

Revision/Exam support (Exam 2/3)

Session 1 **ANSWERS**

Learning Outcomes

During this session you will be able to:

- Understand the format and requirements of PHA6020Y Exam 3
- Revise the therapeutic options for the treatment of patients with conditions covered in semester 1 (IBD, RA, Gout, SOT, CVD, Stroke, DVT/PE) and 2 (Renal, Hepatic, N&V)
- Identify pharmaceutical care issues/problems associated with the treatment of individual patients with renal disease and atrial fibrillation
- Identify therapeutic and toxic drug monitoring parameters for drugs used in the above conditions

Session tasks:

During this session, you should:

- Participate in the discussions around the different clinical areas.
- Make notes relevant to your learning on the clinical topics and monitoring parameters discussed
- **Using any resources**, including Bb and notes, complete the following case studies and associated questions
- Feedback on the two cases and associated questions will occur during the session
- When prompted, log-on to Socrative for further clinical therapeutics revision questions (MOORE630)

KL is attending the hospital for their haemodialysis session – they are reviewed at the MDT meeting and the following record is made in their notes:

Patient:	KL	
Hospital number:	13006259	
DoB:	2/06/1946	
Gender:	M	
Address:	19 Meres Way, Flatplace	
PMH:	Type 2 DM (15 years) ESRF (secondary to diabetic nephropathy) – on haemodialysis (HD) 3 x a week Hypertension 15 years	
DH:	Amlodipine 10mg OM Doxazosin 4mg OM Erythropoietin injection (Eprex®) 2000IU IV whilst on HD Alfacalcidol 0.25mcg OM Gliclazide 80mg BD NKDA	
SH:	Retired engineer	
Alcohol:	Nil	
Smoking Status:	Non-smoker	
OE:	BP	125/80 mmHg
	Temp	36.2 degrees Celsius
	Pulse	66 BPM
	Weight	78kg (dry weight 75kg)
	Patient complaining of itchy skin and recent weakness and fatigue	
Clinic blood tests:	HbA1c	44mmol/mol / 6.2%
	eGFR	8 ml/min/1.73m ²
	Phosphate	2.2* mmol/L
	Corrected calcium	2.45 mmol/L
	Hb	95* g/L
	Ferritin	100* µg/L (Target 200-500)
	ACR	75 mg/mmol

- a) For each of the drugs prescribed for KL (doxazosin, erythropoietin, alfacalcidol and gliclazide), provide details of their indication and therapeutic and toxic monitoring parameters.

[20%]

Amlodipine:

Indication: Hypertension

Therapeutic: Bp- target < 130/80 (as ACR >70)

Toxic: BP, Pulse S/E: e.g SOA

Doxazosin:

Indication: Hypertension

Therapeutic: Bp- target <130/80 (as ACR >70)

Toxic: BP, S/E: e.g headache, rhinitis

Erythropoetin:

Indication: Anaemia

Therapeutic: Hb (100-120g/L)

Toxic: Hb, muscle aches, bp

Alfacalcidol:

Indication: Hypocalcaemia (renal bone disease)

Therapeutic: Corrected calcium levels - target 2.2-2.6mmol/l

Toxic: Corrected calcium, G.I., headache, skin reactions

Gliclazide:

Indication: Type 2 DM

Therapeutic: BG, HbA1c

Toxic: BG, G.I.

- b) Critique the patient's blood pressure management. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[20%]

Amlodipine 10mg OM + Doxazosin 4mg OM – appropriate choice in ESRF– target of <130/80 achieved

(??ACEI/ARB/SGLT2Is – renoprotective in T2DM but too late as already ESRF)

(Thiazide ineffective CrCL<25ml/min + cause glucose intolerance)

No issues

- c) Critique the patient's diabetes management. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[20%]

Gliclazide 80mg BD – appropriate for Type 2 DM in ESRF (metformin/SGLT2Is C/I)

No issues

- d) Critique the patient's anaemia management. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[20%]

Low Hb, Ferritin and symptomatic – anaemia not controlled

Erythropoietin injection (Eprex®) IV whilst on HD – appropriate for anaemia in ESRF

No mention of iron therapy + ferritin levels low => advise IV iron therapy e.g. iron sucrose (Venofer®)

Need to replace iron stores first so that epo injections can work effectively

Monitoring parameters: Therapeutic: Ferritin 200-500mcg/l Toxic: Ferritin, bp, skin, anaphylaxis

If Hb still low & ferritin in range (Hb target 100-120g/L, Ferritin 200-500mcg/l) => advise increase dose e.g. 3000IU whilst on HD

- e) Are there any pharmaceutical care issues you have identified that have not been discussed above? For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[20%]

Phosphate levels high + itchy skin => hyperphosphataemia => needs phosphate binder e.g. calcium acetate (1st line on NICE guidance), sevelamer – with meals (dose adjusted to phosphate content of food)

Monitoring parameters: Therapeutic: Phosphate levels (target 1.1-1.7mmol/L in dialysis), control of pruritis. Toxic: Phosphate levels, G.I. (ensure adherence as common side effects & notorious for poor adherence)

Ensure renal dietitian involvement to counsel on reducing foods high in phosphorous

CASE 2

You have a new patient HG, admitted to the stroke unit this morning, and you are seeing them for the first time on your ward round. Their medical notes, blood test results and drug chart are below:

Patient:	HG	
Hospital number:	097641	
DoB:	19.12.1953	
Gender:	F	
Address:	7 Feeder Rd, Flatplace	
<u>Day 1:</u>		
PC:	Left side weakness and slurred speech	
HPC:	By-passers witnessed collapse at supermarket 2 hours ago – left side weakness + difficulty speaking	
PMH:	Hypertension (3 years) Asthma since childhood	
DH:	Amlodipine 10mg om Atorvastatin 20mg on Seretide 250 Accuhaler 2p bd Salbutamol inhaler prn NKDA	
SH:		
Alcohol	10-15 units/week	
Smoking Status	Smoker – 10/day	
OE	BP	150/105
	Pulse	115 bpm (irregular)
	Weight	89kg
Investigations:	ECG: Atrial fibrillation CT: evidence of clot SALT assessment: needs to be NBM	
Diagnosis:	Ischaemic CVA	
	Dr H Ago Bleep 5893	

Their blood test results on admission are as follows:

PATHOLOGY DEPARTMENT		Consultant/GP: Dr H Ago		PATIENT LOCATION Stroke
Patient Name: HG		NHS No:		
Hosp no: 097641		Sex: F	Age: 70 yr	Pathology
Patient Address:				
Lab Episode No:	4678		Date/Time Collection: Today	
Address for Report: Flatplace Hospital				

BIOCHEMISTRY Collection Today	Total chol mmol/L	Bilirubin (3-20) μmol/l	ALP (20-100) IU/l	AST (5-40) IU/l
ALT (5-30) IU/l	GGT (5-45) IU/l	PT (10-15) secs	Hb (14-18) g/dl	WBC (4-11) x 10 ⁹ /l
Na (134- 145) mmol/L	K (3.6- 5.0) mmol/L	Urea (1.7-7.1) mmol/L	Creatinine (55-125) μmol/L	eGFR ml/min/m ²

UEA Training Prescription Chart								Number of drug charts in use: 1		
Date	Surname	Forename	Sex	D/O/B	Hospital No.	Weight (kg)	Height (cm)	Surface Area (m ²)	SAM?	
Day 1	G	H	F	19/12/1953	97641	89 Estimate / Actual			Yes / No	
Ward/ward change:			Stroke			Patient address:				
Consultant(s)			Dr H Ago							
DRUG SENSITIVITIES/ALLERGIES MUST BE ENTERED. If no allergies/sensitivities you must write 'NKDA' and sign and date.										
Medicine/Substance		Description of allergy/sensitivity				Signature		Date		
		NKDA								
PRE-MEDICATION AND ONCE ONLY DRUGS										
Pharm	Date	Drug (approved name)	Dose	Directions/ route/ other	Time to be given	Signature	Administered by			
							Initials	Date		
Day 1	Aspirin	300mg	STAT			Dr H Ago				
Thromboprophylaxis Risk Assessment										
Drug thromboprophylaxis recommended										
Drug thromboprophylaxis NOT recommended			X							
Prescribing			Drug omissions			Prescribers				
<ul style="list-style-type: none"> Write clearly in black, indelible ink. Use approved drug names. All prescriptions must be signed and dated. If a drug is to be intentionally omitted by a prescriber or pharmacist, indicate this with an 'X' in the drug administration box. If a drug is being stopped, or a dose altered, draw a line through the whole prescription, sign and date. Doctors to re-write charts as required. Start dates should be transferred to new chart. Include cross-reference to drugs on other charts. 			If a drug is omitted, one of the below codes must be entered into the drug administration box. 1. Nil by mouth 6. Patient off ward 2. Not required 7. No IV access 3. Patient refused 9. Contra-indicated 4. Drug unavailable 8. Other - reason must be recorded in notes Self administration of medicines (SAM) If a patient is suitable for SAM they can initial in the relevant drug administration box or a nurse can write 'SAM' in the box.			Signature	Dr H Ago			
						Bleep no.	5893			
						Print name	Doctor H Ago			
						Signature				
						Bleep no.				
						Print name				
						Signature				
						Bleep no.				
						Print name				
Pharmacy codes						Signature				
Pharm: Signature confirms checked/date						Bleep no.				
TTO ✓ = from locker; H = at home; R = relabel; ★ = new supply at discharge						Print name				
Supply: S = ward stock; T = dispensing, see date and quantity; P = POD, see date and quantity						Version 001-19				

REGULAR MEDICINES 1

CHECK PAGE 1 FOR ALLERGY STATUS

				Date →	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Tick box to indicate time of admission or add other times ↓														
1. Drug (approved name)		Start date	End date	08:00										
<i>Amlodipine</i>		<i>Day 1</i>		08:00	✓	✓								
Dose	Route	Frequency		12:00										
<i>5mg</i>	<i>PO</i>	<i>OD</i>		14:00										
Indication		Pharm check		18:00										
				22:00										
Prescriber's signature		Supply		00:00										
<i># Ago</i>														
2. Drug (approved name)		Start date	End date	08:00										
<i>Atorvastatin</i>		<i>Day 1</i>		08:00										
Dose	Route	Frequency		12:00										
<i>20mg</i>	<i>PO</i>	<i>ON</i>		14:00										
Indication		Pharm check		18:00										
				22:00	✓									
Prescriber's signature		Supply		00:00										
<i># Ago</i>														
3. Drug (approved name)		Start date	End date	08:00										
<i>Aspirin</i>		<i>Day 2</i>		08:00	✓	✗								
Dose	Route	Frequency		12:00										
<i>300mg</i>	<i>PR</i>	<i>OD</i>		14:00										
Indication		Pharm check		18:00										
				22:00										
Prescriber's signature		Supply		00:00										
<i># Ago</i>														
4. Drug (approved name)		Start date	End date	08:00										
				08:00										
Dose	Route	Frequency		12:00										
				14:00										
Indication		Pharm check		18:00										
				22:00										
Prescriber's signature		Supply		00:00										
5. Drug (approved name)		Start date	End date	08:00										
				08:00										
Dose	Route	Frequency		12:00										
				14:00										
Indication		Pharm check		18:00										
				22:00										
Prescriber's signature		Supply		00:00										
CHECK PAGE 1 FOR ALLERGY STATUS														

AS REQUIRED DRUGS

CHECK PAGE 1 FOR ALLERGY STATUS

1. Drug (approved name)		Start date		Date	Time									
Paracetamol		Day 1												
Dose	Route	Max Frequency												
500mg-1g	po	6hrly												
Indication		Pharm check		Dose	Route									
Pain/pyrexia														
Prescriber's signature			Supply		Given by	Route								
<i>It Ago</i>														
2. Drug (approved name)		Start date		Date	Time									
Dose	Route	Max Frequency												
Indication		Pharm check		Dose	Route									
Prescriber's signature			Supply		Given by	Route								
3. Drug (approved name)		Start date		Date	Time									
Dose	Route	Max Frequency												
Indication		Pharm check		Dose	Route									
Prescriber's signature			Supply		Given by	Route								
4. Drug (approved name)		Start date		Date	Time									
Dose	Route	Max Frequency												
Indication		Pharm check		Dose	Route									
Prescriber's signature			Supply		Given by	Route								
5. Drug (approved name)		Start date		Date	Time									
Dose	Route	Max Frequency												
Indication		Pharm check		Dose	Route									
Prescriber's signature			Supply		Given by	Route								

- a) For each of the drugs prescribed for Mrs HG (amlodipine, atorvastatin and aspirin) provide details of their indication and therapeutic and toxic monitoring parameters. [20%]

Amlodipine:

Indication: Hypertension

Therapeutic: BP (target <130/80)

Toxic: BP, pulse, S/E: e.g. SOA

Atorvastatin:

Indication: Primary (now secondary) prevention of CVA

Therapeutic: Lack of CV/CVA event, lipid profile

Toxic: LFTs, myopathy, CK

Aspirin:

Indication: Ischemic stroke

Therapeutic: Lack of CVA

Toxic: Bleeding, Hb, G.I.

- b) Critique the patient's **ACUTE** management of their ischaemic CVA. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[15%]

Query for alteplase (within 4.5hrs) => Discuss with Dr and confirm if appropriate (0/9mg/kg max 90mg) => aspirin 300mg would then need to be amended to next day – not been given yet

Monitoring parameters: Therapeutic: Symptoms of CVA Toxic: Bleeding, Hb, BP (C/I if >185/110)

Aspirin 300mg PR od => appropriate for 14 days – route appropriate as NBM

- c) Critique the patient's blood pressure management. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[15%]

Patient should not be on their antihypertensive therapy (maintain cerebral perfusion during acute stages of stroke) – review once stabilised and ongoing need established (target longterm <130/80)

=> Ask Dr to stop patient's current antihypertensive treatment (amlodipine) and monitor patients BP – restart when appropriate then optimise to target (up titrate amlodipine to 10mg => + ACEI (e.g. perindopril) => + Thiazide e.g. Indapamide)

- d) Critique the patient's long-term **SECONDARY PREVENTION** management of their ischaemic CVA. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[20%]

Low dose atorvastatin 20mg on => Ask Dr to increase to 80mg on (NICE, secondary prevention) – not within first 48hrs

Aspirin 300mg od for 14 days then change to long-term antithrombotic => After 14 days change to anticoagulant e.g. DOAC (e.g. edoxaban 60mg od) long-term for secondary prevention of CVA (may be earlier if patient discharged before 14 days)

Monitoring parameters: Therapeutic: lack of CVA Toxic: bleeding, RF

- e) Are there any pharmaceutical care issues you have identified that have not been discussed above? For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[20%]

Inhalers missing from drug chart (on DHx) => Ask doctor to prescribe – check ability to use

Patient's SALT assessment – NBM (will have NG tube inserted) => All medication needs to be given by alternative route (refer to references as available e.g. BNF, Handbook of Drug Administration via Enteral Feeding Tubes, NEWT Guidelines):

(Amlodipine – crush & disperse, Atorvastatin – crush & disperse, Aspirin – PR, Paracetamol- PR/liquid/disp tablets)

Rate control needed for AF e.g. Bisoprolol 5mg od – will contribute to lowering of blood pressure => consider when optimising blood pressure management

Lifestyle: Smoking cessation, weight loss, exercise as appropriate, diet (low saturated fat, 5xday, low salt)

Appropriate counselling required for all newly started medication => Dependent on the patient's condition at the time of discharge appropriate discharge planning

is required to ensure HG can receive his required treatment when they are discharged from hospital.

- f) Calculate HG's CHA₂DS₂VASC and ORBIT score. Do they change your advice on secondary prevention of their ischemic CVA?

{10%}

CHA₂DS₂VASC:

Aged 65–74 years (1 point) + female (1 point) + hypertension (1 point) + stroke (2 points)
= 5 points

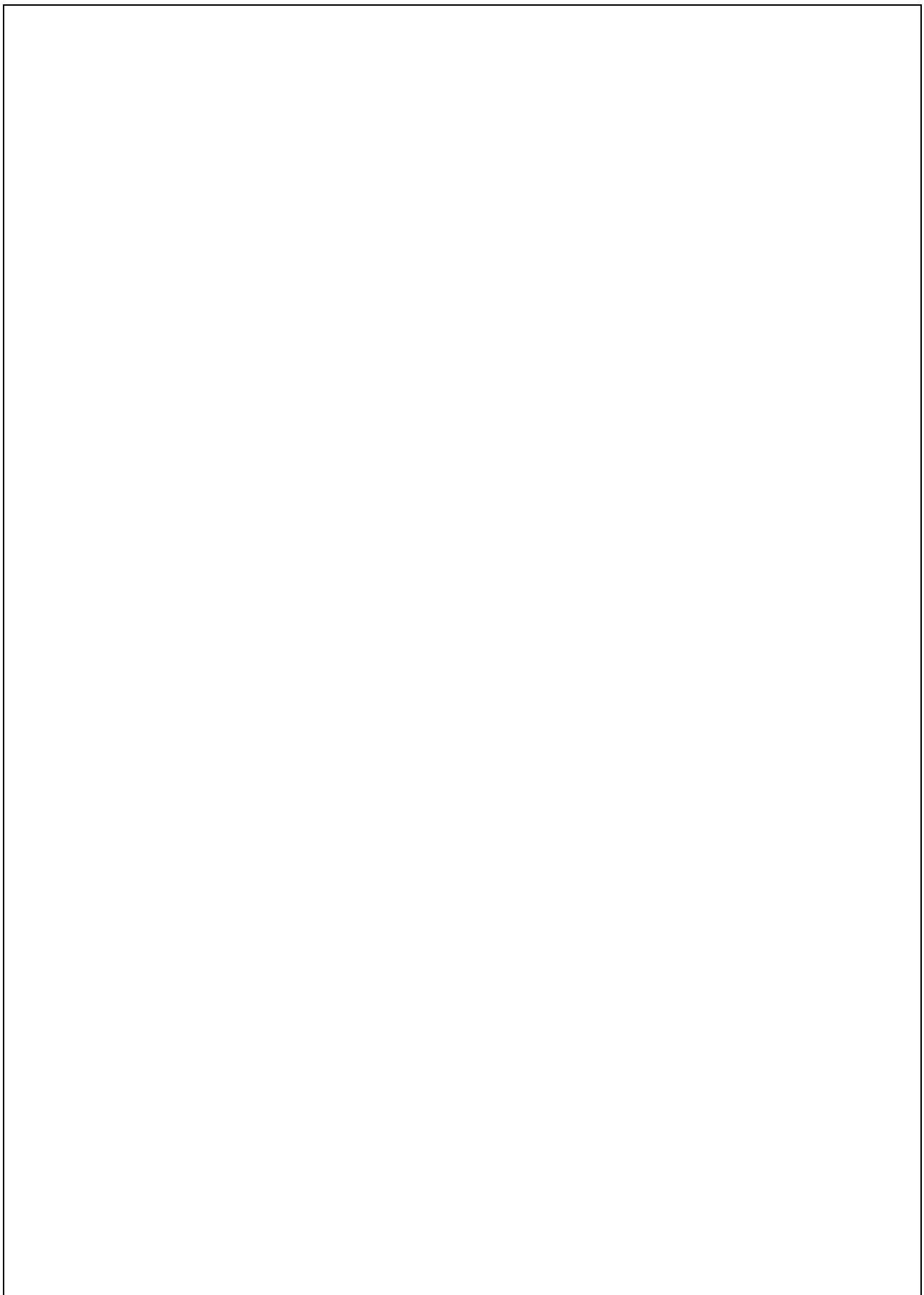
ORBIT: Zero

NICE recommends anyone with CHA₂DS₂VASC of 2 or more (1 or more if male) should be considered for anticoagulation (with assessment of bleeding risk using ORBIT)

HG should be considered for anticoagulation e.g. DOAC as per recommendations above

SOCRATIVE questions

Please feel free to use the following space to make notes during the Socrative session (a supporting document will be uploaded onto Bb after the session)



PHA-6020Y

Patient centred medicine from bench to bedside

Revision/Exam support (Exam 2/3)

Session 2 **ANSWERS**

Learning Outcomes

During this session you will be able to:

- Understand the format and requirements of PHA6020Y Exam 3
- Revise the therapeutic options for the treatment of patients with conditions covered in semester 2 (CNS and mental health).
- Identify pharmaceutical care issues/problems associated with the treatment of individual patients with dementia and bipolar disorder.
- Identify therapeutic and toxic drug monitoring parameters for drugs used in the above conditions.

Session tasks:

During this session, you should:

- Participate in the discussions around the different clinical areas.
- Make notes relevant to your learning on the clinical topics and monitoring parameters discussed
- **Using any resources**, including Bb and notes, complete the following case studies and associated questions
- Feedback on the two cases and associated questions will occur during the session
- When prompted, log-on to Wooclap for further clinical therapeutics revision questions.

CASE 1

You have a new patient TD, admitted to the older persons' care ward this morning, and you are seeing them for the first time on your ward round. Their medical notes, blood test results and drug chart are below:

Patient:	TD
Hospital number:	475839
DoB:	11.04.1931
Gender:	Male
Address:	3 Willow Lane, Flatplace
Day 1:	
PC:	Shortness of breath, cough, and confusion.
HPC:	Son found the patient out of breath and very confused at home during the visit and was worried. Called 999.
PMH:	Alzheimer's disease dementia (moderate; fluctuating capacity; diagnosed in 2021) Urinary incontinence (2014) Hypertension (2011)
DH:	Rivastigmine capsules 6 mg BD Oxybutynin 5 mg BD Amlodipine 10 mg OD Atorvastatin 20 mg OD NKDA
SH:	Lives alone, son visits every other day
Alcohol:	Very rarely
Smoking Status:	Former smoker (gave up 40 years ago)
O/E:	BP 119/73 mmHg
	Pulse 98 bpm (regular)
	SpO ₂ 93%
	Temperature 38.9 °C
	RR 28/min
	Weight 67 kg
	Chest examination: Coarse crackles at the bases of both lungs Abdominal examination: Soft abdomen, no distension and normal bowel sounds
	Currently NBM
	GCS 10/15
Investigations:	ECG: SR CXR: Bilateral basal consolidation of the lungs
Diagnosis:	Community acquired pneumonia (severe)
Plan:	<ol style="list-style-type: none"> 1. IVAbx 2. Oxygen 3. SALT (NG tube?) 4. Inform NOK
	Dr Y Chan Bleep 1763

Their blood test results on admission are as follows:

PATHOLOGY DEPARTMENT		Consultant/GP: Dr T Patel		PATIENT LOCATION AMU
Patient Name: TD			NHS No:	
Hosp no: 475839		Sex: M	Age: 92 yr	Pathology
Patient Address:				
Lab Episode No:	4573		Date/Time Collection: Today	
Address for Report: Flatplace Hospital				

BIOCHEMISTRY		CRP	Bilirubin	ALP	AST
Collection Today	LAB No 8904	123* (<3 mg/L)	29* (3-20) µmol/l	135* (20-100) IU/l	45* (5-40) IU/l
	ALT 22 (5-30) IU/l	GGT 89* (5-45) IU/l	PT 13 (10-15) secs	Hb 142 (140-180) g/L	WBC 14.3* (4-11) x 10 ⁹ /l
	Na 135 (134- 145) mmol/L	K 4.9 (3.6- 5.0) mmol/L	Urea 7.3* (1.7-7.1) mmol/L	Creatinine 101 (55-125) µmol/L	eGFR 60 ml/min/m ²

UEA Training Prescription Chart								Number of drug charts in use: 1										
Date	Surname	Forename	Sex	D/O/B	Hospital No.	Weight (kg)	Height (cm)	Surface Area (m ²)	SAM?									
Day 1	D	T	M	01/04/1931	475839	67 Estimate / Actual			Yes / No									
Ward/ward change:		AMU			Patient address:		3 Willow Lane, Flatplace											
Consultant(s)		Dr T Patel																
DRUG SENSITIVITIES/ALLERGIES MUST BE ENTERED. If no allergies/sensitivities you must write 'NKDA' and sign and date.																		
Medicine/Substance	Description of allergy/sensitivity					Signature		Date										
NKDA						YC		11/05/2023										
PRE-MEDICATION AND ONCE ONLY DRUGS																		
Pharm	Date	Drug (approved name)	Dose	Directions/ route/ other	Time to be given	Signature	Administered by											
							Initials	Date										
11-May	Co-amoxiclav	1.2 g	IV	22:00:00	YC	FK	11-May											
11-May	Clarithromycin	500 mg	IV	22:00:00	YC	FK	11-May											
Thromboprophylaxis Risk Assessment																		
Drug thromboprophylaxis recommended			X															
Drug thromboprophylaxis NOT recommended																		
Prescribing			Drug omissions			Prescribers												
<ul style="list-style-type: none"> Write clearly in black, indelible ink. Use approved drug names. All prescriptions must be signed and dated. If a drug is to be intentionally omitted by a prescriber or pharmacist, indicate this with an 'X' in the drug administration box. If a drug is being stopped, or a dose altered, draw a line through the whole prescription, sign and date. Doctors to re-write charts as required. Start dates should be transferred to new chart. Include cross-reference to drugs on other charts. 			If a drug is omitted, one of the below codes must be entered into the drug administration box. <table border="0"> <tr><td>1. Nil by mouth</td><td>6. Patient off ward</td></tr> <tr><td>2. Not required</td><td>7. No IV access</td></tr> <tr><td>3. Patient refused</td><td>9. Contra-indicated</td></tr> <tr><td>4. Drug unavailable</td><td>8. Other - reason must be recorded in notes</td></tr> <tr><td>5. Vomiting/nausea</td><td></td></tr> </table>			1. Nil by mouth	6. Patient off ward	2. Not required	7. No IV access	3. Patient refused	9. Contra-indicated	4. Drug unavailable	8. Other - reason must be recorded in notes	5. Vomiting/nausea		Signature	Dr Y Chan	
1. Nil by mouth	6. Patient off ward																	
2. Not required	7. No IV access																	
3. Patient refused	9. Contra-indicated																	
4. Drug unavailable	8. Other - reason must be recorded in notes																	
5. Vomiting/nausea																		
						Bleep no.	1763											
						Print name	Doctor Y Chan											
						Signature												
						Bleep no.												
						Print name												
			Self administration of medicines (SAM)			Signature												
						Bleep no.												
						Print name												
Pharmacy codes						Signature												
Pharm: Signature confirms checked/date						Bleep no.												
TTO ✓ = from locker; H = at home; R = relabel; * = new supply at discharge						Print name												
Supply: S = ward stock; T = dispensing, see date and quantity; P = POD, see date and quantity						Version 001-19												

REGULAR MEDICINES 1

CHECK PAGE 1 FOR ALLERGY STATUS

				Date →	11-May	12-May	13-May	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
Tick box to indicate time of admission or add other times ↓													
1. Drug (approved name) Enoxaparin		Start date 11-May	End date	06:00 08:00									
Dose 40 mg	Route SC	Frequency OD		12:00 14:00									
Indication CAP		Pharm check		18:00	✓	X							
				22:00									
Prescriber's signature Y Chan		Supply		00:00									
2. Drug (approved name) Co-amoxiclav		Start date 11-May	End date 48 h	06:00 08:00									
Dose 1.2 g	Route IV	Frequency TDS		12:00 14:00				Review					
Indication CAP		Pharm check		18:00									
				22:00	✓	X							
Prescriber's signature Y Chan		Supply		00:00									
3. Drug (approved name) Clarithromycin		Start date 11-May	End date 48 h	06:00 08:00									
Dose 500 mg	Route IV	Frequency BD		12:00 14:00				Review					
Indication CAP		Pharm check		18:00									
				22:00	✓	X							
Prescriber's signature Y Chan		Supply		00:00									
4. Drug (approved name) Oxybutynin		Start date 11-May	End date	06:00 08:00									
Dose 5 mg	Route PO	Frequency BD		12:00 14:00					1				
Indication		Pharm check		18:00									
				22:00	✓	1							
Prescriber's signature Y Chan		Supply		00:00									
5. Drug (approved name) Amlodipine		Start date 11-May	End date	06:00 08:00									
Dose 10 mg	Route PO	Frequency OD		12:00 14:00									
Indication		Pharm check		18:00									
				22:00									
Prescriber's signature Y Chan		Supply		00:00									

CHECK PAGE 1 FOR ALLERGY STATUS

REGULAR MEDICINES 2

CHECK PAGE 1 FOR ALLERGY STATUS

			Date →	11-May	12-May	13-May	Day 4	Day 5	Day 6	Day 7	Day 8
Tick box to indicate time of admission or add other times ↓											
6. Drug (approved name) Atorvastatin		Start date 11-May	End date	06:00 08:00							
Dose 20 mg	Route PO	Frequency OD		12:00 14:00							
Indication		Pharm check		18:00 22:00	✓	1					
Prescriber's signature Y Chan		Supply		00:00							
7. Drug (approved name) Rotigotine		Start date 11-May	End date	06:00 08:00							
Dose 4 mg	Route Top	Frequency ON		12:00 14:00							
Indication		Pharm check		18:00 22:00	✓	4					
Prescriber's signature Y Chan		Supply		00:00							
8. Drug (approved name) Paracetamol		Start date 11-May	End date	06:00 08:00		X	WL				
Dose 1 g	Route IV	Frequency QDS		12:00 14:00	✓	X	WL				
Indication Pain/pyrexia		Pharm check		18:00 22:00	✓	X					
Prescriber's signature Y Chan		Supply		00:00							
9. Drug (approved name)		Start date	End date	06:00 08:00							
Dose	Route	Frequency		12:00 14:00							
Indication		Pharm check		18:00 22:00							
Prescriber's signature		Supply		00:00							
10. Drug (approved name)		Start date	End date	06:00 08:00							
Dose	Route	Frequency		12:00 14:00							
Indication		Pharm check		18:00 22:00							
Prescriber's signature		Supply		00:00							

CHECK PAGE 1 FOR ALLERGY STATUS

- a) Using available resources, such as national clinical guidance, critique the management of Mr TD's dementia. Where appropriate, refer to the pharmacological mechanism of action of medicines discussed. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.

[30%]

Patient admitted on rivastigmine, which is an acetylcholinesterase inhibitor, licensed for the management of mild to moderately severe Alzheimer's disease dementia. It is also recommended as one of the three options for the management of this condition by relevant NICE guideline for dementia assessment and management.

Rivastigmine facilitates cholinergic neurotransmission by slowing the degradation of acetylcholine released by functionally intact cholinergic neurones. Thus, rivastigmine may have an ameliorative effect on cholinergic-mediated cognitive deficits in dementia associated with Alzheimer's disease.

Patient was admitted on rivastigmine capsules 6 mg BD, which is the maximum recommended dose of oral rivastigmine and may reflect the ever-advancing severity of patient's dementia. Since the patient is currently NBM, it may be appropriate to convert them to rivastigmine patch (equivalent dose of 9.5 mg patch changed every 24 hours). The patient has been erroneously prescribed rotigotine patches instead of rivastigmine. Rotigotine is a dopamine agonist used in the management of Parkinson's disease, however may be confused with rivastigmine as a sound-alike, look-alike drug and due to it being a transdermal preparation.

The action would be to contact the medical team and ask to substitute the prescription of rotigotine for rivastigmine 9.5 mg/24 hours. Caution is needed in patients with possible hepatic impairment (rivastigmine can cause elevation of LFTs) - note that patient's LFTs are elevated, however < 2 x ULN. Re-check LFTs in a few days' time and if still elevated, consider withholding rivastigmine temporarily. It is possible that LFTs are temporarily elevated due to acute infection.

- b) Mr TD is reviewed by the Speech and Language Team (SALT) who recommends the temporary insertion of an NG tube to facilitate the administration of enteral feeds and medicines. Using available resources, recommend suitable alternatives to patient's oral medicines in light of this development, with any monitoring parameters for new medicines if appropriate. Consider patient's comorbidities and long-term prognosis in your answer.

[40%]

Rivastigmine should be converted to transdermal patches as outlined in question (a) above.

Enoxaparin, paracetamol, clarithromycin and co-amoxiclav are administered via parenteral routes and are unaffected by insertion of the NG tube.

Oxybutynin tablets can be (crushed if needed and) dispersed in water for administration via NG tubes. If the patient has a urinary catheter in place, this may be temporarily withheld. Since oxybutynin is an anti-cholinergic medicine, it should be avoided in patients with dementia long-term due to its potential to worsen the condition. Mirabegron 50 mg OD may be a suitable alternative, although it should be used with caution in patients with a history of hypertension such as Mr TD (it is a beta 3-adrenoceptor agonist and can cause a rise in BP).

Amlodipine can be (crushed if needed and) dispersed in water for administration via NG tubes.

Atorvastatin can be crushed and dispersed in water for administration via NG tubes. It is light-sensitive and must be administered immediately. The patient is on concomitant clarithromycin therapy, therefore atorvastatin should be withheld for the duration of clarithromycin treatment (clarithromycin increases the plasma concentration of atorvastatin, leading to greater risk of myopathy). The patient is 92 years old and their dementia appears to be getting worse. It may be worth discussing the ongoing risks vs. benefits of atorvastatin therapy with patient or their next of kin/lasting power of attorney. Limited benefits in patients over the age of 80 years, and risk reduction estimated over 10 years which the patient may not be able to reach.

- c) Mr TD successfully recovers from pneumonia. His NG tube is removed however he continues to display a mild swallowing difficulty and episodes of agitation. Mr TD is reviewed by the Frailty Consultant who concludes that his Alzheimer's dementia has progressed to severe disease. They also prescribe risperidone 250 micrograms BD. Using available resources, discuss the ongoing management of Mr TD's dementia, including any follow-up or monitoring actions that may be required. Refer to pharmacological mechanisms of action where appropriate.

[30%]

According to NICE guidance for dementia assessment and management, Mr TD who now suffers from severe Alzheimer's disease may be offered memantine in addition to acetylcholinesterase inhibitor (rivastigmine).

Considering his swallowing difficulty, it may be appropriate to offer memantine as either orodispersible tablets or (pump actuation) oral solution to facilitate administration. The usual starting dose is 5 mg once daily, then increased in steps of 5 mg every week; usual maintenance 20 mg daily; maximum 20 mg per day. Memantine is a NDMA-receptor antagonist and reduces the levels of glutamate which is thought to be linked with neurodegeneration. As such, it acts as a neuroprotective agent. The key monitoring includes common adverse drug reactions: headache, constipation, dizziness, hypertension and dyspnoea. Hypertension may be particularly relevant to Mr TD and BP should be monitored carefully after discharge.

Risperidone is a dopamine antagonist which is probably the safest antipsychotic in the treatment of aggression and psychosis in patients with dementia. Excessive or prolonged use of antipsychotics in patients with dementia can lead to dehydration, over-sedation, infections, falls/fractures, strokes and greater mortality. As such, risks and benefits of treatment should be weighed carefully at the start. The dose and duration should be limited and ongoing need for risperidone reviewed every 6 weeks. The starting dose of 250 micrograms BD is appropriate and may be increased up to a maximum of 1 mg BD over time. Risperidone oral solution and orodispersible tablets are available to facilitate administration for Mr TD.

The OT/PT team should be involved in assessing patient's care needs post-discharge, e.g. whether or not they would require a social package of care which may include administration of medicines.

If the patient still has sufficient mental capacity and if not already in place, they should be encouraged to establish a lasting power of attorney and any advance care plans.

Ensure that the patient/family have access to a wider support network, including any local support groups and national charities.

Case 2

A 55-year-old man is arrested by police due to being found by his neighbours displaying disruptive behaviour. He appears full of energy, is easily distracted from conversation, and is fixated on going to play as goalkeeper for his home football team, Manchester United. His neighbours have tried to support the man by returning him to his flat, however he became agitated and displayed some physical aggression when they tried to help. Upon further investigation, the patient is detained under the Mental Health Act as he is believed to be undergoing a manic episode associated with Bipolar Disorder.

He has no known allergies or medical conditions. He currently lives alone in his own home.

- a) What are the common signs and symptoms associated with a patient living with bipolar disorder who is experiencing mania?

[10%]

[2%] for any of below points.

The manic phase of bipolar disorder may include:

- feeling very happy, elated or overjoyed
- talking very quickly
- feeling full of energy
- feeling self-important
- feeling full of great new ideas and having important plans
- being easily distracted
- being easily irritated or agitated
- being delusional, having hallucinations and disturbed or illogical thinking
- not feeling like sleeping
- doing things that often have disastrous consequences – such as spending large sums of money on expensive and sometimes unaffordable items
- making decisions or saying things that are out of character and that others see as being risky or harmful

Following a detailed mental health and physical health review, the man is commenced on quetiapine at a dose of 50mg BD on day 1, 100mg BD on day 2, 150mg BD on day 3, then 200mg BD from day 4 onwards.

- b) Describe how quetiapine exerts its beneficial clinical effect in the management of mania in bipolar disorder. Discuss the pharmacology of quetiapine as part of your answer.

[30%]

Quetiapine is a second-generation antipsychotic drug.

Quetiapine is a dopamine D₁, dopamine D₂, 5-HT₂, alpha₁-adrenoceptor, and histamine-1 receptor antagonist.

It is this combination of receptor antagonism with a higher selectivity for 5HT₂ relative to D₂-receptors, which is believed to contribute to the clinical antipsychotic properties and low extrapyramidal undesirable effect (EPS) liability of quetiapine compared to typical antipsychotics.

Quetiapine can be prescribed in acute manic episodes and can also then be used as long-term management of bipolar disorder.

- c) List the physical and biochemical monitoring parameters required for this patient who is about to be prescribed quetiapine. Consider baseline, ongoing and long-term monitoring requirements.

[25%]

Baseline: BP, pulse, weight/height/BMI/waist circumference, ECG, FBC, U&Es, LFTs, HbA1c, lipids (full profile), smoking history

Ongoing: BP/Pulse (after each dose change or at 1 month and 3 months), HbA1c at 12 weeks, weight (NICE recommend weekly for first 6 weeks and then at 12 weeks and 1 year plotted on a chart. Other guidelines recommend every 3 months for 1st year or at 1 month (if clinically indicated) and 3 months)

Lipids: In bipolar disorder NICE recommend assessment at 12 weeks. Other guidelines recommend every 3 months for first year 1,3,4,5, or at 1 month (if clinically indicated) and 3 months (or more often if weight gain is rapid).

ECG: After each dose change or if clinically indicated.

Prolactin: At 6 months and if clinically indicated.

Smoking history at 3 months.

Every 12 months: FBC, U&Es, LFTs, weight, lipids, prolactin, BP, FPG. NICE recommend measurement of weight, waist circumference, BP, pulse, and HbA1c and fasting blood glucose every 12 months in patients being treated for bipolar disorder.

Creatine Phosphokinase (CPK) if neuroleptic malignant syndrome (NMS) suspected.

Clinical efficacy – improvement in patient symptoms

Adherence!

Tolerance/side-effects e.g. drowsiness, weight gain, dizziness, tremors

After 2 weeks of monitoring within the hospital, the man is discharged back into his own home with community support. He has been titrated up to Quetiapine 300mg BD, with a plan to remain on this dose unless community review finds further dose titrations are needed.

- d) You speak to the man prior to discharge. Describe the common side-effects which can be experienced by patients taking Quetiapine and any advice for their management.

[20%]

Any of: **Appetite increased**; asthenia; dysarthria; dyspepsia; dyspnoea; fever; headache; irritability; palpitations; peripheral oedema; rhinitis; sleep disorders; suicidal behaviour (particularly on initiation); suicidal ideation (particularly on initiation); syncope; vision blurred; withdrawal syndrome

Suicidal behaviour/ideation – monitor closely, report any thoughts of self-harm or suicide immediately to 999/GP/key worker – could provide advice for Samaritans or other relevant charity if patient engaging.

Weight gain – significant weight gain can cause concern for patients and lead to non-compliance, explain this possible side-effect in advance and inform seek guidance if considering stopping treatment because of weight gain.

Focus on EPSE's – report immediately – examples: dystonia, akathisia, pseudoparkinsonism, tardive dyskinesia.

Raised HbA1c – polyuria, polydipsia, unintentional weight loss, fatigue

Drowsiness may affect performance of skilled tasks (e.g., driving or operating machinery), especially at start of treatment; effects of alcohol are enhanced.

Unfortunately, after 4 weeks in his own home, the man enters a further episode of mania and is admitted back into hospital care.

- e) According to current evidence-based clinical guidelines, what would be the next expected steps for his pharmacotherapy?

[10%]

Currently not on maximum dose of Quetiapine – could consider increase to a maximum of 800mg daily.

May need to consider benzodiazepine in the interim to control manic episode.

Antipsychotic drugs (such as haloperidol, olanzapine, quetiapine, and risperidone) are used in the treatment of acute episodes of mania or hypomania; **if the response to antipsychotic drugs is inadequate, lithium or valproate may be added.**

If a student suggested switching to another agent, they should consider the fact that antipsychotic agents need to be slowly withdrawn to avoid withdrawal symptoms. Some drugs can be switched directly after a slight dose reduction, which is guided by specialist texts. Other drugs (e.g., Aripiprazole) may be introduced immediately whilst Quetiapine is slowly being decreased.

Any switch requires close patient monitoring (for EPSE's etc.) and close involvement of the patient.

An example switch is shown below for information (Quetiapine to Olanzapine):

Direct switch and cross titration

Although quetiapine is sedating and carries some risk of cholinergic rebound, olanzapine has similar effects. Therefore, an extended withdrawal regimen is not necessary. It is suggested that moderate to higher doses (above approximately 300 mg) of quetiapine be withdrawn by reducing the dose to 50% on day 1 and stopping it on day 5.

Olanzapine should be started at night on day 1. For schizophrenia and related disorders, start at 5–10 mg/day, administered as a single daily dose. The dose should be adjusted based on individual clinical response and adverse effects.

For acute mania associated with bipolar disorder, the recommended starting dose is 10 or 15 mg once a day as monotherapy, or 10 mg once daily in combination with lithium or valproate. Dosage adjustments, if indicated, should generally occur at intervals of not less than 24 hours. When dosage adjustments are necessary, dose increments or decrements of 5 mg daily are recommended, unless in acute settings.

Students may also discuss non-pharmacological management e.g. CBT, psychotherapy, self-help (but more of a long-term plan when stable)

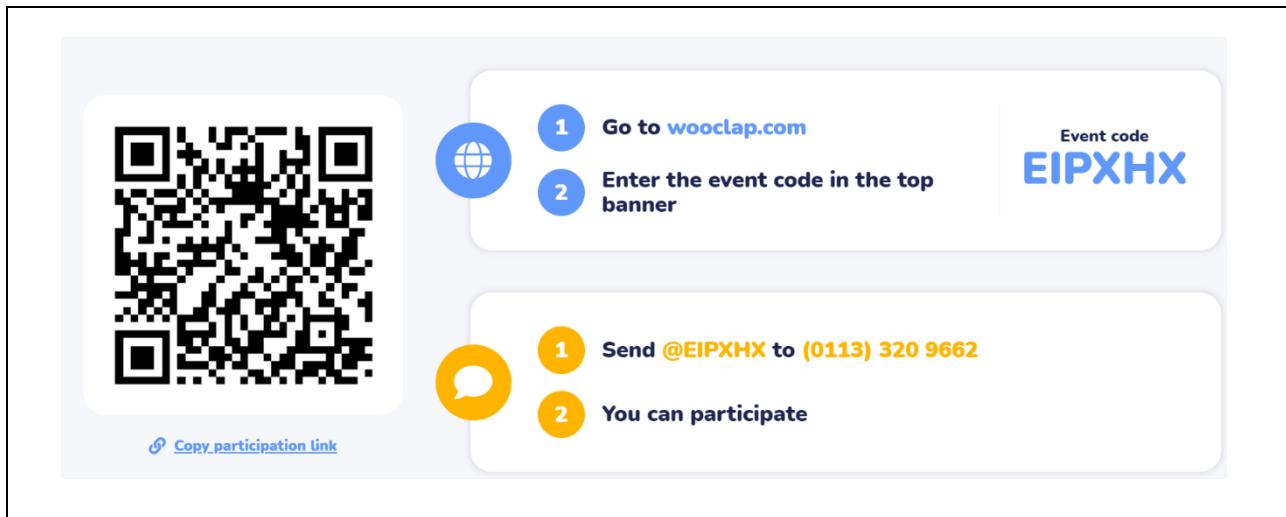
The patient improves well on their new treatment plan but advises he struggles with remembering to take the medication at times. He is concerned about entering another manic phase as it required him to have an extended period off work and he wishes to avoid this in the future.

f) What options are available to help support this unintentional non-adherence?

- Modified release preparations of medications
- Depot injectables e.g. olanzapine, risperidone
- Reminders on phone, calendar etc.
- Reviewing medication timing within the day.
- Any other reasonable amendment to routine which will support adherence.

Wooclap questions

Please feel free to use the following space to make notes during the Wooclap session
(a supporting document will be uploaded onto Bb after the session)



PHA-6020Y Exam 3 Formative Feedback

Catherine Heywood/Nicky Moore/
Vilius Savickas

REMINDER FROM EXAM SUPPORT WORKSHOP:

Format:

- ▶ In-person 3 hour exam
- ▶ Three questions (cases) - covering any of the clinical content taught in semester 1 and 2
- ▶ No choice - all questions same value
- ▶ Exam sat in an IT suite (or equivalent) but answers hand-written in separate answers booklets
- ▶ Open - book

Open book

- ▶ Permitted to access any online resources via the provided computer [except for those that could facilitate communication including OneDrive and other cloud-based storage/file sharing platforms]
- ▶ Recommended electronic resources to use are:
 - ▶ BNF (<https://bnf.nice.org.uk/>)
 - ▶ Electronic Medicines Compendium (www.medicines.org.uk)
 - ▶ Medicines Complete (www.medicinescomplete.com)
 - ▶ National Institute for Health and Care Excellence (<https://www.nice.org.uk>)
 - ▶ PHA-6020Y Blackboard

- ▶ Six (6) sides of hand-written notes:

- ▶ Plenty of time, but not enough to look everything up!
- ▶ Use them wisely!
- ▶ Will be checked by invigilator
- ▶ Bullet points for each clinical area:
 - ▶ What management would you expect to see?
 - ▶ What pharmaceutical care issues could you get? - review all workshops

(Textbooks and dictionaries not permitted)

“CRITIQUE”

- ▶ **Detailed analysis and assessment:** =>
 - ▶ What is right/correct about the patient's management and why?
 - ▶ What is wrong/incorrect about the patient's management and why?
- ▶ **Optimisation:** =>
 - ▶ What would you recommend to “optimise” the patient's management? (“interventions”/“pharmaceutical care issues”)
- ▶ Parts of questions will guide you!
- ▶ Marks will be given for correct/appropriate comments even if not in mark scheme!

Normalised Marking Scheme

Normalised marking approach applied to all SAQ questions:

Raw mark (25)	% range	Description
0-2.5	0-9%	No information provided or information incorrect or proactively dangerous
2.5-5	10-20%	Mention one or two main points or proactively dangerous
5-10	21-39%	Mentioned three or four main points but limited understanding or proactively dangerous
10-12.5	40-49%	Points covered demonstrates some understanding with errors (Not clinically dangerous)
12.5-15	50-59%	Most main points covered demonstrates understanding with only minor errors (Not clinically dangerous)
15-17.5	60-69%	Good answer and understanding most main and some minor points (Not clinically dangerous)
17.5-20	70-79%	All main points and some minor points, very good understanding (Not clinically dangerous)
20-25	80%+	Thorough and detailed understanding demonstrated (Not clinically dangerous)

Question 1:

- You are working as a GP pharmacist and have been asked to review AB, 56 year old White Caucasian patient, who was seen in the surgery that morning. Their GP medical notes are as follows:

GP consultation - Today	
Patient:	AB
NHS number:	456 789 123
DoB:	3/2/1967
Gender:	F
Address:	7 Charles Grove, Flatplace
Allergies:	NKDA
Weight:	86kg
Occupation:	Teaching assistant
Alcohol:	1-20 units/week
Smoking Status:	Gave up smoking 2 months ago, previously smoked 20 cigarettes/day Recently started again – 1-2 per day
PMH:	STEMI (2 months ago) Hypertension (1 year)
Repeat Medication:	Ramipril 7.5mg od Atorvastatin 20mg od Bisoprolol 2.5mg od Clopidogrel 75mg od Omeprazole 20mg od NKDA.
PC:	Migraine – increasing frequency of attacks – not able to control with OTC ibuprofen
OE:	BP: 150/95 mmHg Pulse: 84 BPM
Plan:	Refer to practice pharmacist

- (a) For each of the drugs prescribed for AB (aspirin, atorvastatin, bisoprolol, clopidogrel, ramipril and GTN), provide details of their indication and therapeutic and toxic monitoring parameters. [20%]

► Aspirin:

- Indication: 2^o prevention of MI
- Therapeutic MP: ↓CV events
- Toxic MP: Signs of bleeding, Hb, S/E:GI

► Atorvastatin:

- Indication: 2^o prevention of MI
- Therapeutic MP: ↓CV events, Lipid profile
- Toxic MP: LFTs, CK, myopathy

► Bisoprolol:

- Indication: 2^o prevention of MI, HT
- Therapeutic MP: ↓CV events, BP < 140/90, pulse down to 60bpm
- Toxic MP: BP, pulse

► Clopidogrel:

- Indication: 2^o prevention of MI
- Therapeutic MP: ↓CV events
- Toxic MP: Signs of bleeding, Hb, S/E:GI

► Ramipril:

- Indication: 2^o prevention of MI, HT
- Therapeutic MP: ↓CV events, BP < 140/90
- Toxic MP: BP, RF, K+, dry cough

► GTN:

- Indication: Ischaemic chest pain
- Therapeutic MP: Chest pain, usage
- Toxic MP: Bp, pulse, flushing/dizziness

- (b) With reference to their current repeat prescription, critique the management of secondary prevention of MI in this patient. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate. [25%]

- Correct drugs for secondary prevention of MI (NICE) - DAPT*, atorvastatin, ACEI & beta-blocker
(*NICE STEMI => prasugrel first line)

- Atorvastatin should be 80mg (secondary prevention) not 20mg (primary prevention)

- Consider PPI e.g. lansoprazole 15mg od for gastric protection as DAPT Monitoring parameters:
 - Therapeutic MP: G.I. symptom control, lack of G.I. bleed
 - Toxic MP: S/E e.g. diarrhoea, low sodium

► Consideration of optimisation(uptitration) of:

- Bisoprolol - uptitrate to 3.75mg od (target 10mg daily - rate control towards 60bpm)
- Ramipril - uptitrate to 5mg daily (target 10mg od)
- - Need stop date for DAPT (clopidogrel to stop at 12 months)

(c) Critique the management of hypertension in this patient. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.[20%]

- 57-year-old white Caucasian (not diabetic) => NICE advises CCB however ACEI and beta-blocker used for secondary prevention of MI should be used as priority to control BP
- BP 150/90 not controlled (target <140/90)
- Recommend uptitration of ramipril to 5mg od (target 10mg od for secondary prevention anyway + uptitration of bisoprolol to 3.75mg od)

(d) What lifestyle advice you would offer AB? [10%])

- -smoking cessation
- -weight loss
- -alcohol - max 14units/week
- diet - low saturated fat, low salt, 5/day
- exercise - 30mins 5x/week

(e) What advice should be given for the management of their migraines? Explain your answer. [25%]

- Record migraine diary
- Record/identify triggers /manage
- Pain:
 - Simple analgesic - soluble works faster, Take as soon as possible an onset of symptoms (at prodrome/aura if possible - before headache)
 - Paracetamol 1000mg/aspirin 900mg - not appropriate with 75mg od/ibuprofen 400mg - not working
 - Triptan (HT1 receptor agonists) - not appropriate - C/I in CVD (coronary vasoconstriction)

► Antiemetic may be helpful (Even in absence of nausea and vomiting)

- E.g. Metoclopramide 10mg tds, Prochlorperazine 10mg tds,
- OTC: Migraleve®, Buccastem M®

► Therefore, if migraine not managed with simple analgesia may need to consider preventative therapies:

- Non-selective beta blockers e.g. propranolol - not suitable in addition to existing therapy
- Pizotifen
- Methysergide

Question 2

► For each of the drugs prescribed for JT (Oxazepam, lactulose, spironolactone and dalteparin), provide details of their indication and therapeutic and toxic monitoring parameters. [20%]

- Oxazepam - Acute alcohol withdrawal
 - Therapeutic - Control of the symptoms of alcohol withdrawal, no progression of symptoms
 - Toxic - Rebound withdrawal, abuse, drowsiness, RR (respiratory depression), nervous system disorders (light headedness, dizziness), psychiatric disorders
- Lactulose - Treatment and prevention of hepatic encephalopathy
 - Therapeutic - Stool chart 2-3 soft stools per day, improvement or prevention of the symptoms of hepatic encephalopathy
 - Toxic - Stool chart - diarrhoea, adherence, GI disturbance (flatulence, pain, N&V)
- Spironolactone - Asclites
 - Therapeutic - weight loss [aim 0.5-0.75 kg/day], abdominal girth
 - Toxic - U&E's [RF and K+Na+], gynaecomastia, s/e - GI disorders
- Dalteparin - VTE prophylaxis
 - Therapeutic - Lack of VTE
 - Toxic - Bleeding and bruising, Hb, PLT, renal function, weight, hyperkalaemia

- Critique the patient's drug history (thiamine, lactulose, spironolactone) in view of her medical history. Explain the rationale behind the use of the prescribed drugs. [30%]

- Thiamine 100 mg TDS** – Appropriate drug, formulation, dose and frequency of thiamine used for the prevention of Wernicke's encephalopathy in this patient who continues to drink increased quantities of alcohol to reduce the risk of vitamin B deficiency.
- Vitamin B is likely to become deficient due to poor oral intake and lowered vitamin absorption due to alcohol consumption as seen in this patient. It can lead to Wernicke (encephalopathy)Korsakoff's syndrome, an acute neuropsychiatric disorder which can develop into a long term condition.
- Patients that continue to drink should remain on this indefinitely, those that become abstinent should continue for a further 6 months – patient still drinking therefore appropriate to continue.
- Lactulose 40 mL TDS** – Appropriate drug, formulation, dose and frequency for the management of hepatic encephalopathy (provided it is producing the required effect). Patient has severe liver disease (cirrhosis) prior to admission and so is likely to have had hepatic encephalopathy before or is at risk of it.
- Hepatic encephalopathy, caused by the excess of ammonia/nitrogenous waste (and other toxic waste products) which are not cleared by the liver. These can cross the blood-brain barrier in concentration in the systemic circulation. These can travel to the brain, cross the BBB and cause the symptoms of encephalopathy. Lactulose reduces the gut pH reducing the ammonia produced by bacteria of the gut, reduces the absorption of now ionised molecules and increases gut transit to reduce the presence of nitrogenous waste.
- Needs to produce 2-3 soft stool a day to be effective at reducing the nitrogenous load of the gut.
- Spironolactone 300 mg OD** – Appropriate drug, formulation, dose and frequency, and first line pharmacological management of ascites (patient's examination indicates this). As patients abdomen is distended, the dose may be too low or this may be due to poor absorption. It is important to monitor for potassium loss not to cause hypokalaemia.
- Liver cirrhosis and distorted liver architecture lead to the formation of collateral circulation and an increase in portal hypertension, along with a reduction in the production of albumin and activation of the renin-angiotensin-aldosterone system (due to reduced blood flow to the kidneys). This increases fluid reabsorption in the kidney and causes a redistribution of fluid within the abdomen. Aldosterone is also usually broken down in the liver but due to reduced metabolising capacity this is also not possible. Spironolactone is diuretic treatment to mobilise and remove intra-abdominal fluid and spironolactone is an aldosterone antagonist to reduce its effect.

- Critique the patient's acute management during admission. For any pharmaceutical care issues identified describe the action you would like to take to resolve these. [35%]

- Patients with chronic alcohol use and cirrhosis), continued drinking and signs on examination (slurred speech, disorientation, agitation, confusion, shaking, nausea, sweating) - are all symptoms of acute alcohol withdrawal.
- CIWA-Ar (Clinical Institute Withdrawal Assessment of Alcohol) - score of more than 10 implies pharmacological treatment is required (withdrawal is present).
- SADQ (Severity of Alcohol Dependence Questionnaire) - score of 30 indicates high dependence.
 - Pharmacological treatment appropriate
- STAT dose of chlordiazepoxide given and oxazepam 20mg PRN prescribed to be administered via CIWA-Ar.
 - Management appropriate
- Benzodiazepines are required for management of the symptoms of alcohol withdrawal and to prevent progression to more serious symptoms.
- An initial dose of chlordiazepoxide is appropriate prior to initiating the symptom triggered regime. Chlordiazepoxide has a long half-life and is preferred as it may be more effective than short acting ones at preventing seizures and delirium and has less rebound. However, there is a risk of accumulation especially in those with liver disease, like JT - blood tests (reduce albumin, increase PT, generally abnormal LFTs) imply, and diagnosis confirms cirrhosis.
- Therefore, oxazepam is an appropriate choice as it has a shorter half-life and less prone to accumulation and toxicity. Close monitoring required due to risk of rebound.
- Symptom triggered regime based on CIWA-Ar rather than fixed regime and lowest dose is preferred over fixed regime.

- Patient should be on IV paracetamol to prevent/manage (unclear what symptoms the patient has are due to) Wernicke's encephalopathy. Low threshold for starting. Patient not been taking thiamine Po and poor oral intake. Paracetamol IV high potency (vit B and C injection) – 2 pairs TDS for 3-5 days. Continue with oral thiamine to prevent omission from discharge. Remain on oral thiamine for 3-6 months after cessation of alcohol or indefinitely if still drinking.
- Discuss with doctors the need for propranolol to manage portal hypertension. Signs present. Cautious initiation required as extensive first pass metabolism.
- Spironolactone** missing from chart. Patient should continue to receive this for ascites. Potential for dose increase if 0.5-0.75 kg/day weight loss not seen.
- VTE risk assessment not completed, dalteparin prescribed. Ensure risk assessment is completed and risks associated with deranged PT discussed with the medical team.
- Phytomenadione** to try to manage prolonged PT – 10mg OD IV 3 days. Likely to not be effective as patient has cirrhosis and raised PT unlikely to be due to poor vitamin K absorption, instead due to reduced hepatic production of clotting factors.
- Encourage adherence to prescribed medicines. All of DHx appropriate and should be continued.

Prior to discharge, JT suffers a fall spraining her right wrist. Her pain score is 6 at rest and 8 with any attempted movement. Her oxazepam dosing has now stopped. The doctors add the following medication to her chart:

- Paracetamol 500 mg tablets - 1g QDS
- Morphine sulphate modified release 5 mg tablet - 5mg BD
- Morphine sulphate oral solution 10 mg/5 mL – 1 mL every 4 hours when required

- Critique the patients new pain relief. For any pharmaceutical care issues identified describe the action you would like to take to resolve these.

[15%]

- Appropriate drug choices for pain relief, however regimes require some reconsideration.
- Paracetamol** - data is conflicting regarding the safety in liver disease (this patient) and dosing will be guided by local policy, often reducing the dose. Theoretically liver enzyme induction (by chronic alcohol) may enhance the production of toxic metabolites.
- Caution is necessary in patients that cannot eliminate the toxic metabolite due to decreased glutathione, i.e. malnourished patients - relevant for this patient.
- Also, this patient is under 50kg caution use - reduce dose.
 - Reduce the dose to 500mg QDS or TDS or 15 mg/Kg
- Morphine** – cleared by the liver (extensive first pass metabolism) and a high extraction ratio drug (reliant on blood flow) which will be reduced due to portal hypertension and collateral circulation. Therefore, there is an increased bioavailability, prolongation of duration of action and increased risk of toxicity – relevant for this patient as they have liver cirrhosis.
- Morphine is centrally acting and can also induce sedation increasing the risk of hepatic encephalopathy.
- A common adverse effect is constipation which can increase the risk of hepatic encephalopathy through the build up of nitrogenous waste products.
- Modified release makes it difficult to monitor the patients underlying condition and to remove if there is a deterioration in the patient. The half life will be increased even further in this patient with cirrhosis.
- Breakthrough pain relief at a 10th of the daily dose – appropriate, however needs to be relative to usual daily dose.
 - Recommend removing the MR opioid and using an immediate relief preparation throughout the day, i.e. 2.5-5mg every 4-6 hours PRN.
 - Monitor before each dose, only administer if no adverse effects and pain relief required.
 - Monitor closely for sedation or deterioration in central adverse effects.
 - Review after 24 hours of dosing to estimate 24 hour requirement. A regular immediate release dose may be instated or continue on the PRN regime.

Question 3:

- You have a new patient KR, admitted to the surgical ward. Their medical notes and drug details are as follows:

Patent:	KR
Hospital number:	859383
DoB:	15.07.1943
Gender:	F
Address:	14 Prospect Row, Flatplace
PC:	Vomiting, severe abdominal pain, confusion/agitation
HPC:	Has been vomiting profusely for the last 2 days, accompanied by severe abdominal pain. No other recent abdominal symptoms
PMH:	Appendectomy (20 years ago) Parkinson's Disease (13 years) Dementia (5 years) Metastatic gastric cancer (1 year ago)

DH:	<ul style="list-style-type: none"> - Stalevo® 100 mg/25mg/200mg tablets (Levodopa/carbidopa/entacapone) Take 1 TDS - Sinemet CR 50 mg/200mg prolonged-release tablets. Take 1 at night. - Zomorph 20 mg BD - Oramorph 10 mg 4 hourly PRN – states he has been taking 20 mg x 4 doses daily for the last 3 weeks because the pain has been getting worse. He has been trying to get a GP appointment to review this but has not had much luck. 								
SH:	Retired accountant, lives alone in supported-living bungalow, daughter has PoA Mobilises independently with a walking frame								
Alcohol	2-3 units/week								
Smoking Status	Ex-smoker – quit 25 years ago								
OE	<table> <tr> <td>BP</td><td>110/67</td></tr> <tr> <td>Temp</td><td>36.6°C</td></tr> <tr> <td>Pulse</td><td>71 bpm (regular)</td></tr> <tr> <td>Weight</td><td>68.3 kg</td></tr> </table>	BP	110/67	Temp	36.6°C	Pulse	71 bpm (regular)	Weight	68.3 kg
BP	110/67								
Temp	36.6°C								
Pulse	71 bpm (regular)								
Weight	68.3 kg								

Investigations:
CT scan of abdomen and pelvis – shows small bowel obstruction caused by adhesions. LFT – NAD, U&E NAD, eGFR 67

Diagnosis:
Small bowel obstruction due to adhesions from previous appendicectomy

Plan:
Strict nil by mouth
NG tube on free drainage
Pain protocol
Parkinson's medications have been converted to patch formulation while NB
Fentanyl patch instead of morphine
Haloperidol for N&V/agitation
Dr Mehta Bleep 5391

KR has now been prescribed;
 - Fentanyl 50 mcg transdermal patch - apply 1 weekly
 - Diamorphine 15 – 20 mg subcutaneously 2 hourly PRN for pain
 - Haloperidol 2.5 mg 2 hourly subcutaneously PRN for N&V/agitation
 - Rotigotine patch 14 mg/24hrs – apply 1 daily
 (Their Parkinson's symptoms are well controlled throughout their admission using the rotigotine 14 mg/24hrs patch)

(a) Using the BNF, critique the newly prescribed analgesia. Include in your answer your pharmaceutical dosage calculations in relation to the conversion from oral morphine to fentanyl patch and the appropriateness of the diamorphine dose for breakthrough pain. For any errors identified make appropriate recommendations to rectify these.

[30%]

Morphine to fentanyl dose conversion [Up to 15%]

- Confirm patient's adherence to Zomorph and use of PRN Oramorph prior to conversion to patches to ensure that the dose calculated is appropriate and will not cause toxicity
- Zomorph 20 mg BD = 40 mg
- Oramorph 20 mg QDS = 80 mg
- Total 120 mg daily
- BNF conversion table - 120mg morphine equates to Fentanyl 50 microg/hr patch, which is currently prescribed.
- The BNF however advises that when switching between different opioids, the calculated equivalent dose should be reduced in most cases to prevent patients from receiving too much opioid during this period.
- Guidance from the Royal College of Anaesthetists (UK) suggests that the starting point for dose reduction from the calculated equivalent dose is around 25-50%. Patient factors such as pain severity, age, frailty, tolerability, and current opioid dose are then taken into account.
- Sensible to reduce the dose in this older person to 25 microg/h or 37.5 microg/h patch. Specialist advice may be sought from the acute pain team.
- Fentanyl patches are to be applied every 72 hours, not weekly.

Diamorphine PRN dose calculation [Up to 15%]

- Opioid PRN dose = 1/10-1/6 of total daily dose - 12-20mg PO morphine 2 hourly PRN
- 10 mg PO morphine = 3 mg S/C diamorphine
- 12-20mg PO morphine = 3.6-6.0mg S/C diamorphine therefore dose should be reduced to 2.5 - 5mg S/C diamorphine every 2 hours PRN (answer or either 2.5mg or 5mg every 2 hours PRN is also acceptable).

b) Explain, using the underpinning science, why haloperidol would be contra-indicated in this patient [30%].

- In PD there is a degeneration of dopaminergic neurons in the nigrostriatal pathway. The nigrostriatal pathway is involved in control of movement. Release of dopamine in the striatum stimulates D1 and D2 receptors which initiate movement via the direct and indirect pathways.
- Loss of these neurons in PD results in the paucity of movement seen in PD patients.
- Haloperidol is a non-selective dopamine antagonist. It would block DA receptors in the striatum, decreasing the dopaminergic transmission that remains, thereby exacerbating the disease. In addition, it would interact with the drugs being used to treat the disease, stopping them from being effective.
- Levodopa is a precursor of dopamine and is converted to DA by the action of dopa decarboxylase.
- Carbidopa is a peripheral dopa decarboxylase inhibitor inhibiting conversion of the levodopa to DA in the periphery.
- Entacapone is a COMT inhibitor which inhibits the breakdown of levodopa DA. All of these therefore increase the amount of DA available at the synapses in the striatum.
- Haloperidol would negate this effect by stopping the DA acting at its receptors.

Despite the poor initial prognosis KR's bowel obstruction resolves, and she is changed back to an oral regime for all his medications.

Her family have decided that she is no longer able to live independently and have arranged respite care for her with a view to continuing as a permanent resident if she settles into the new care home. The new carers have limited experience supporting patients with Parkinson's Disease. Meals at the care home are given at 8:00, 12:00, 17:00. They request some written advice for her care plan regarding the management of his Parkinson's medications.

- (c) Compose a written summary for the care home team on how to manage her Parkinson's medications. Include in your summary information about how the medications work, appropriate suggestion of administration times and instructions, and relevant information about managing side effects.

[40%]

Answer should include:

- how to administer and appropriate timings
- how the medication works including limited effectiveness and
- some appropriate side-effects, avoids use of jargon (without explaining meaning).

(i) how to administer and appropriate timings

- i. The medication is given orally at the same time every day. Small doses are given frequently to reduce 'peaks and troughs' in levodopa levels. Short acting medication and effect may deteriorate toward the end of dose.
- Do not stop the medication unless the prescriber advises. It is potentially dangerous to stop taking it suddenly.
- Should be prescribed by brand so highlight any changes to the pharmacy.
- Any timing allowed within reason provided student gives administration of the medication four times daily (Stalevo TDS and Sinemet CR at night) with an interval of at least 30-60 minutes before and after meals.
- Protein (e.g. meat, fish, eggs, cheese, yoghurt, nuts, beans, pulses) may interact with levodopa. It is therefore generally advised that the medication should be taken at least 30-45 minutes before meals.
- Reinforce the importance of correct timings of administration.
- Seek medical advice if acute illness (e.g. vomiting etc.) prevents oral administration of medications.

(Up to 15%)

(ii) how the medication works including limited effectiveness

- Helps improve movement/muscle problems (motor symptoms).
- Sinemet = combination of levodopa and carbidopa. Levodopa replaces the lost dopamine in the brain which is the cause of PD symptoms. Carbidopa is there to improve effectiveness of the levodopa by helping it reach the brain and also reduces side effects.
- Stalevo= combination of levodopa, carbidopa and entacapone. Entacapone slows the clearance of levodopa from the bloodstream.
- Palliative treatment - does not affect disease progression. Effectiveness diminishes with time and doses may be increased with time and/or additional medications added.

(Up to 15%)

(iii) some appropriate side-effects, avoids use of jargon (without explaining meaning).

- Side effects - loss of appetite, postural hypotension, vomiting, diarrhoea, bradykinesia (the on-off phenomenon), dizziness, confusions, hallucinations, depression, somnolence, impulsive/compulsive behaviours, dyskinesias (involuntary movements) (any reasonable from SPC, should not be overly alarming).
- Reinforce that medication should NOT be discontinued in event of side effects but continued until these have been discussed with prescriber and/or specialist.
- Any other appropriate counselling points.

(Up to 10%)

UNIVERSITY OF EAST ANGLIA

School of Pharmacy
Formative Exam 3 2022/23
Version 1

PERSON-CENTRED MEDICINE: FROM BENCH TO BEDSIDE EXAM 3

PHA-6020Y

Time allowed: 3 hours

There are **THREE** questions.

You should attempt to answer **ALL THREE** questions and **ALL** parts of each question.
Each question has the same value.

Use a **SEPARATE** answer book for **EACH** question. Percentages in square brackets [] indicate the marks available for each part of the question.

The paper consists of 13 pages in total.

Each question consists of a patient scenario. For each scenario you should review the information provided before attempting the questions.

Additional Materials

Students are permitted to access **any** online resources via the provided computer **except** for those that could facilitate communication (including OneDrive and other cloud-based storage/file sharing platforms).

Recommended electronic resources to use are:

- BNF (<https://bnf.nice.org.uk/>)
- Electronic Medicines Compendium (www.medicines.org.uk)
- Medicines Complete (www.medicinescomplete.com)
- National Institute for Health and Care Excellence (<https://www.nice.org.uk/>)
- PHA-6020Y Blackboard

Students are permitted to take six (6) sides of handwritten notes into the assessment.

Textbooks are not permitted in this examination.

Dictionaries are not permitted in this examination.

Do not take this question paper out of the examination room.

Do not turn over until you are told to do so by the invigilator

1. Answer **ALL** parts (a) to (e).

You are working as a GP pharmacist and have been asked to review AB, 56-year-old White Caucasian patient, who was seen in the surgery that morning. Their GP medical notes are as follows:

GP consultation - Today		
Patient:	AB	
NHS number:	456 789 123	
DoB:	03/02/1967	
Gender:	F	
Address:	7 Charles Grove, Flatplace	
Allergies:	NKDA	
Weight:	89Kg	
Occupation:	Teaching assistant	
Alcohol:	15-20 units/week	
Smoking Status:	Gave up smoking 2 months ago, previously smoked 20 cigarettes/day Recently started again – 1-2 per day	
PMH:	STEMI (2 months ago) Hypertension (2 years)	
Repeat Medication:	Aspirin 75mg od Atorvastatin 20mg on Bisoprolol 2.5mg od Clopidogrel 75mg od	Ramipril 2.5mg on GTN spray PRN NKDA
PC:	Migraine – increasing frequency of attacks – not able to control with OTC Ibuprofen.	
OE:	BP: Pulse:	150/95 mmHg 84 BPM
Plan:	Refer to practice pharmacist	

- (a) For each of the drugs prescribed for AB (aspirin, atorvastatin, bisoprolol, clopidogrel, ramipril and GTN), provide details of their indication and therapeutic and toxic monitoring parameters. [20%]
- (b) With reference to their current repeat prescription, critique the management of secondary prevention of MI in this patient. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate. [25%]
- (c) Critique the management of hypertension in this patient. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate. [20%]
- (d) What lifestyle advice you would offer AB? [10%]
- (e) What advice should be given for the management of their migraines? Explain your answer. [25%]

2. Answer **ALL** parts (a) to (d).

You have a new patient JT, admitted to the hepatology ward. Their medical notes, blood test results and drug chart are as follows:

Patient:	JT	
Hospital number:	192837	
DoB:	19.09.1980	
Gender:	Female	
Address:	12 Garden Crescent, Flatplace	
Day 1:	Brought in by ambulance.	
PC:	Woke up this morning confused and disorientated. Family unable to cope with her behaviour.	
HPC:	Patient has a long history of excess alcohol (varied quantities) use spanning the previous 15 years. Been seen under the substance misuse team a number of times to control alcohol use and always returned to drinking. No history of seizures, DT's or GI bleeds.	
PMH:	Chronic liver disease due to alcohol misuse (Liver cirrhosis)	
DH:	Thiamine 100 mg TDS (family report she is not taking this) Lactulose 40 mg TDS (family report she is not taking this) Spironolactone 300 mg OD	
Allergies:	NKDA	
SH: Alcohol	Approximately 2 bottles of 12.5% wine daily with additional tequila shots (3-5 / day)	
Smoking Status	Nil	
Illicit drug use	Nil	
OE:	BP	156/89
	Temp	37.1 °C
	Pulse	92 b.p.m
	Weight	78 kg
	Lungs	Clear RR - normal
	Speech slurred. Disorientated, agitation and confusion. Shaking and feeling nauseous. Sweating. Abdomen: No palpable masses. Swollen and distended due to ascites. Arms and legs thin – family report a poor oral intake.	
Investigations:	Blood taken. Recent SADQ – >30 (severe) CIWA-Ar – estimated >10	
Diagnosis:	Acute alcohol withdrawal	
Plan:	Admit.	

	Start acute alcohol withdrawal protocol and encourage oral intake. Speak to hepatology and dietician regarding long term management. Referral to substance misuse team.
	<i>Dr Williamson 0990</i>

Blood test on admission:

Flatplace Trust PATHOLOGY DEPARTMENT	Consultant/GP: Dr J Williamson	PATIENT LOCATION
Patient Name: JT	NHS No: 887654	Hepatology Ward
Hosp no: 192837	Sex: F	Age: 42 years
Patient Address: 12 Garden Crescent, Flatplace		
Lab Episode No: 774563		Date/Time Collection: Today
Address for Report: Flatplace Hospital, Flatplace		

BIOCHEMISTRY Collection LAB No Today 774563					
	Cr 88 (55 – 125 μmol/L)	Ur 4.3 (2.5- 7.8mmol/L)	K 4.6 (3.6 - 5.00 mmol/L)	Na 140 (134 – 145 mmol/L)	Viral screen Negative
	GGT 113* (5-45 units/L)	ALP 148* (20-100 units/L)	ALT 32* (5-30 units/L)	AST 94* (5-40 units/L)	Bilirubin 35* (0-17 μmol/L)
	Ammonia 106* (11-51 μmol/L)	Albumin 25* (35-50 g/L)	PT 27* (10-15 sec)	Hb NAD	FBC NAD

UEA Training Prescription Chart								Number of drug charts in use: 1		
Date	Surname	Forename	Sex	D/O/B	Hospital No.	Weight (kg)	Height (cm)	Surface Area (m ²)	SAM?	
Day 1	T	J	F	19.09.1980	192837	49 Estimate / Actual			Yes / No	
Ward/ward change:						Patient address:				
Consultant(s)										
DRUG SENSITIVITIES/ALLERGIES MUST BE ENTERED. If no allergies/sensitivities you must write 'NKDA' and sign and date.										
Medicine/Substance		Description of allergy/sensitivity				Signature		Date		
NKDA						<i>Williamson</i>		<i>Day 1</i>		
PRE-MEDICATION AND ONCE ONLY DRUGS										
Pharm	Date	Drug (approved name)	Dose	Directions/ route/ other	Time to be given	Signature	Administered by			
							Initials	Date		
Day 1	<i>Chlordiazepoxide</i>	30 mg	PO	STAT	<i>Williamson</i>	L.I	<i>Day 1</i>			
Thromboprophylaxis Risk Assessment										
Drug thromboprophylaxis recommended										
Drug thromboprophylaxis NOT recommended										
Prescribing			Drug omissions			Prescribers				
<ul style="list-style-type: none"> • Write clearly in black, indelible ink. • Use approved drug names. • All prescriptions must be signed and dated. • If a drug is to be intentionally omitted by a prescriber or pharmacist, indicate this with an 'X' in the drug administration box. • If a drug is being stopped, or a dose altered, draw a line through the whole prescription, sign and date. • Doctors to re-write charts as required. Start dates should be transferred to new chart. Include cross-reference to drugs on other charts. 			If a drug is omitted, one of the below codes must be entered into the drug administration box. 1. Nil by mouth 6. Patient off ward 2. Not required 7. No IV access 3. Patient refused 9. Contra-indicated 4. Drug unavailable 8. Other - reason must be recorded in notes Self administration of medicines (SAM) If a patient is suitable for SAM they can initial in the relevant drug administration box or a nurse can write 'SAM' in the box.			Signature				
						Bleep no.				
						Print name				
						Signature				
						Bleep no.				
						Print name				
						Signature				
						Bleep no.				
						Print name				
Pharmacy codes										
Pharm: Signature confirms checked/date										
TTO ✓ = from locker; H = at home; R = relabel; ★ = new supply at discharge										
Supply: S = ward stock; T = dispensing, see date and quantity; P = POD, see date and quantity										
Version 001-19										

REGULAR MEDICINES 1

CHECK PAGE 1 FOR ALLERGY STATUS

			Date →	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Tick box to indicate time of admission or add other times ↓													
1. Drug (approved name) Dalteparin		Start date Day 1	End date	06:00 08:00									
Dose 5000 units	Route SC	Frequency OD		12:00 14:00									
Indication		Pharm check		18:00 22:00	✓								
Prescriber's signature Dr P. Williamson		Supply		00:00									
2. Drug (approved name) Thiamine		Start date Day 1	End date	06:00 08:00									
Dose 100 mg	Route PO	Frequency TDS		12:00 14:00									
Indication		Pharm check		18:00 22:00									
Prescriber's signature Dr P. Williamson		Supply		00:00									
3. Drug (approved name) Lactulose		Start date Day 1	End date	06:00 08:00									
Dose 40 mL	Route PO	Frequency TDS		12:00 14:00									
Indication		Pharm check		18:00 22:00									
Prescriber's signature Dr P. Williamson		Supply		00:00									
4. Drug (approved name)		Start date	End date	06:00 08:00									
Dose	Route	Frequency		12:00 14:00									
Indication		Pharm check		18:00 22:00									
Prescriber's signature		Supply		00:00									
5. Drug (approved name)		Start date	End date	06:00 08:00									
Dose	Route	Frequency		12:00 14:00									
Indication		Pharm check		18:00 22:00									
Prescriber's signature		Supply		00:00									

CHECK PAGE 1 FOR ALLERGY STATUS

AS REQUIRED DRUGS

CHECK PAGE 1 FOR ALLERGY STATUS

1. Drug (approved name) Oxazepam		Start date Day 1		Date							
Dose 20 mg	Route PO	Max Frequency PRN		Time							
Indication as per CIWA-Ar		Pharm check		Dose							
Prescriber's signature			Supply	Given by							
2. Drug (approved name)		Start date		Date							
Dose	Route	Max Frequency		Time							
Indication		Pharm check		Dose							
Prescriber's signature			Supply	Given by							
3. Drug (approved name)		Start date		Date							
Dose	Route	Max Frequency		Time							
Indication		Pharm check		Dose							
Prescriber's signature			Supply	Given by							
4. Drug (approved name)		Start date		Date							
Dose	Route	Max Frequency		Time							
Indication		Pharm check		Dose							
Prescriber's signature			Supply	Given by							
5. Drug (approved name)		Start date		Date							
Dose	Route	Max Frequency		Time							
Indication		Pharm check		Dose							
Prescriber's signature			Supply	Given by							

- (a) For each of the drugs prescribed for JT (Oxazepam, lactulose, spironolactone and dalteparin), provide details of their indication and therapeutic and toxic monitoring parameters.

[20%]

- (b) Critique the patient's **drug history** (thiamine, lactulose, spironolactone) in view of her medical history. Explain the rationale behind the use of the prescribed drugs.

[30%]

- (c) Critique the patient's **acute management** during admission. For any pharmaceutical care issues identified describe the action you would like to take to resolve these.

[35%]

Prior to discharge, JT suffers a fall spraining her right wrist. Her pain score is 6 at rest and 8 with any attempted movement. Her oxazepam dosing has now stopped. The doctors add the following mediation to her chart:

Paracetamol 500 mg tablets - 1g QDS

Morphine sulphate modified release 5 mg tablet - 5mg BD

Morphine sulphate oral solution 10 mg/5 mL – 1 mL every 4 hours when required

- (d) Critique the patients new pain relief. For any pharmaceutical care issues identified describe the action you would like to take to resolve these.

[15%]

3. Answer **ALL** parts (a) to (c).

You have a new patient KR, admitted to the surgical ward. Their medical notes and drug details are as follows:

Patient:	KR								
Hospital number:	859383								
DoB:	15.07.1943								
Gender:	F								
Address:	14 Prospect Row, Flatplace								
PC:	Vomiting, severe abdominal pain, confusion/agitation								
HPC:	Has been vomiting profusely for the last 2 days, accompanied by severe abdominal pain. No other recent abdominal symptoms								
PMH:	Appendectomy (20 years ago) Parkinson's Disease (13 years) Dementia (5 years) Metastatic gastric cancer (1 year ago)								
DH:	<ul style="list-style-type: none"> – Stalevo® 100 mg/25mg/200mg tablets (Levodopa/carbidopa/entacapone) Take 1 TDS – Sinemet CR 50 mg/200mg prolonged-release tablets. Take 1 at night. – Zomorph 20 mg BD – Oramorph 10 mg 4 hourly PRN – states he has been taking 20 mg x 4 doses daily for the last 3 weeks because the pain has been getting worse. He has been trying to get a GP appointment to review this but has not had much luck. 								
SH:	Retired accountant, lives alone in supported-living bungalow, daughter has PoA Mobilises independently with a walking frame								
Alcohol	2-3 units/week								
Smoking Status	Ex-smoker – quit 25 years ago								
OE	<table> <tbody> <tr> <td>BP</td> <td>110/67</td> </tr> <tr> <td>Temp</td> <td>36.6°C</td> </tr> <tr> <td>Pulse</td> <td>71 bpm (regular)</td> </tr> <tr> <td>Weight</td> <td>68.3 kg</td> </tr> </tbody> </table>	BP	110/67	Temp	36.6°C	Pulse	71 bpm (regular)	Weight	68.3 kg
BP	110/67								
Temp	36.6°C								
Pulse	71 bpm (regular)								
Weight	68.3 kg								
Investigations:	CT scan of abdomen and pelvis – shows small bowel obstruction caused by adhesions. LFT – NAD, U&E NAD, eGFR 67								

Diagnosis: Small bowel obstruction due to adhesions from previous appendicectomy

Plan:

- Strict nil by mouth
- NG tube on free drainage
- Poor prognosis
- Parkinson's medications have been converted to patch formulation while NBM
- Fentanyl patch instead of morphine
- Haloperidol for N&V/agitation

Dr Mehta Bleep 5391

KR has now been prescribed;

- Fentanyl 50 mcg transdermal patch - apply 1 weekly
- Diamorphine 15 – 20 mg subcutaneously 2 hourly PRN for pain
- Haloperidol 2.5 mg 2 hourly subcutaneously PRN for N&V/agitation
- Rotigotine patch 14 mg/24hrs – apply 1 daily

(Their Parkinson's symptoms are well controlled throughout their admission using the rotigotine 14 mg/24hrs patch)

(a) Using the BNF, critique the newly prescribed analgesia. Include in your answer your pharmaceutical dosage calculations in relation to the conversion from oral morphine to fentanyl patch and the appropriateness of the diamorphine dose for breakthrough pain. For any errors identified make appropriate recommendations to rectify these.

[30%]

(b) Explain, using the underpinning science, why haloperidol would be contra-indicated in this patient.

[30%]

Despite the poor initial prognosis KR's bowel obstruction resolves, and she is changed back to an oral regime for all his medications.

Her family have decided that she is no longer able to live independently and have arranged respite care for her with a view to continuing as a permanent resident if she settles into the new care home. The new carers have limited experience supporting patients with Parkinson's Disease. Meals at the care home are given at 8:00, 12:00, 17:00. They request some written advice for her care plan regarding the management of her Parkinson's medications.

(c) Compose a written summary for the care home team on how to manage KR's Parkinson's medications. Include in your summary information about how the medications work, timing and administration instructions and relevant information about managing side effects.

[40%]

END OF PAPER

PHA-6020Y
Formative Exam 3 Feedback
(Part 2)

Dr Vilius Savickas
Lecturer in Clinical Pharmacy

Case – Mrs KR

Patient:	KR
Hospital number:	859383
DoB:	15.07.1943
Gender:	F
Address:	14 Prospect Row, Flatplace
PC:	Vomiting, severe abdominal pain, confusion/agitation
HPC:	Has been vomiting profusely for the last 2 days, accompanied by severe abdominal pain. No other recent abdominal symptoms
PMH:	Appendicectomy (20 years ago) Parkinson's Disease (13 years) Dementia (5 years) Metastatic gastric cancer (1 year ago)



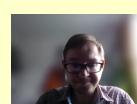
Case – Mrs KR

DH:	<ul style="list-style-type: none"> Stalevo® 100 mg/25mg/200mg tablets (Levodopa/carbidopa/entacapone) Take 1 TDS Sinemet CR 50 mg/200mg prolonged-release tablets. Take 1 at night. Zomorph 20 mg BD Oramorph 10 mg 4 hourly PRN – states he has been taking 20 mg x 4 doses daily for the last 3 weeks because the pain has been getting worse. He has been trying to get a GP appointment to review this but has not had much luck. 								
SH:	Retired accountant, lives alone in supported-living bungalow, daughter has PoA. Mobilises independently with a walking frame								
Alcohol	2-3 units/week								
Smoking Status	Ex-smoker – quit 25 years ago								
OE	<table> <tr> <td>BP</td> <td>110/67</td> </tr> <tr> <td>Temp</td> <td>36.6°C</td> </tr> <tr> <td>Pulse</td> <td>71 bpm (regular)</td> </tr> <tr> <td>Weight</td> <td>68.3 kg</td> </tr> </table>	BP	110/67	Temp	36.6°C	Pulse	71 bpm (regular)	Weight	68.3 kg
BP	110/67								
Temp	36.6°C								
Pulse	71 bpm (regular)								
Weight	68.3 kg								



Question A (30%)

Using the BNF, critique the newly prescribed analgesia. Include in your answer your pharmaceutical dosage calculations in relation to the conversion from oral morphine to fentanyl patch and the appropriateness of the diamorphine dose for breakthrough pain. For any errors identified make appropriate recommendations to rectify these.



Question A (30%)

Morphine to fentanyl dose conversion [Up to 15%]

- Confirm patient's adherence to Zomorph and use of PRN Oramorph prior to conversion to patches to ensure that the dose calculated is appropriate and will not cause toxicity
- Zomorph 20 mg BD = 40 mg
- Oramorph 20 mg QDS = 80 mg
- Total 120 mg daily
- BNF conversion table – 120mg morphine equates to Fentanyl 50 microg/hr patch, which is currently prescribed. The BNF however advises that when switching from oral to transdermal opioids, due to possible opioid-induced hyperalgesia, the calculated equivalent dose of the new opiate should be reduced by one-quarter to one-half in order to prevent an overdose. It is therefore recommended to prescribe a '25' fentanyl patch instead of the '50'.
- Fentanyl patches are to be applied every 72 hours, not weekly



Question A (30%)

Diamorphine PRN dose calculation [Up to 15%]

- Opioid PRN dose = 1/10-1/6 of total daily dose (120 mg) - 12-20mg PO morphine 2 hourly PRN
- 10 mg PO morphine = 3 mg S/C diamorphine
- 12-20mg PO morphine = 3.6-6.0mg S/C diamorphine therefore dose should be reduced to 2.5 - 5mg S/C diamorphine every 2 hours PRN (answer or either 2.5mg or 5mg every 2 hours PRN is also acceptable).

Parenteral morphine – a reasonable alternative?



Question B (30%)

Explain, using the underpinning science, why haloperidol would be contra-indicated in this patient.



Question B (30%)

- In PD there is a degeneration of dopaminergic neurons in the nigrostriatal pathway.
- The nigrostriatal pathway is involved in control of movement. Release of dopamine in the striatum stimulates D1 and D2 receptors which initiate movement via the direct and indirect pathways. Loss of these neurons in PD therefore results in the paucity of movement seen in PD patients.
- Haloperidol is a non-selective dopamine antagonist. It therefore would block DA receptors in the striatum, decreasing the dopaminergic transmission that remains, thereby exacerbating the disease.
- In addition, it would interact with drugs being used to treat the disease, stopping them from being effective.
- Levodopa is a precursor of dopamine and is converted to DA by the action of dopa decarboxylase. Carbidopa is a peripheral dopa decarboxylase inhibitor inhibiting conversion of the L-dopa in the periphery. Entacapone is a COMT inhibitor which inhibits the breakdown of DA. Therefore increase the amount of DA available at the synapses in the striatum. Haloperidol negates this effect by stopping the DA acting at its receptors.



Question C (40%)

Despite the poor initial prognosis KR's bowel obstruction resolves, and she is changed back to an oral regime for all her medications.

Her family have decided that she is no longer able to live independently and have arranged respite care for her with a view to continuing as a permanent resident if she settles into the new care home. The new carers have limited experience supporting patients with Parkinson's Disease. Meals at the care home are given at 8:00, 12:00, 17:00. They request some written advice for her care plan regarding the management of his Parkinson's medications.

Compose a written summary for the care home team on how to manage her Parkinson's medications. Include in your summary information about how the medication works, administration instructions and relevant information about managing side effects.



Question C (40%)

Answer should include – (i) how to administer and appropriate timings, (ii) how the medication works including limited effectiveness, and (iii) some appropriate side-effects, avoids use of jargon (without explaining meaning).

- The medication is given orally at the same time every day. Small doses are given frequently to reduce 'peaks and troughs' in levodopa levels. Short acting medication and effect may deteriorate toward the end of the dose.
- Do not stop the medication unless the prescriber advises. It is potentially dangerous to stop taking it suddenly. Should be prescribed by brand so highlight any changes to the pharmacy.
- Any timing allowed provided it's four times daily (Stalevo TDS and Sinemet CR at night) with an interval of at least 30-60 minutes before and after meals. Protein (e.g. meat, fish, eggs, cheese, yoghurt, nuts, beans, pulses) may interact with levodopa. It is therefore generally advised that the medication should be taken at least 30-45 minutes before meals.
- Seek medical advice if acute illness (e.g. vomiting etc.) prevents oral administration of medications. (Up to 15%)



Question C (40%)

- Helps improve movement/muscle problems (motor symptoms).
- Sinemet = combination of levodopa and carbidopa. Levodopa replaces the lost dopamine in the brain which is the cause of PD symptoms. Carbidopa is there to improve effectiveness of the levodopa by helping it reach the brain and also reduces side effects.
- Stalevo= combination of levodopa, carbidopa and entacapone. Entacapone slows the clearance of levodopa from the bloodstream in the brain.
- Palliative treatment – does not affect disease progression. Effectiveness diminishes with time and doses may be increased with time and/or additional medications added.

(Up to 15%)



Question C (40%)

Side effects - loss of appetite, postural hypotension, vomiting, diarrhoea, bradykinesia (the on-off phenomenon), dizziness, confusions, hallucinations, depression, somnolence, impulsive/compulsive behaviours, dyskinesias (involuntary movements) (any reasonable from SPC, should not be overly alarming).

Reinforce that medication should NOT be discontinued in event of side effects but continued until these have been discussed with prescriber and/or specialist.

Any other appropriate counselling points.

(up to 10%)



Good luck in your finals!!!



PHA-6020Y Exam 3 Formative Feedback

Catherine Heywood/Nicky Moore

REMINDER FROM EXAM SUPPORT WORKSHOP:

Format:

- ▶ In-person 3 hour exam
- ▶ Three questions (cases) - covering any of the clinical content taught in semester 1 and 2
- ▶ No choice - all questions same value
- ▶ Exam sat in an IT suite (or equivalent) but answers hand-written in separate answers booklets
- ▶ Open - book

Open book

- ▶ Permitted to access any online resources via the provided computer [except for those that could facilitate communication including OneDrive and other cloud-based storage/file sharing platforms]
- ▶ Recommended electronic resources to use are:
 - ▶ BNF (<https://bnf.nice.org.uk/>)
 - ▶ Electronic Medicines Compendium (www.medicines.org.uk)
 - ▶ Medicines Complete (www.medicinescomplete.com)
 - ▶ National Institute for Health and Care Excellence (<https://www.nice.org.uk>)
 - ▶ PHA-6020Y Blackboard

▶ Six (6) sides of hand-written notes:

- ▶ Plenty of time, but not enough to look everything up!
- ▶ Use them wisely!
- ▶ Will be checked by invigilator
- ▶ Bullet points for each clinical area:
 - ▶ What management would you expect to see?
 - ▶ What pharmaceutical care issues could you get? - review all workshops

(Textbooks and dictionaries not permitted)

“CRITIQUE”

- ▶ **Detailed analysis and assessment:** =>
 - ▶ What is right/correct about the patient's management and why?
 - ▶ What is wrong/incorrect about the patient's management and why?
- ▶ **Optimisation:** =>
 - ▶ What would you recommend to “optimise” the patient's management? (“interventions”/“pharmaceutical care issues”)
- ▶ Parts of questions will guide you!
- ▶ Marks will be given for correct/appropriate comments even if not in mark scheme!

Question 1:

- You are working as a GP pharmacist and have been asked to review AB, 56 year old White Caucasian patient, who was seen in the surgery that morning. Their GP medical notes are as follows:

GP Consultation - Today	
Patient:	AB
NHS number:	456 789 123
DoB:	3/2/1967
Gender:	F
Address:	7 Charles Grove, Flatplace
Ailments:	NKDA
Weight:	89kg
Occupation:	Teaching assistant
Alcohol:	15-20 units/week
Smoking Status:	Gave up smoking 2 months ago, previously smoked 20 cigarettes/day Recently started again – 1-2 per day
PMH:	STEM (2 months ago) (hypertension 2 years)
Repeat Medication:	Aspirin 75mg od Ramipril 2.5mg od Atorvastatin 20mg od GTN spray PRN Bisoprolol 2.5mg od Clopidogrel 75mg od NKDA
PC:	Migraine – increasing frequency of attacks – not able to control with OTC Ibsuprofen
OE:	B/P: 150/95 mmHg Pulse: 84 BPM
Plan:	Refer to practice pharmacist

- (a) For each of the drugs prescribed for AB (aspirin, atorvastatin, bisoprolol, clopidogrel, ramipril and GTN), provide details of their indication and therapeutic and toxic monitoring parameters. [20%]

- Aspirin:**
 - Indication: 2^o prevention of MI
 - Therapeutic MP: ↓CV events
 - Toxic MP: Signs of bleeding, Hb, S/E:GI
- Atorvastatin:**
 - Indication: 2^o prevention of MI
 - Therapeutic MP: ↓CV events, Lipid profile
 - Toxic MP: LFTs, CK, myopathy
- Bisoprolol:**
 - Indication: 2^o prevention of MI, HT
 - Therapeutic MP: ↓CV events, BP < 140/90, pulse down to 60bpm
 - Toxic MP: BP, pulse
- Clopidogrel:**
 - Indication: 2^o prevention of MI
 - Therapeutic MP: ↓CV events
 - Toxic MP: Signs of bleeding, Hb, S/E:GI

► Ramipril:

- Indication: 2^o prevention of MI, HT
- Therapeutic MP: ↓CV events, BP < 140/90
- Toxic MP: BP, RF, K+, dry cough

► GTN:

- Indication: Ischaemic chest pain
- Therapeutic MP: Chest pain, usage
- Toxic MP: BP, pulse, flushing/dizziness

- (b) With reference to their current repeat prescription, critique the management of secondary prevention of MI in this patient. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate. [25%] (up to 5% each relevant point – max points with detail)

- Correct drugs for secondary prevention of MI (NICE) - DAPT, atorvastatin, ACEI & beta-blocker
- Atorvastatin should be 80mg (secondary prevention) not 20mg (primary prevention)
- Consider PPI e.g. lansoprazole 15mg od for gastric protection as DAPT Monitoring parameters:
 - Therapeutic MP: G.I. symptom control, lack of G.I. bleed
 - Toxic MP: S/E e.g. diarrhoea, low sodium

► Consideration of optimisation(uptitration) of:

- Bisoprolol - uptitrate to 3.75mg od (target 10mg daily - rate control to 60bpm)
- Ramipril - uptitrate to 5mg daily (target 10mg od)
- Need stop date for DAPT (clopidogrel to stop at 12 months)

(c) Critique the management of hypertension in this patient. For any pharmaceutical care issues identified describe the action you would take to resolve these. Include in your answer any monitoring parameters for new medication where appropriate.[20%]

- ▶ 57-year-old white Caucasian (not diabetic) => NICE advises CCB however ACEI and beta-blocker used for secondary prevention of MI should be used as priority to control BP (up to 7.5%)
- ▶ BP 150/90 not controlled (target <140/90) (up to 5%)
- ▶ Recommend up titration of ramipril to 5mg od (target 10mg od for secondary prevention anyway + up titration of bisoprolol to 3.75mg od) (up to 7.5%)

(d) What lifestyle advice you would offer AB? [10%] (Up to 2% each relevant point)

- ▶ -smoking cessation
- ▶ -weight loss
- ▶ -alcohol – max 14units/week
- ▶ diet – low saturated fat, low salt, 5/day
- ▶ exercise – 30mins 5x/week

(e) What advice should be given for the management of their migraines? Explain your answer. [25%]

- ▶ Record migraine diary (2.5%)
- ▶ Record/identify triggers (2.5%)
- ▶ Pain: (up to 10%)
 - ▶ Simple analgesic - soluble works faster, Take as soon as possible an onset of headache
 - ▶ Paracetamol 1000mg QDS
 - ▶ NSAID Ibuprofen possible 600mg TDS (Monitor use not really want more than 2 days a week)
 - ▶ Triptan (HT1 receptor agonists) C/I in CVD (coronary vasoconstriction)

- ▶ Antiemetic may be helpful (Even in absence of nausea and vomiting)
 - ▶ E.g. Metoclopramide 10mg tds, Prochlorperazine 10mg tds (2.5%)

- ▶ Therefore, if migraine not managed with simple analgesia may need to consider preventative therapies:
 - ▶ Topiramate (50-100mg daily) (advise on risks of pregnancy if appropriate)
 - ▶ Non-selective beta blockers not suitable in addition to existing therapy (bisoprolol may help but cardioselective)
 - ▶ Amitriptyline cautioned in CVD - risk of arrhythmias (up to 7.5%)

Question 2

For each of the drugs prescribed for JT (Oxazepam, lactulose, spironolactone and dalteparin), provide details of their indication and therapeutic and toxic monitoring parameters. [20%]

- **Oxazepam** – Acute alcohol withdrawal
 - **Therapeutic** - Control of the symptoms of alcohol withdrawal, no progression of symptoms
 - **Toxic** - Rebound withdrawal, abuse, drowsiness, RR (respiratory depression), nervous system disorders (light headedness, dizziness), psychiatric disorders
- **Lactulose** – Treatment and prevention of hepatic encephalopathy
 - **Therapeutic** - Stool chart 2-3 soft stools per day, improvement or prevention of the symptoms of hepatic encephalopathy
 - **Toxic** - Stool chart – diarrhoea, adherence, GI disturbance (flatulence, pain, N&V)
- **Spironolactone** – Ascidic
 - **Therapeutic** - weight loss [aim 0.5-0.75 kg/day], abdominal girth
 - **Toxic** - U&E's [RF and K+Na+], gynaecomastia, s/e – GI disorders
- **Dalteparin** – VTE prophylaxis
 - **Therapeutic** – Lack of VTE
 - **Toxic** - Bleeding and bruising, Hb, PLT, renal function, weight, hyperkalaemia

• Critique the patient's drug history (thiamine, lactulose, spironolactone) in view of her medical history. Explain the rationale behind the use of the prescribed drugs. [30%]

- ▶ **Thiamine 100 mg TDS** – Appropriate drug, formulation, dose and frequency of thiamine used for the prevention of Wernicke's encephalopathy in this patient who continues to drink increased quantities of alcohol to reduce the risk of vitamin B deficiency.
- ▶ Vitamin B is likely to become deficient due to poor oral intake and lowered vitamin absorption due to alcohol consumption as seen in this patient leading to Wernicke's encephalopathy/Korsakoff's syndrome, an acute neuropsychiatric disorder which can develop into a long term condition.
- ▶ Patients that continue to drink should remain on this indefinitely, those that become abstinent should continue for a further 6 months – patient still drinking therefore appropriate to continue.
- ▶ **Lactulose 40 ml, TDS** – Appropriate drug, formulation, dose and frequency for the management of hepatic encephalopathy (provided it is producing the required effect). Patient has severe liver disease (cirrhosis) prior to admission and so is likely to have had hepatic encephalopathy before or is at risk of it.
- ▶ Hepatic encephalopathy, caused by the excess of ammonia/nitrogenous waste (and other toxic waste products) which are not cleared by the liver due to the cirrhosis, that increase in concentration in the systemic circulation. These can travel to the brain, cross the blood-brain barrier and cause the symptoms of encephalopathy. Lactulose reduces the gut pH reducing the ammonia producing nitrogenous waste.
- ▶ Needs to produce 2-3 soft stool a day to be effective at reducing the nitrogenous load of the gut.
- ▶ **Spironolactone 300 mg OD** – Appropriate drug, formulation, dose and frequency, and first line pharmacological management of ascites (patient's examination indicates this). As patients abdomen is distended, the dose may be too low or this may be due to poor adherence – re-start regular dosing and monitor, up titrate to 400mg daily if weight loss not seen.
- ▶ Liver cirrhosis and disordered liver architecture lead to the formation of collateral circulation and an increase in portal hypertension. Ascites with spironolactone is used to alter the balance of fluid distribution of the body's circulatory system (due to reduced blood flow to the kidneys). This increases fluid reabsorption in the kidney and causes a redistribution of fluid within the abdomen. Aldosterone is also usually broken down in the liver but due to reduced metabolising capacity this is also not possible. Spironolactone is diuretic treatment to mobilise and remove intra-abdominal fluid and spironolactone is an aldosterone antagonist to reduce its effect.

- Critique the patient's acute management during admission. For any pharmaceutical care issues identified describe the action you would like to take to resolve these. [35%]

- Patients M/Hx (chronic alcohol use and cirrhosis), continued drinking and signs on examination (slurred speech, disorientation, agitation, confusion, shaking, nausea, sweating) - are all symptoms of acute alcohol withdrawal.
- CIWA-Ar (Clinical Institute Withdrawal Assessment of Alcohol) - score of more than 10 implies pharmacological treatment is required (withdrawal is present).
- SADQ (Severity of Alcohol Dependence Questionnaire) - score of 30 indicates high dependence.
 - Pharmacological treatment appropriate
- STAT dose of chlordiazepoxide given and oxazepam 20mg PRN prescribed to be administered via CIWA-Ar.
 - Management appropriate
- Benzodiazepines are required for management of the symptoms of alcohol withdrawal and to prevent progression to more serious symptoms.
- An initial dose of chlordiazepoxide is appropriate prior to initiating the symptom trigger. Chlordiazepoxide has a long half-life and is preferred as it may be more effective than short acting ones at preventing seizures and delirium and has less rebound. However, there is a risk of accumulation especially in those with liver disease, like JT - blood tests (reduce albumin, increase PT, generally abnormal LFTs) imply, and diagnosis confirms cirrhosis.
- Therefore, oxazepam is an appropriate choice as it has a shorter half-life and less prone to accumulation and toxicity. Close monitoring required due to risk of rebound.
- Symptom triggered regime based on CIWA-Ar rather than fixed regime and lowest dose is preferred over fixed regime.

Patient should be on **IV pabrinex** to prevent/manage (unclear what symptoms the patient has are due to) Wernicke's encephalopathy. Low threshold for starting. Patient not been taking thiamine Po and poor oral intake. Pabrinex IV high potency (vit B and C injection) - 2 pairs TDS for 3-5 days. Continue with oral thiamine to prevent omission from discharge. Remain on oral thiamine for 3-6 months after cessation of alcohol or indefinitely if still drinking.

Discuss with doctors the need for **propranolol** to manage portal hypertension. Signs present. Cautious initiation required as extensive first pass metabolism.

Spironolactone missing from chart. Patient should continue to receive this for ascites. Potential for dose increase if 0.5-0.75 kg/day weight loss not seen.

VTE risk assessment not completed, dalteparin prescribed. **Dalteparin** not indicated in view of bleeding tendency (inc. PT). Remove dalteparin prescription. Recommend mobilisation or compression stockings.

Phytomenadione to try to manage prolonged PT - 10mg OD IV 3 days. Likely to not be effective as patient has cirrhosis and raised PT unlikely to be due to poor vitamin K absorption, instead due to reduced hepatic production of clotting factors.

Encourage **adherence** to prescribed medicines. All of DHx appropriate and should be continued.

Prior to discharge, JT suffers a fall spraining her right wrist. Her pain score is 6 at rest and 8 with any attempted movement. Her oxazepam dosing has now stopped. The doctors add the following mediation to her chart:

- Paracetamol 500 mg tablets - 1g QDS
- Morphine sulphate modified release 5 mg tablet - 5mg BD
- Morphine sulphate oral solution 10 mg/5 mL - 1 mL every 4 hours when required

- Critique the patients new pain relief. For any pharmaceutical care issues identified describe the action you would like to take to resolve these.

[15%]

- Appropriate drug choices for pain relief, however regimes require some reconsideration.
- Paracetamol** - data is conflicting regarding the safety in liver disease (this patient) and dosing will be guided by local policy, often reducing the dose. Theoretically liver enzyme induction (by chronic alcohol) may enhance the production of toxic metabolites.
- Caution is necessary in patients that cannot eliminate the toxic metabolite due to decreased glutathione, i.e. malnourished patients - relevant for this patient.
- Also, this patient is under 50kg caution use - reduce dose.
 - Reduce the dose to 500mg QDS or TDS or 15 mg/Kg
- Morphine** - cleared by the liver (extensive first pass metabolism) and a high extraction ratio drug (reliant on blood flow) which will be reduced due to portal hypertension and collateral circulation. Therefore, there is an increased bioavailability, prolongation of duration of action and increased risk of toxicity - relevant for this patient as they have liver dysfunction.
- Morphine is centrally acting and can also induce sedation increasing the risk of encephalopathy.
- A common adverse effect is constipation which can increase the risk of hepatic encephalopathy through the build up of nitrogenous waste products.
- Modified release makes it difficult to monitor the patients underlying condition and to remove if there is a deterioration in the patient. The half life will be increased even further in this patient with cirrhosis.
- Breakthrough pain relief at a 10th of the daily dose - appropriate, however needs to be relative to usual daily dose.
 - Recommend removing the MR opioid and using an immediate relief preparation throughout the day, i.e. 2.5-5mg every 4-6 hours PRN.
 - Monitor before each dose, only administer if no adverse effects and pain relief required.
 - Monitor closely for sedation or deterioration in central adverse effects.
 - Review after 24 hours of dosing to estimate 24 hour requirement. A regular immediate release dose may be instilled or continue on the PRN regime.

Examination Feedback Summary

Module Name: Person Centred Medicine
Module Code:
PHA6020Y Exam 3

Year 2023

Question: 1 (Nicola Moore)

- a) This was generally well answered by all. Students lost marks where specific and important monitoring parameters were missed, only side effects were quoted, or detail was missing. A considerable number of students incorrectly labelled the indication of aspirin 75mg for analgesia. The concept of primary and secondary prevention was not always well demonstrated.
- b) Reasonably well answered by most. The question referred to drug history and not the current inpatient information, some students confused this. A considerable number of students quoted information without critiquing or without critiquing the components (the indication based on guidance, the dose, frequency etc.), this meant limited marks could be awarded. Detail was often lacking, for example, the implications and guidance behind the patients QRISK score and how that translated into their current treatment. Only some students correctly identified and correctly explained the issue of an inappropriate indication for the aspirin. Where an inappropriate explanation for their action was provided, marks were not awarded, this included interactions.
- c) The answers to this question were variable. A considerable number of students documented observations/statements without appraisal, losing them marks. It was also clear that some students struggled to appropriately interpret the information from the drug chart. Similar to above, lacking critique/appraisal meant limited marks could be awarded. Where interactions were identified and action taken which was inappropriate for this patient no marks were awarded, for example, aspirin and methotrexate, aspirin and dalteparin or methotrexate and antibiotics, as action should have been taken meaning these were not an issue. Unfortunately, most students missed that methotrexate should be held due to the severe infection.
- d) Where a critique occurred of the current management long term management, considerable marks were given. Some areas lacked detail, for example, the meaning of treat-to-target and the reason for sulfasalazine gradual dose increase. Treatment beyond current stated therapy was not considered.

Question: 2 (Vilius Savickas) Most students performed well in answering the 2a part of this question, indicating appropriate indications and monitoring parameters for each medicine. Several misconceptions were highlighted by student answers, such as frequent references to hypoglycaemia as a toxic monitoring parameter of metformin. With a few exceptions, students correctly identified and addressed the key pharmaceutical issues in relation to antimicrobial therapy in part 2b. Some students did not indicate the monitoring parameters of alternative antimicrobial therapy proposed and most did not consider the severity of infection treated.

Most students demonstrated a good understanding of NICE guidance and underlying principles for the management of acute/chronic heart failure (2c), hypertension (2d) and type 2 diabetes mellitus (2e). Some students considered sections 2c-2e in isolation rather than as integral parts of pharmaceutical care provided for the same patient. For instance, a number of students recommended starting a mineralocorticoid receptor antagonist and a beta blockers for the treatment of heart failure in 2c, yet suggested starting a thiazide-like diuretic for the management of hypertension in 2d.

The vast majority of students identified the fact that the patient was not prescribed adequate pharmacological thromboprophylaxis and recommended an appropriate option to address this issue (2f). Most also considered additional lifestyle interventions to further reduce patient's cardiovascular risk.

Question: 3 (Samuel Taylor) - Average student score for this question: 69.8%

Question	Feedback
3a	This question was generally answered well, with students identifying the key signs and symptoms of depression as discussed within the GP consult. Some did not note the comments around avoidance of eye contact, loss of libido/sexual dysfunction or the fact the patient was becoming more argumentative with their partner. Consider when you learn a list of signs and symptoms how a patient would explain these to you - they will describe things in a different fashion which you need to be able to detect.

- 3b** This question had some excellent responses as well as some very poor responses. Some of you mentioned signs and symptoms that the GP had already asked about without further explanation or expansion of thoughts. Some candidates picked up on the importance of considering co-morbid conditions e.g., anxiety and the need to check for illicit substance use or substance misuse. Whilst this patient reports they drink 10-15 units per week this is within or just over the government guidelines (negligible) - some of you discussed this as a major issue for this patient but did not give rationale.
- 3c** Many of you focused on DSM-IV, DSM-V, ICD-10, ICD-11 which are important diagnostic tools, but the PHQ-9, HADS, BDI-II are useful tools you need to be aware of and are stated within NICE guidelines.
- 3d** There were some good answers here, some made excellent but relating the advice back to the patient's individual circumstances and the consultation.
- 3e** This question was generally not answered so well, although a small proportion of students scored exceptionally well. There was minimal discussion of increased risk of suicide in the first few weeks/month of starting an SSRI in a younger person. Where there was discussion of this, very few of you provided appropriate safety netting to the patient around this - who can they call? Charities? Supportive family? This should form an essential part of your counselling. Many of you remembered that taking Sertraline with food can reduce the risk of nausea, but many of you discussed XL formulations which **do not exist** for sertraline, you had copied this from the lecture notes but not considered the real-life availability of such products. Many of you were able to state 4 or more common side-effects from the BNF. The important bit here was explaining how to minimise concern from these.
- 3f** There was a mixture of responses here, ranging from incorrect to outstanding. It was great to see a proportion of you mentioning shared decision-making and inviting the patient to be involved in this decision. A good proportion of you identified that checking adherence is essential. Very few of you explored potentially new reasons for why the SSRI may not be working i.e., any new changes in personal life? troubling side-effects? new stresses? You could have completed a PHQ-9 (or similar) to use as a comparison in future encounters. You could have considered increasing the dose of sertraline slowly, switching to another SSRI or considering a drug with a different mechanism of action e.g., mirtazapine. You only received full credit if you gave examples of the drug type you were recommending. It was important here to also consider the use of non-pharmacological therapy i.e., confirming current use, adding on therapy, changing therapies.