be confirmed in order to prescribe appropriate dosages of drugs for the four-month continuation phase.

3. What recommendation will you make to the prescriber?

The four-month continuation phase of treatment should include two drugs only – that is, rifampicin and isoniazid. If the patient's weight is confirmed as being over 50 kg, the treatment recommended is 2 tablets daily of Rifinah® 300/150.

If combination products are not appropriate, dosage information for individual drugs is given in the *BNF*.

Suggested revision points

■ Antituberculosis treatment regimens (*BNF* section).

Scenario 5.14 Antibiotic therapy in pregnancy

Format: Interactive station

Supporting information available to student: *BNF*

Time allowed: 5 minutes

Suggested years of study: Undergraduate years 3, 4; pre-registration; postgraduate.

Knowledge and skills tested

■ Antibiotic use in pregnancy
■ Patient counselling.

Task

You are in a community pharmacy and receive a prescription for a 35-year-old female patient for ciprofloxacin 500 mg to be taken twice daily for seven days. You note from her PMR that the patient was previously taking the combined oral contraceptive pill (Microgynon®) but did not get her repeat prescription for this the last time it was due. She is currently taking folic acid 400 micrograms daily which she recently purchased from your pharmacy. She has no known drug allergies.

1. What is the likely indication for the ciprofloxacin?
2. What information will you need from the patient to ensure the appropriateness of this prescription?

3. If the prescription is inappropriate, what would be your recommendation?

Scenario 5.14 feedback

1. What is the likely indication for the ciprofloxacin?

There are a number of indications for ciprofloxacin but in this case it is most likely to be urinary tract infections (UTIs), although you cannot be sure without asking the patient.

2. What information will you need from the patient to ensure the appropriateness of this prescription?

The clue in the question is that the patient may have stopped taking the combined oral contraceptive pill and she has recently purchased folic acid. The dose of folic acid indicates that she may be intending to get pregnant or may indeed be pregnant. The choice of antibiotic is therefore important depending on the stage of pregnancy, known as the trimester, which she is currently in.

Do you know where to locate information about drugs in pregnancy within the *BNF*?

3. If the prescription is inappropriate, what would be your recommendation?

The patient should be referred back to the GP for a new prescription of an antibiotic that can be taken in pregnancy. You should communicate this sensitively to the patient with reassurance that alternative options are available for use in pregnancy.

Suggested revision points

- List the antibiotics which are contraindicated for use in pregnancy
- Identify whether the trimester is important for the contraindication.

Chapter 5 feedback summary

In Chapter 5 you have looked at a range of clinical prescription management issues. Working through the scenarios should have enabled you to develop your prescription management and problem-solving skills.

Remember that when reviewing a prescription:

- You need to consider whether there is an actual or potential problem in relation to drug therapy. Don't forget about drug–disease interactions as well as drug–drug interactions. Look for evidence of a problem in the scenario and/or through talking to the patient or healthcare professional (e.g. signs or symptoms, adverse changes in laboratory data).
- It is important to consider the options available to solve the problem.
- You should recommend an appropriate solution to the problem, using the appropriate reference sources, and the information from the scenario. That is, the advice you give should be tailored to the given circumstances. Don't forget that recommendations may include advice on monitoring to ensure treatment is safe and/or effective.

In an OSCE station you should expect to explain (justify) your chosen course of action. Use the most appropriate reference sources available to you. When giving advice or recommendations to patients or healthcare professionals make sure you are communicating that advice clearly in a logical order, using language that is appropriate to the person you are talking to.

Now that you have completed this chapter, assess your competence in the knowledge and skills listed in Table 5.2. Jot down any notes that may help you.

If there are any points that you consider need further work, start a CPD (continuous professional development) cycle now to identify how you can achieve this action.

Sample chapter from *Pharmacy OSCEs*

Table 5.2 Chapter 5 learning outcomes

Knowledge and skills	*More work required*	*Feel competent*
Review prescriptions and identify clinical management problems		
Choose appropriate reference materials in order to answer the questions		
Retrieve appropriate material in order to solve the problem(s) identified		
Interpret laboratory data		
Apply information to the scenario		
Communicate recommendations and advice to patients and prescribers		

References and further reading

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