

Exercises in CLINICAL ACCURACY CHECKING

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This is the seventh set of clinical accuracy exercises to be published in *Hospital Pharmacist*. Readers who have been following the series will have noted that the exercises attempt to address the pharmaceutical and medical issues that arise in different specialties. The two prescriptions in this issue

deal with the use of drugs on a cardiology ward. Readers are invited to identify the problems and determine solutions for them. The prescriptions are followed by a discussion of the significant issues.

It must be emphasised that these tests were introduced to assess the performance of checkers in a dispensary situation where time is at a premium. It should also be noted that these prescriptions have passed through the dispensary at Addenbrooke's NHS Trust, although the patients' names have been removed to maintain confidentiality. The check list used by candidates is shown in Figure 1. Figures 2–4 (p48) relate to prescription 1, and Figures 5–6 (p49) relate to prescription 2.

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CLINICAL ACCURACY CHECKING TEST

Task	Answer sheet	(Candidate name:.....)
1. You have minutes to review the following prescription charts and identify the problems. You have minutes to document your answers	Prescription number	1
Total time allowed: minutes	Review panel:	
2. You are only able to make ONE intervention per prescription. For each of the prescriptions, using the answer sheets provided:	Ward	Clinical specialty
3. Document the ward and clinical specialty	Chart endorsements:	
4. List briefly the endorsements you would make to the chart	Medical problems:	
5. List briefly the patient's major medical problem(s) suggested by the drug therapy	1.	5.
6. List briefly the most important pharmaceutical problems you would try to resolve if you were checking the chart at ward level (maximum of SIX problems)	2.	6.
7. State the ONE priority intervention you would make for EACH of the charts given that you are checking the chart in the dispensary (NB: Occasionally, more than one intervention may be needed)	3.	7.
8. Briefly state the action you would take to resolve the priority intervention	4.	8.
9. State the urgency of the priority intervention from one of the following:	Pharmaceutical problems:	
Urgent = chart must be amended by a doctor or pharmacist before being dispensed	1.	4.
Less urgent = any other action, such as sending an intervention note to the doctor, highlighting the problem to the ward pharmacist, telephoning a nurse or doctor for further information.	2.	5.
10. Materials allowed:	3.	6.
Martindale's Extra Pharmacopoeia	Priority intervention number	1 2 3 4 5 6
Paediatric formulary	(circle the appropriate number)	
Compendium of data sheets and SPCs	Suggested action to resolve the priority intervention:	
Trissel's handbook of injectable drugs	Urgency:	Urgent Less urgent
Renal drug handbook	(circle as appropriate)	
List of wards — specialty and current ward pharmacist		

Figure 1: Instructions for candidates: state the ward and clinical specialty in order to focus attention on likely problems. For example, if the patient was on a medical ward specialising in renal disease, the pharmacist must be particularly vigilant about renally excreted drugs. The chart endorsements refer to the discharge or to take out (TTO) prescription where one exists or otherwise to the inpatient chart. Please note: candidates are given six minutes to review each prescription, and three minutes to document their answers for each prescription

Prescription Chart											
Surname		Hospital No		Weight		DRUG SENSITIVITIES					
A First Names		Date of Birth		Sex		Doctor must also enter this information on FRONT of case folder must not be administered unless this box has been completed					
P Consultant		30.3.16		F		Date		Drug/Substance		Signature	
		Ward Cardiology		Height		19.8.01		NKA		A DOCTOR	

Figure 2: Patient's details on the chart for prescription 1

Regular Prescriptions										Regular Prescriptions									
Month and date										Month and date									
Tick times or enter other times										Tick times or enter other times									
DRUG (APPROVED NAME) Bendroflumethiazide										DRUG (APPROVED NAME) Asprin									
Dose										Dose									
Route										Route									
Start Date										Start Date									
Stop Date										Stop Date									
Signature										Signature									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Pravastatin										DRUG (APPROVED NAME) Clopidogrel									
Dose										Dose									
Route										Route									
Start Date										Start Date									
Stop Date										Stop Date									
Signature										Signature									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Nicorandil										DRUG (APPROVED NAME) Trazodone									
Dose										Dose									
Route										Route									
Start Date										Start Date									
Stop Date										Stop Date									
Signature										Signature									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Furosemide										DRUG (APPROVED NAME) Isosorbide mononitrate SR									
Dose										Dose									
Route										Route									
Start Date										Start Date									
Stop Date										Stop Date									
Signature										Signature									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Ramipril										DRUG (APPROVED NAME) Flucloxacillin									
Dose										Dose									
Route										Route									
Start Date										Start Date									
Stop Date										Stop Date									
Signature										Signature									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Amlodipine										DRUG (APPROVED NAME) Enoxaparin									
Dose										Dose									
Route										Route									
Start Date										Start Date									
Stop Date										Stop Date									
Signature										Signature									
Additional Instructions										Additional Instructions									

Figure 3: Patient's regular drugs (prescription 1)

DRUG (APPROVED NAME) Glyceryl trinitrate buccal				Date	20	20														
Dose	Max Frequency	Route	Start Date	Time	2.45	6.45														
3-10mg	PRN	Buccal	19.8.01																	
Signature A Doctor		Stop Date	Pharm	Dose	3mg Buc	3mg Buc														
Additional Instructions / Max. dose in 24 hours				Given by	AN	AN														
DRUG (APPROVED NAME) Paracetamol				Date	19															
Dose	Max Frequency	Route	Start Date	Time	9.15															
1G	QDS	PO	19.8.01																	
Signature A Doctor		Stop Date	Pharm	Dose	1G PO															
Additional Instructions / Max. dose in 24 hours				Given by	AN															

Figure 4: Patient's "as required" drugs (prescription 1)

Prescription Chart			
Surname	Hospital No	Weight	DRUG SENSITIVITIES
S First Names	Date of Birth	Sex	Doctor must also enter this information on FRONT of case folder must not be administered unless this box has been completed
			Drugs
P Consultant	15.6.31	F	Date
			Drug/Substance
			Signature
			9.8.01
Ward Cardiology			NKA

Figure 5: Patient's details on the chart for prescription 2

Regular Prescriptions												Regular Prescriptions												
Month and date												Month and date												
Tick times or enter other times												Tick times or enter other times												
DRUG (APPROVED NAME)	Dose	Route	Start Date	Stop Date	6	8	12	14	18	22	9	10	11	12	13	14	15	16	17	18	19	20	21	
Amoxicillin	500mg	PO	19.8.01	14.8.01	6	8 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Signature	A Doctor		Pharm		18	22 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Clarithromycin	500mg	PO	19.8.01	14.8.01	6	8 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Signature	A Doctor		Pharm		18	22 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Aspirin	75mg	PO	19.8.01		6	8 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Signature	A Doctor		Pharm		18	22 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Paracetamol	1G	PO			6	8 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Signature	A Doctor		Pharm		18	22 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Losartin	50mg	PO	19.8.01		6	8 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Signature	A Doctor		Pharm		18	22 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Nystatin	1ml	PO	13.8.01	18.8.01	6	8 *																		
Signature	A Doctor		Pharm		18	22 *																		
Spironolactone	50mg	PO	19.8.01		6	8 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Signature	A Doctor		Pharm		18	22 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Sotalol	80mg	PO	16.8.01		6	8 *																		
Signature	A Doctor		Pharm		18	22 *																		
Furosemide	40mg	PO	19.8.01		6	8 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Signature	A Doctor		Pharm		18	22 *	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	
Salbutamol	2 puffs	Inh	22.8.01		6	8 *																		
Signature	A Doctor		Pharm		18	22 *																		

indicate completion of the courses of antibiotics

PRESCRIPTION 1

Figure 7 (p54) shows the solution to prescription 1. This patient is an 85-year old female admitted to the cardiology ward with unstable angina. The symptoms of unstable angina are a rapidly declining exercise tolerance and unpredictable attacks of chest pain, typically occurring at rest and not relieved by sublingual glyceryl

trinitrate. Unstable angina is a medical emergency because, if left untreated, it will progress to a myocardial infarction in about 50 per cent of patients.¹ In this patient, the acute episode was a progression of existing ischaemic heart disease (IHD). This is evident from the fact that she had been on typical multiple drug therapy. The use of bendroflumethiazide suggests a diagnosis of hypertension, a known treatable risk factor for IHD and also a known precipitant of left ven-

tricular failure. In addition, the patient was being treated for depression and an infection, most probably staphylococcal.

In unstable angina, the aims of therapy are to reduce cardiac oxygen demand, control pain and distress, provide antithrombotic therapy and provide antiplatelet therapy. At Addenbrooke's Hospital, the heparin used is enoxaparin at a dose of 1mg per kg body weight twice daily for two days, and then reviewed. The British Cardiac Society guidelines for the management of acute coronary syndromes² state that low molecular weight (LMW) heparin may need to be continued for up to eight days or more in patients at high risk of an acute event or those in whom myocardial revascularisation is delayed or contraindicated. However, the most likely reason for prolonged therapy is lack of review by medical staff. This patient had been on enoxaparin for five days, suggesting an ongoing acute problem.

There is an apparent mismatch in the use of nitrates. Buccal glyceryl trinitrate (GTN) was prescribed in an attempt to control the pain in unstable angina according to an Addenbrooke's protocol, in doses ranging from 3mg to 10mg, with regular monitoring of chest pain and blood pressure at five-minute intervals. According to the protocol, if the condition stabilises, the dose providing control of pain is used regularly three times a day. If chest pain remains uncontrolled, intravenous (IV) GTN is used (50mg GTN in 50ml normal saline,

running at 1–10ml per hour) and titrated to achieve pain control while maintaining systolic blood pressure above 100mmHg. The drug treatment is changed to a long-acting nitrate once the patient has been pain-free for 12 hours, the first dose coinciding with the commencement of weaning off the infusion or with the final buccal dose. If patients had been on long-acting nitrates before they are admitted, these are usually withheld during buccal or IV therapy and then restarted at a higher dose where possible, once control has been achieved. In this patient, however, only two doses of buccal GTN are recorded, IV GTN was not prescribed and the patient was taking modified-release isosorbide mononitrate 120mg daily throughout. This may suggest one of two things:

- 1 The doctor could have omitted to review the LMW heparin once the acute episode was controlled
- 1 It is possible that a separate prescription for IV GTN did exist, perhaps on a fluid chart, which should be referred to on the main chart. If this was the case, the modified-release isosorbide mononitrate would normally be left out

If a prescription for IV GTN did exist, it is important to bear in mind that, depending on the brand used, IV GTN may be limited to

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three successive days of therapy³ because of the accumulation of propylene glycol, which can cause lactic acidosis. After this period, treatment should continue with isosorbide dinitrate infusion, which is formulated in normal saline.⁴

This prescription predates the routine use of glycoprotein IIb/IIIa receptor antagonists at Addenbrooke's. Patients admitted with an acute coronary syndrome would now be tested for troponin, a marker found in high-risk patients, and considered for early percutaneous intervention preceded by the use of a glycoprotein IIb/IIIa receptor antagonist.^{2,5}

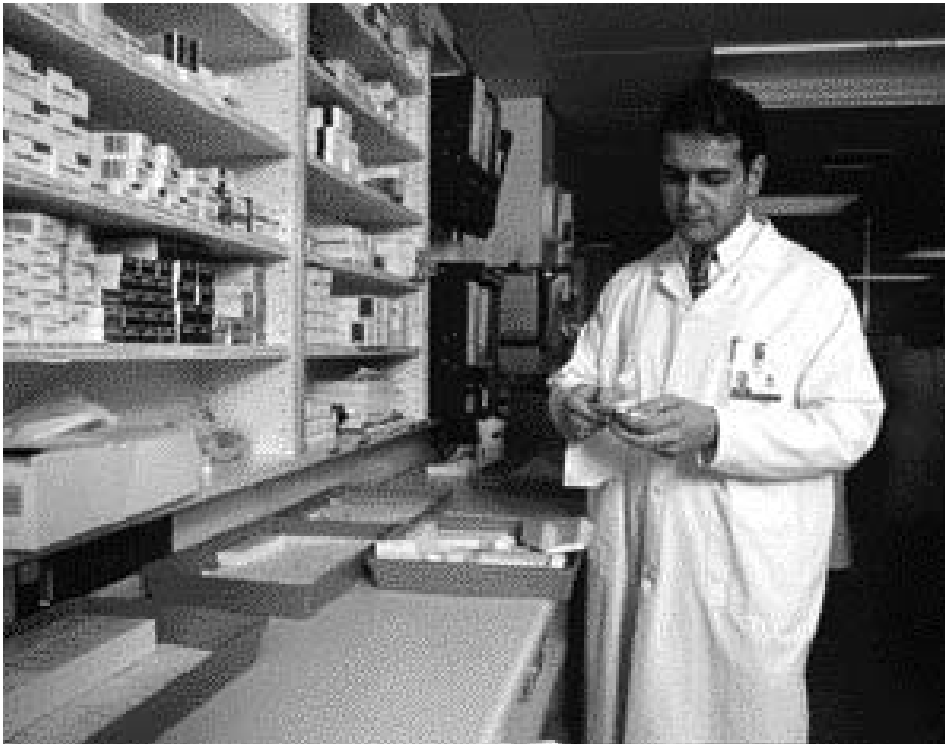
There is uncertainty around the use of amlodipine in unstable angina since there are no data to support the use of dihydropyridines for this indication.⁶ Amlodipine is contraindicated in unstable angina,⁷ but calcium channel blockers that lower the heart rate can be used for patients intolerant of beta-blockers.²

In this particular patient, the history of heart failure would indicate that beta-blockers should be introduced cautiously, and both diltiazem and verapamil are contraindicated in heart failure.⁷ Amlodipine was shown to have no adverse effect in congestive heart failure (CHF) patients in the PRAISE-2 study⁸ and can help reduce the risk factor of hypertension. In practice, if a patient had been on amlodipine before admission, this would not normally be stopped,

but the pharmacist should establish that it was not being used to treat the unstable angina.

The dose of ramipril deserves some attention. The HOPE study⁹ looked at the use of ramipril at a dose of 2.5mg daily for one week, 5mg daily for three weeks, then increasing to 10mg daily in patients at high risk of cardiovascular events but without pre-existing CHF. There was a reduced rate of myocardial infarction, stroke and cardiovascular death in patients on ramipril, compared with placebo. The pharmacist could monitor to ensure that the ramipril dose is increased to 10mg daily if the patient can tolerate the maximum dose. The deciding factor is often the degree of hypotension.

The National Service Framework for Coronary Heart Disease (CHD)¹⁰ recommends that serum cholesterol should be lowered to less than 5mmol per litre or by 30 per cent, whichever is the greater, in patients with diagnosed CHD. The CURVES study¹¹ suggests an 18 per cent reduction in total cholesterol with pravastatin 20mg daily. Although there is a dose-dependent increase in effect,^{11,12} a 40mg pravastatin dose showed a total cholesterol reduction of 24 per cent,¹¹ so even a 40mg dose may not achieve the target cholesterol level. On the basis of available evidence, the pharmacist should suggest increasing the dose of pravastatin to 40mg. It may not be possible, however, to ensure that target reduction of the cholesterol



The clinical accuracy checker needs to bear in mind that some drugs on the chart may have been prescribed due to the side-effects of co-prescribed drugs

level is achieved because of the time delay to onset of effect (up to two weeks) and to peak effect (four to six weeks).¹²

The NSF for CHD¹⁰ suggests a dose of aspirin 150mg daily for unstable angina, although the British Cardiac Society guidelines² and the Antithrombotic Trialists Collaboration¹³ recommend a dose of 75mg. In practice, the dose would probably not be increased. The CURE trial¹⁴ compared the use of clopidogrel (300mg stat, then 75mg daily) with aspirin (75mg–325mg daily) in patients with acute coronary syndrome and reported a 19.1 per cent reduction in the primary endpoints of cardiovascular death, myocardial infarction and non-fatal stroke. In the CURE trial, clopidogrel was continued for 3–12 months (mean, 9 months), and the differences were maintained over that period. There are no data to support stopping the drug in this group of patients after 28 days as is common practice following stent insertion. Prescribing both drugs together is therefore reasonable, but the pharmacist should check the local hospital practice.

The use of bendroflumethiazide is of interest. If, as suggested by the low dose, the drug had been prescribed for hypertension before admission, it might no longer be needed because many of the prescribed drugs will lower raised blood pressure. Thiazide diuretics have a place in the treatment of mild heart failure, although a loop diuretic is more commonly prescribed. Bendroflumethiazide could have been prescribed before admission for CHF, in combination with furosemide. Thiazides can be used for resistant oedema in heart failure associated with diuretic resistance.⁶ The bendroflumethiazide dose to treat oedema should be 5mg–10mg daily,⁷ reducing to alternate day or once to thrice weekly doses as oedema is controlled. The ward pharmacist should monitor blood pressure and heart failure control and check the medical reason for the use of bendroflumethiazide.

The choice of antidepressant in cardiovascular disease is also important. The Psychotropic Drug Directory¹⁵ recommends the avoidance of drugs that cause orthostatic hypertension in chronic stable heart failure and angina, including tricyclic antidepressants. The directory also advises against the use of drugs that cause tachycardia, including trazodone, but rather recommends using a selective serotonin reuptake inhibitor (SSRI). However, SSRIs can also cause cardiovascular side effects such as orthostatic hypotension. Although

this side effect is considered infrequent,¹⁶ it is common in patients with other risk factors as in this elderly patient who was on multiple hypotensive drug therapies.

In this patient, the priority intervention for the dispensary-based pharmacist should probably be to establish whether LMW heparin should continue or whether an intravenous nitrate was being given which was not referred to in the main chart. The ward pharmacist is more appropriately placed to deal with issues surrounding evidence-based medicine and appropriate drug selection.

— PRESCRIPTION 2

Figure 8 (p54) shows the solution to prescription 2. The reason for admission in this patient is less obvious, although medical problems include heart failure, a community-acquired chest infection, and an arrhythmia, probably a supraventricular arrhythmia such as atrial fibrillation. Sotalol is used primarily for controlling the ventricular rate.

The NSF for CHD¹⁰ recommends the use of an angiotensin converting enzyme (ACE) inhibitor with a diuretic for the

treatment of stable heart failure, with the possible addition of a beta-blocker and spironolactone. For patients intolerant of an ACE-inhibitor (often due to the coughing), the NSF suggests using hydralazine and isosorbide dinitrate.¹⁰ The guidelines recently published by both the Scottish Intercollegiate Guidance Network (SIGN)¹⁷ and the European Cardiac Society¹⁸ recommend angiotensin II receptor antagonists in this situation, reserving the combination of hydralazine and nitrate to those patients with a contraindication to both drug classes, such as renal artery stenosis. In this patient, the alternative prescribed was losartan. The pharmacist should be aware that losartan is currently not licensed to treat heart failure. The ELITE II study¹⁹, which compared losartan 50mg daily with captopril 50mg three times daily in patients with CHF class II–IV and an ejection fraction below 40 per cent, found no difference between the drugs in terms of all cause mortality or sudden death. Losartan is as good as captopril in this context but no better. No intervention would be required.

The use of spironolactone in heart failure has increased, following the RALES study²⁰ in which spironolactone, at a dose of 25mg daily, was added to a regimen that included an ACE inhibitor, digoxin and a loop diuretic, in patients with a left ventricular ejection fraction of 40 per cent or less. There was a significant reduction in all cause mortality, hospital admissions due to heart failure and improvement in heart failure class with the addition of spironolactone. Many pharmacists are concerned about the risk of hyperkalaemia with the combination of a potassium-sparing diuretic and losartan, and equally about the combination with an ACE-inhibitor. In the RALES study,²² potassium levels in the treatment group were raised by 0.3mmol per litre compared with 0mmol per litre in the group not on spironolactone. The incidence of severe hyperkalaemia in the treatment group was 2 per cent compared with 1 per cent in the non-spironolactone group, but this was not significant. However, this study excluded patients with renal impairment (serum creatinine over 221µmol per litre) or a baseline potassium above 5mmol per litre. Therefore, the risk of hyperkalaemia would be increased in a patient with renal impairment and in the elderly. The pharmacist should be aware of the risk of hyperkalaemia and monitor for it. However, the patient would equally be at risk if hypokalaemia should occur because this would increase the risk of arrhythmias. The serum potassium level should

normally be maintained above 4mmol per litre, if necessary using short-term oral potassium supplements, but within the upper reference range.

The treatment of arrhythmias in the presence of heart failure is of interest. In atrial fibrillation (AF), for example, the effective loss of atrial contraction can lead to a fall in cardiac output of up to 25 per cent, contributing to heart failure.²¹ Conversely, a history of heart failure is a known clinical factor predisposing to AF.²¹ Therefore, the control of both the arrhythmia and the heart failure are of vital importance in this patient. However, the selection of sotalol may be a problem. This is because sotalol has no proven efficacy for pharmacological conversion of recent-onset or persistent AF, although it does control heart rate and maintain sinus rhythm.²¹ In heart failure, the hypertrophied myocardium may be prone to ventricular pro-arrhythmic side effects of antiarrhythmic drugs. For example, *torsade de pointes* is a known side effect of sotalol, particularly in women.⁷ It is possible that sotalol had caused wheezing, as the patient had been started on salbutamol. Amiodarone can convert and maintain the patient in sinus rhythm, and is considered first-line therapy in patients with CHF because of its relative safety when compared with other agents.²¹ Morbidity may be reduced by pharmacological maintenance of sinus rhythm in patients with heart failure.²¹ The pharmacist should question the use of sotalol and recommend amiodarone as a more suitable alternative.

Although amiodarone would appear to be the drug of choice in concurrent heart failure and arrhythmia, it is contraindicated in patients with a history of thyroid dysfunction,²² as in this patient, due to the risk of either hypothyroidism or hyperthyroidism. Thyroid function should be checked routinely in a patient with arrhythmias. If this patient is taking too high a dose of levothyroxine, this could be a potential cause of the arrhythmia and must be eliminated. In practice, amiodarone would be used and any alteration in thyroid function monitored and treated appropriately.

Anticoagulation is the next problem. In patients with AF, there is a five-fold increased risk of stroke due to embolism²³ because the loss of mechanical atrial systole and of atrial contraction predisposes to stasis of blood in the atria, encouraging thrombus formation. The patient's advanced age, history of heart failure and female sex (possibly) are also risk factors for stroke.²¹ Aspirin gives only a modest reduction of stroke risk in AF compared with oral anticoagulants (19 per cent and 33 per cent, respectively).²¹ The treatment of choice for high-risk patients such as this is warfarin, but elderly patients are less likely to be treated with oral anticoagulation, even when it has been shown to be of benefit, because of the perceived risk of bleeding.²¹ The choice of aspirin in this patient should probably be questioned, but it is possible that the regular prescription of ranitidine was due to gastrointestinal bleeding and the pharmacist should check for this. If warfarin was prescribed, particular care would be needed to ensure that the target INR of 2.0–3.0 was maintained so that protection against stroke was achieved while minimising the risk of bleeding.²¹

The prescription of amoxicillin and clarithromycin for a community-acquired chest infection seems appropriate, providing broad-spectrum cover including atypical organisms. Nystatin was probably required for oral thrush following the use of these antibiotics, but both medical problems appear controlled and appropriate course lengths have been specified.

A competent pharmacist would be expected to question the use of sotalol in a patient with heart failure and possible iatrogenic wheezing, as well as being aware of the unlicensed use of losartan and the choice of appropriate anticoagulation.

Summaries of the solutions to the exercises are shown on page 54.

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Answer sheet (answers are shown in magenta) Candidate
name:.....

Prescription number 1

Ward: Medical Clinical specialty: Cardiology

Chart endorsements: Isosorbide mononitrate — swallow without chewing; Aspirin — after food

Medical problems:

1. Hypertension?	5. Unstable angina
2. Hypercholesterolaemia	6. Depression
3. Ischaemic heart disease	7. Infection — probably staphylococcal
4. Heart failure	

Pharmaceutical problems:

1. Enoxaparin course length
2. Evidence-based medicine — dose of ramipril, dose of pravastatin
3. Check appropriate use of aspirin and clopidogrel — CURE study
4. Indication and appropriateness of bendroflumethiazide and amlodipine
5. Appropriate choice of an antidepressant in heart disease
6. Nitrates: check for an IV GTN chart, check possible therapeutic duplication (IV and long-acting oral) and omission of sublingual GTN on the “as required” section of the chart

Priority intervention Number 1, but candidates must also mention number 6 (see text)

Suggested action to resolve the priority intervention:

1. Contact the ward to see if the patient has an IV GTN chart, then contact the doctor to request either that enoxaparin is stopped or that isosorbide mononitrate slow release is stopped while IV GTN continues
2. Also advise the prescribing of “as required” sublingual GTN in anticipation of discharge

Figure 7: Solution to prescription 1

Answer sheet (answers are shown in magenta) Candidate
name:.....

Prescription number 2

Ward: Medical Clinical specialty: Cardiology

Chart endorsements: Spironolactone — after food

Medical problems:

1. Infection — community acquired chest infection	5. Arrhythmia, probably atrial fibrillation
2. Heart failure	6. Pain
3. Oral thrush	7. Hypothyroidism
4. Raised gastric acid	8. Wheezing — query asthma

Pharmaceutical problems:

1. Choice of therapy in heart failure in patients intolerant of ACE inhibitors
2. Choice of anti-arrhythmic drug in patient with heart failure and AF — possible drug-induced wheezing
3. Appropriate stroke prophylaxis in a high risk patient with AF
4. Monitoring of serum potassium to maintain at >4mmol/L<5mmol/L
5. Check thyroid function tests for thyroid control and as baseline for amiodarone (if started)

Priority intervention Number 2

Suggested action to resolve the priority intervention:

Contact the doctor to discuss the appropriate choice of anti-arrhythmic drug and appropriate stroke prophylaxis, after confirming the indication for ranitidine in the medical notes to establish the risk of gastrointestinal bleeding

Figure 8: Solution to prescription 2