

Exercises in CLINICAL ACCURACY CHECKING

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This is the sixth 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 in elderly patients. Readers are invited to

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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 changed to maintain confidentiality. The check list used by candidates is shown in Figure 1.

Figures 2–4 (p286) relate to prescription 1, and Figures 5–7 (p287) relate to prescription 2.

CLINICAL ACCURACY CHECKING TEST

Task

1. You have – **minutes** to review the following prescription charts and identify the problems. You have – **minutes** to document your answers

Total time allowed: – minutes

2. You are only able to make **ONE** intervention per prescription **For each of the prescriptions**, using the answer sheets provided:

3. Document the ward and clinical specialty

4. List briefly the endorsements you would make to the chart

5. List briefly the patient's major medical problem(s) suggested by the drug therapy

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)

7. State the **ONE priority intervention** you would make for **EACH of the charts** given that you are **checking the chart in the dispensary**

8. Briefly state the **action** you would take to resolve the priority intervention

9. State the urgency of the **priority** intervention from one of the following:

Urgent = chart must be amended by a doctor or pharmacist before being dispensed

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.

10. Materials allowed:

Martindale's Extra Pharmacopoeia	BNF
Paediatric formulary	Hospital formulary
Compendium of data sheets and SPCs	Calculator
Trissel's handbook of injectable drugs	Hospital IV monographs
Renal drug handbook	
List of wards — specialty and current ward pharmacist	

Answer sheet

(Candidate name:.....)

Prescription number 1

Review panel:

Ward Clinical specialty

Chart endorsements:

Medical problems:

1.	5.
2.	6.
3.	7.
4.	8.

Pharmaceutical problems:

1.	4.
2.	5.
3.	6.

Priority intervention number 1 2 3 4 5 6
(circle the appropriate box)

Suggested action to resolve the priority intervention:

Urgency: Urgent Less urgent
(circle the appropriate box)

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 Ottoman		Hospital No		Weight	DRUG SENSITIVITIES	
First Names Jean		Date of Birth 19.08.21	Sex F		Doctor must also enter this information on FRONT of case folder must not be administered unless this box has been completed	
Consultant		Ward Medical		Height	Date 01.08.01	Drug/Substance Elastoplast
						Signature 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) Asprin				6			
				8	*	AN	AN
Dose	Route	Start Date	Stop Date	12			
75mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22			
DRUG (APPROVED NAME) Bisoprolol				6			
				8	*	AN	AN
Dose	Route	Start Date	Stop Date	12			
2.5mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22			
DRUG (APPROVED NAME) Cimetidine				6			
				8	*	AN	AN
Dose	Route	Start Date	Stop Date	12			
400mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22	*	AN	
DRUG (APPROVED NAME) Quinine bisulphate				6			
				8			
Dose	Route	Start Date	Stop Date	12			
300mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22	*	AN	
DRUG (APPROVED NAME) Diltiazem				6			
				8	*	AN	AN
Dose	Route	Start Date	Stop Date	12			
60mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18	*	AN	
Additional Instructions				22			
DRUG (APPROVED NAME) Furosemide				6			
				8	*	AN	AN
Dose	Route	Start Date	Stop Date	12			
40mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18	*	AN	
Additional Instructions				22			
DRUG (APPROVED NAME) Spirinolactone				6			
				8	*	AN	AN
Dose	Route	Start Date	Stop Date	12			
25mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22			
DRUG (APPROVED NAME) Mixtard insulin				6			
				8	28U	AN	AN
Dose	Route	Start Date	Stop Date	12			
see side	SC	01.08.01		14			
Signature A Doctor			Pharm	18	24U	AN	
Additional Instructions				22			
DRUG (APPROVED NAME) Nicorandil				6			
				8	*	AN	AN
Dose	Route	Start Date	Stop Date	12			
30mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22			
DRUG (APPROVED NAME) imdur (isosorbide mononitrate SR)				6			
				8	*	AN	AN
Dose	Route	Start Date	Stop Date	12			
120mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22			
DRUG (APPROVED NAME) Nicorandil				6			
				8			
Dose	Route	Start Date	Stop Date	12			
20mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22	*	AN	
DRUG (APPROVED NAME) Simvastatin				6			
				8			
Dose	Route	Start Date	Stop Date	12			
20mg	PO	01.08.01		14			
Signature A Doctor			Pharm	18			
Additional Instructions				22	*	AN	

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

DRUG (APPROVED NAME) Temazepam				Date														
Dose	Max Frequency	Route	Start Date	Time														
10mg	ON	PO	01.08.01															
Signature A Doctor			Stop Date	Pharm	Dose													
Additional Instructions / Max. dose in 24 hours				Given by														
DRUG (APPROVED NAME) Haloperidol				Date	1.8													
Dose	Max Frequency	Route	Start Date	Time	22.00													
0.50mg	BD	PO	01.08.01															
Signature A Doctor			Stop Date	Pharm	Dose	0.5mg												
Additional Instructions / Max. dose in 24 hours				Given by	AN													

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

Prescription Chart										
Surname Goodridge		Hospital No			Weight		DRUG SENSITIVITIES			
First Names Rosie		Date of Birth 29.12.08	Sex F	Height		Doctor must also enter this information on FRONT of case folder must not be administered unless this box has been completed			Drugs	
Consultant		Ward Care of elderly			Date 12.12.00	Drug/Substance NKDA			Signature A DOCTOR	

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) Senna										DRUG (APPROVED NAME) Beclometasone via volumatic									
Dose 7.5mg										Dose 200mcg									
Route PO										Route Inh									
Start Date 13.12.00										Start Date 13.12.00									
Stop Date										Stop Date									
Signature A Doctor										Signature A Doctor									
Pharm										Pharm									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Fybogel										DRUG (APPROVED NAME) Levothyroxine									
Dose 1 sachet										Dose 150mcg									
Route PO										Route PO									
Start Date 13.12.00										Start Date 13.12.00									
Stop Date										Stop Date									
Signature A Doctor										Signature A Doctor									
Pharm										Pharm									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Amiodarone										DRUG (APPROVED NAME) Salbutamol via volumatic									
Dose 200mg										Dose 200mcg									
Route PO										Route Inh									
Start Date 13.12.00										Start Date 13.12.00									
Stop Date										Stop Date									
Signature A Doctor										Signature A Doctor									
Pharm										Pharm									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Benzylpenicillin										DRUG (APPROVED NAME) Milpar									
Dose 1.2G										Dose 10ml									
Route IV										Route PO									
Start Date 13.12.00										Start Date 13.12.00									
Stop Date										Stop Date									
Signature A Doctor										Signature A Doctor									
Pharm										Pharm									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Ciprofloxacin										DRUG (APPROVED NAME) Flecainide									
Dose 500mg										Dose 100mg									
Route PO										Route PO									
Start Date 13.12.00										Start Date 13.12.00									
Stop Date										Stop Date									
Signature A Doctor										Signature A Doctor									
Pharm										Pharm									
Additional Instructions										Additional Instructions									
DRUG (APPROVED NAME) Co-amilofruse 5/40										DRUG (APPROVED NAME)									
Dose 2 tabs										Dose									
Route PO										Route									
Start Date 13.12.00										Start Date									
Stop Date										Stop Date									
Signature A Doctor										Signature									
Pharm										Pharm									
Additional Instructions										Additional Instructions									

Figure 6: Patient's regular drugs (prescription 2). The double-headed arrow in the amiodarone slot indicates discontinuation

DRUG (APPROVED NAME) Co-proxamol				Date															
Dose 2	Max Frequency PRN	Route PO	Start Date 13.12.00	Time															
Signature A Doctor		Stop Date	Pharm	Dose/Route															
Additional Instructions / Max. dose in 24 hours				Given by															
DRUG (APPROVED NAME) Meptazinol				Date															
Dose 200mg	Max Frequency 3 hrly	Route PO	Start Date 13.12.00	Time															
Signature A Doctor		Stop Date	Pharm	Dose/Route															
Additional Instructions / Max. dose in 24 hours				Given by															

Figure 7: Patient's "as required" drugs (prescription 2)

Answer sheet (answers are shown in magenta)

Candidate name:.....

Prescription number 1

Ward: **Medical** Clinical specialty: **Medical**

Chart endorsements:

- | | |
|---|---|
| 1. Insulin — human or porcine, strength, injection device, when clarified | 3. Isosorbide mononitrate — swallow without chewing |
| 2. Diltiazem — modified release or sustained release, when clarified | 4. Aspirin — after food |

Medical problems:

- | | |
|--|---|
| 1. Stroke/myocardial infarction prevention | 5. Night cramps |
| 2. Excess gastric acid | 6. Diabetes mellitus (probably type II) |
| 3. Angina prophylaxis | 7. Hypercholesterolaemia |
| 4. Heart failure | 8. Insomnia and confusion |

Pharmaceutical problems:

1. Cimetidine — risk of causing confusion in the elderly. Consider changing to ranitidine
2. Drug interactions — cimetidine and diltiazem (see discussion on p286), lisinopril and spironolactone (risk of hyperkalaemia)
3. Diltiazem — caution or possible contraindication in heart failure
4. Polypharmacy — risk of hypotension, although multi-drug therapy is common in heart failure and angina
5. Brand names — For bisoprolol, ensure that the brand licensed for heart failure is supplied. Check diltiazem brand
6. Insulin — need to specify whether it is human or porcine and clarify the dose (28 units and 24 units)

Priority intervention number **Number 1, but candidate must also mention numbers 3 and 6**

Suggested action to resolve the priority intervention:

1. Contact prescriber to recommend change from cimetidine to ranitidine
2. Review diltiazem in view of caution/contraindication in heart failure and possible drug interaction
3. Check type and strength of insulin and amend “u” to “units” on the chart

Urgency: **Less urgent**

Figure 8: Solution to prescription 1

Answer sheet (answers are shown in magenta)

Candidate name:.....

Prescription number 2

Ward: **Care of the elderly** Clinical specialty: **Care of the elderly**

Chart endorsements:

1. Fybogel — in 200ml water
2. Beclometasone — rinse mouth with water after use

Medical problems:

- | | |
|---|---|
| 1. Constipation | 4. Asthma/chronic obstructive pulmonary disease |
| 2. Arrhythmias | 5. Thyroid insufficiency |
| 3. Infection — probably chest infection | |

Pharmaceutical problems:

1. Amiodarone side effects — check for drug-induced lung disease and drug-induced hypothyroidism
2. Laxatives — polypharmacy plus risk of gastrointestinal obstruction if Fybogel taken at night
3. Check antibiotic course length — discontinue or change to oral?
4. Drug interaction — amiodarone and flecainide. The half-life of amiodarone is approximately 50 days. Interaction persists after amiodarone is discontinued
5. Interaction between ciprofloxacin and magnesium in Milpar
6. Therapeutic duplication — meptazinol and co-proxamol

Priority intervention number **Number 4, but candidate must also mention numbers 2 and 5**

Suggested action to resolve the priority intervention:

1. Inform prescriber of amiodarone/flecainide drug interaction and recommend dose reduction of flecainide
2. Check signs of infection and consider advising to stop antibiotics or change to oral therapy.
3. Ask ward pharmacist to investigate appropriate laxative therapy

Urgency: **Urgent**

Figure 9: Solution to prescription 2