PHA-6020Y

CVS - Clinical Workshop 3 - ANSWERS

CORONARY/ISCHAEMIC HEART DISEASE

Learning Outcomes

By the end of this workshop you will be able to:

- Describe the therapeutic options for the treatment of:
 - Stable angina
 - Acute myocardial infarction (STEMI)
- Identify pharmaceutical care issues associated with the treatment of individual patients with IHD
- Identify the therapeutic and toxic monitoring parameters for the drug used in the treatment of IHD

Pre-workshop tasks:

In advance of this workshop please complete CASE 1.

Resources

- On Bb:
 - Screencasts: Coronary Heart Disease
 - NICE Guidelines: Stable angina (https://www.nice.org.uk/guidance/cg126)
 - NICE Guidelines: Acute Coronary Syndromes (https://www.nice.org.uk/guidance/ng185)
 - BNF: Treatment summaries Musculoskeletal system- NSAIDs Cardiovascular events

CASE 1 TO BE COMPLETED IN ADVANCE OF WORKSHOP

CASE 1 – Stable Angina

Mr HS, a 52 yr old South Asian man, presents to his GP with a history of chest tightness/pain on several occasions whilst walking his dog. His symptoms resolved completely on each occasion following a period of rest. He initially assumed it was 'indigestion' but on each occasion was unrelated to food or alcohol intake. He has hypertension, is slightly overweight (BMI 26), smokes 10 cigarettes/day (recently cut down from 20/day) and now 'exercises' by taking the dog for a walk each day (wife had previously done this but GP had advised increased exercise when he was diagnosed with HT). His brother had an AMI aged 62 yrs and his mother has Type II DM.

His current regular drug therapy is:

Indapamide 2.5mg om Celecoxib 100mg bd prn (for recent knee pain)

Diagnosis: Stable angina

1. What are Mr HS's risk factors for CHD?

Male HT Overweight Family history of IHD (& DM) Smoking South Asian ethnicity

2. What is celecoxib and what are the problems associated with its use in Mr HS?

Cyclo-oxygenase-2 inhibitor (NSAID) – indicated for pain & inflammation in OA and RA

Increased cardiovascular risk associated with use of COX-2 inhibitors + diclofenac (also some recent data indicating may also be a risk with other non-selective NSAIDs, although appears some worse than others – **Naproxen/low dose ibuprofen** (max 400mg tds – risk increases if use 2.4g daily) appear safest with short duration)

CSM advises with IHD should be switched to alternative therapy where at all possible

Also issue with **ALL NSAIDs** is risk of fluid retention and increased BP so avoid if possible.

Check if still has knee pain and advise try paracetamol and review pain control

3. Comment on the appropriateness of Mr HS's current therapy for his HT

NICE/BHS 2019 guidelines advise ACEI (or ARB) as <55yrs but no need to change unless problems

Check efficacy (target <140/90) and toxicity

- 4. What drug therapy would be appropriate for Mr HS's angina?
- PRN S/L GTN for treatment of acute angina attacks
- β blocker /Calcium channel blocker joint first line for stable angina (NICE guidance) either drug can be used first, then add on as a second agent if required
- If angina not controlled by β blocker /Calcium channel blocker (or combination of both) add in any of following:

Nitrate (long acting)/ivabradine/ ranolazine /nicorandil (2016 MHRA guidance – consider nicorandil after all others due to risk of ulceration)

- + secondary prevention – aspirin + statin (atorvastatin 80mg)

NB: When starting either β - blocker /Calcium channel blocker for angina, these will also lower bp, so **stop Mr HS's indapamide** to prevent polypharmacy

Mr HS's GP prescribes the following for his angina:

Propranolol 40mg tds GTN tabs s/l prn

5. Comment on the appropriateness of Mr HS's therapy for his stable angina, what problems may occur and what changes would you recommend to help improve adherence?

β- blocker tends to be 1st line choice over CCB unless C/I

No evidence than one is better than the other although **drug characteristics/side-effect profile** may affect choice:

Propranolol cheap but likely to have more S/E's & TDS regime will not improve adherence

Advise use **cardioselective** (N.B. these are still not cardiospecific) (eg Atenolol, bisoprolol, metoprolol) to avoid problems with β_2 receptor blockade (bronchospasm))

(Not relevant to this patient but cardioselective β - blocker also less likely to mask symptoms of hypo in diabetic patient)

Also use of water soluble β - blocker (eg atenolol) rather than lipid soluble (eg propranolol) is less likely to cause CNS S/E's (eg sleep disturbance, nightmares)

[Oxprenolol, pindolol, acebutolol, celiprolol - **Intrinsic sympathomimetic activity** – partial agonist stimulate as well as block adrenergic receptors – less likely to cause bradycardia & cold extremities]

Advise change to alternative β- blocker E.g. Atenolol 100mg od

6. What are the counselling points for his recommended drug treatment?

Atenolol 100mg od:

Name, strength, frequency, indication, S/E's (bradycardia, dizziness, cold extremities, sleep disturbances, fatigue, impotence etc) – use PIL & emphasise less likely with atenolol vs propranolol

DO NOT STOP ABRUPTLY – may ppt angina due to rebound receptor hypersensitivity

GTN s/l: (most patients will receive s/l spray but occasionally get tablets)

Name & indication

Under the tongue when get chest pain (or when know going to get chest pain on exertion) [If tablets => don't swallow (inactive)]

Sit down (may cause dizziness and rest helps chest pain)

May cause headache [if tablets can spit out or swallow when chest pain gone to prevent this] but explain caused by opening up of blood vessels in head and goes quickly

If chest pain not relieved after 5 mins taken another, if no improvement after further 5 min take a 3rd BUT must contact GP/ambulance as well

Spray – expiry usually about 2 years but remind patient to check

Tablets have 8-week expiry once opened (write date on bottle when opened)

Keep with you at all times, keep spare, can be bought OTC in pharmacy

One month later, Mr HS is still suffering intermittent chest pain and his GP refers him to the local hospital to see a consultant cardiologist in the outpatient clinic. The consultant prescribes him:

Isosorbide mononitrate 10mg bd

This controls his chest pain for a while, but then he begins to get increasing chest pain on exertion

7. What is the likely cause of his treatment not working and what can be done to improve its efficacy? What are the counselling points for ISMN?

Nitrate tolerance – nitrates interact with sulphydryl groups in vascular tissue (to cause release of nitric oxide to cause vasodilatation) – continued use depletes the sulphydryl groups resulting in tolerance, but restoration will occur within hours of interruption in nitrate use

Need 4-8 hr "nitrate free period" in every 24hrs:

Plan for when least likely to get chest pain

- BD dosing 2nd dose ideally no later than 2-4pm (or definitely no later than 6pm)
- MR preparations- have only 15-20 hr action (i.e. in-built nitrate-free period)
- Patches remove overnight

Because of need for "nitrate-free" period => nitrates do not provide full 24-hour control of angina => therefore nitrates only appropriate for "add-on" use to other antianginals and not appropriate for monotherapy

Counselling:

Nome, strength, frequency, regime (re: tolerance avoidance), indication Side-effects: throbbing headache (particularly in first few days – patients often refuse to continue taking but if can be encouraged to persevere & use prn paracetamol, usually stops after a few days), flushing, dizziness, tachycardia

CASE 2 – STEMI (ST-elevated Myocardial Infarction)

For case 2, Mr HL, you have been provided with the following documents:

- Drug chart (pages 7-12)
- Medical notes (pages 13-20)
- "End-of-bed" TPR chart (page 21)

His blood test results on admission are as follows:

Norfolk and Norwich NHS Trust PATHOLOGY DEPARTMENT	1 1	Consultant/GP:	Dr T Wright	PATIENT LOCATION Cardiac Ward
Patient Name: Mr H	L		NHS No: 987654332	
Hosp no: 123456		Sex: M	Age: 55 Yr	Pathology
Patient Address:				
Lab Episode No:	8904		Date/Time Collect	tion: Today
Address for Report	: Norfolk & Norwic	ch University Ho	spital Colney Lane	Norwich NORF NR4

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Medicines Policy Full policy available on the Trust Intronet homepage via DTMM icon

Good Prescribing Practice

All medicines to be administered or applied to a patient must be clearly written on the drug chart.

No medicines should be given unless details are clear and can be easily understood.

All prescriptions must include:

- The APPROVED NAME of the medicines, written in CAPITAL LETTERS e.g. FUROSEMIDE not LASIX®
- The FORM AND/OR ROUTE of administration e.g. tablet, syrup, injection; oral, subcutaneous
- The DOSE must be IN FULL UNITS; e.g. 500 mg not 0.5 g or 250 micrograms not 0.25 mg. state micrograms in full not mcg
- Where the dose is expressed in terms of units, the word 'UNITS' must be written in full
- The directions and times of administration. It is the prescriber's responsibility to state times of administration using the 24 hour clock.
- The FULL SIGNATURE and BLEEP NUMBER of the prescriber (initials do not fulfil the legal requirement). In the case of consultant staff
 please state telephone extension number. The prescriber will be a qualified, UK registered Doctor.
- The FULL DATE, including year; e.g. 01/01/10 or 1st Jan 10
- If a volume then the stated dose must also include a strength e.g. Salbutomol 2mg/5mL; dose 5mL/hour

If there remains any doubt about the legibility of a prescription or if it is not understood, the nurse or other healthcare practitioner has a responsibility NOT to administer or supply the drug, and must contact the prescriber concerned or another doctor or a pharmacist.

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For As Required Medication the prescription must also state the following in addition to the above:

- The frequency of administration including definite dosing intervals and/or maximum dose
- The indication of the medicine e.g. "for headache"

Alterations to the Prescription

Alterations to an existing prescription are NOT allowed. The prescription must be re-written if alterations to any part are required.

Discontinuation of Prescriptions

- When a medication is no longer required, the prescriber should cancel the prescription by drawing a thick line beside the last entry, which should be signed and dated; in addition, a single oblique line should be scored through the drug name
- The prescriber must sign and date at the end of the administration record next to the thick line.
- The cancelling of a prescription must be unambiguous in its intent but must NOT totally abscure the record.

Allergies

- Allergies must be written and signed (by initials) clearly in the box provided on the front of the prescription chart.
- Allergies must state the name of the medicines in capital letters, the nature of the allergy (if known) and the source of the information.
- Where no allergies/hypersensitivities exist "None Known" should be entered and signed.
- If the allergy section is left blank the practitioner can refuse to administer or dispense any item from the prescription.

Dose to be omitted

If a dose is to be omitted, the prescriber must clearly annotate the medication chart with a "X" in the relevant space in relation to date and time on the record of administration section of the chart.

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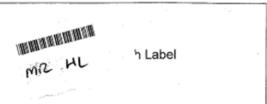
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12.						У	
Medicines Reconciliation: Comp Medicines Management Pre-A Compliance Aids Pre- Admission (ci None / Medication chart / Nomade / Community Pharmacy Details: Name Nursing / Residential Home: Name	dmission: Por rde as appropriate) / Mediwaller® / Large pr	atient	Other	ottles/ Carer	ns MAR chart	/ Other	Sign
Pharmacy Communication Bo	oard:						
Date Issue						Sign	Resolved Sign & Date
	Name					(Pharmad	
Discharge Medicines							4
Patients own medication at home Ye	s / No Name.		**********	Date	******		× .
☐ TTO Clinically Checked						Date	
Compliance Aids (circle) Norm Med	Scation chart / Nomed® ;	Mediwaller	f [®] / Lorge pr	rint labels /	Easy open bo	ottles/ Carers M	AR chart /



Clinical Assessment



Date and Time	Presenting complaint:		
-	Clerking Doctors Name: A. Wall	Grade:	813
15/04/			
	ss 3		
	- No previous condisc she		
	- Ex -smokee		
	-+ve FH		
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	- On arround still have p	zi 2	110
	Morphie 2.5mg		

Single Record - Clinical Assessment UNH900C

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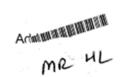
Version 2
Date of Approval: June 2011

MHP 07/11



Norfolk and Norwich University Hospitals

NHS Foundation Trust



Past Medical History

-T2DM

- previoue Indigeotis - not on regular 185

Co-morbidities	Tick	Co-morbidities	Tick	Co-morbidities Tick
Acute myocardial Infarction		Diabetes complications		Renal disease
Cerebrovascular accident		Peptic ulcer disease		Liver disease
Congestive heart failure		Peripheral vascular disease		Severe Liver disease
Connective tissue disorder		Pulmonary disease		Paraklegia
Dementia		Cancer		
Diabetes		Metastatic cancer		* "

Family History

Smoking: Have you ever smoked? Yes [if smoked <100 in lifetime = never smoked]

How many cigarettes do/did you smoke a day at most?

Alcohol: How often have you had 6 or more drinks if female, or 8 or more if male, on a single occasion in the last year?

Monthly

0 Less than Never Monthly

Daily, or almost daily £...

Recreational Drugs:

When did you start?

When was your last cigarette?

Calculate maximum packs per year?

If yes:

Scoring: Total of 0-1 indicates low risk drinkers: Total of 2-4 indicates increasing or higher risk drinkers: Overall Total of 2 or above is SASQ positive:

Consent for Alcohol team to contact:

Single Record - Clinical Assessment

Version 2 Date of Approval: June 2011



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MR HL

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Compat medication (1.4				
Current medication (include any medication recently stopp	ing over the counter, nerba	i and no	meopathic re	medies ar
Medication		Dana	F	Reconci
Medication	Indication (if known)	Dose	Frequency	(Pharmac
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- PRN - Lansoprasso	Ce.	7		(3)
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- Metform.		7		1 Code
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On anticoagulant medication	On diabetic medication □ On	steroid /	Immunosunni	essant's r
If on Warfarin / Clopidogrel see protoco		Julio Vide	пппаповаррі	Coodin o L
				150,000,000
Allergies (see A+E front sheet) Drug:				
STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY.	NKOA			
Other:		Latex:	yes / no	



MRHL

bel

			С	linical E	xamin	ation			
Temp O ₂ sat	°C % (FiO₂	BP /	30166	Pulse	70	min	RR	/min	
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BMI =	4		Heig	ht =			Weight =	w	

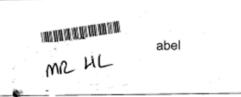
GCS Eye opening 1, none 2, to pain 3, to speech AMT spontaneously
 none 2.incomprehensible 6. monarch 7. WW1 8 20 - 1 1. age 2. dob Verbal sounds 3. inappropriate words 4. confused 5 orientated 1. none 2. extension to pain 3. year 4. time two people recognition
 recall address Motor 5. place 3.flexion withdrawal 5. localises pain
 obeys commands Pain score 0 - no pain. 1 - mild. 2 - moderate. 3 - severe U = Unconscious Circle best response V = Verbal P = Pain AVPU: A= Alert No response to any stimulus Responds to pain Responds to voice Responds

Single Record - Clinical Assessment

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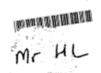
Version 2 Date of Approval: June 2011





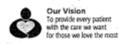
ivestigations o	rdered (tick)		* 7				
BC D-dimer Blucose Blood Culture	U+E Calcium Amylas	m	FT CXR Paracetamol Vitalograph	Tropon ECHO Salicyla		Coag Gp and Save X-match	
Results:	~						
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Mina a fill III II

MRHL

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Date and Time	CLINICAL NOTES	
16.4.	Nursing: Pt monitored in Sinus Brady	rate occasionally
06.30	dropping under 40 bpm woust pr aslee Right wrist intact,	P. OBS STABLE.
	zigra tarta	
16/4	SpR.	x V
08:	10	2222
	PPCI to PCA.	CXR (AP).
CK 608	for stayed (C) to LAD/Cx.	Borderhne hear
Na 139	BP.120/80. HR 60/m	Dischone
lu 66	JVP-> S1+12+0.	2x sum of 4-5
H 12.3		beat NIVT.
Wall	(ab).	
PH 217	1	
	(1) Continue mondaing tonight	x - V
	- Home on 18/4/	
**	P Continue mombing tonight Home on 18/4/ In staged PCI to CX/LAD.	The second secon
16/4/12	(1) - numirosco via relemetry, continues	to be in
NOCTE	Sincir Rethin no VT observed	Sh
-		
	,	

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Single Record - Clinical Assessment





Date and Time CLINICAL NOTES	
114/2012 Sayor	
1130 O PACI to NEA	
Ostrac PCs to lespland i 4-6/2	· · · O
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Single Record - Clinical Assessment

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Norfolk and Norwich University Hospitals NHS To provide every patient with the care we want for those we love the most В **NHS Foundation Trust** WARD: Observations Frequency: **OBSERVATION CHART** O2 Code: Inspired O₂: Name: MR HL Record flow rate in N = Nasal cannulae SM = Simple Mask Litres (L) Registration No: 123456 RM = Reservoir Mask Target Oxygen NHS Number: 98765432 = Venturi Saturations; = Humidified > Record % Date of Birth: (55 YR OLD) = Air DATE 184 15/4 16/4 16/4 DATE TIME TIME 40 °C T 240 39.5 E 230 M 39 220 38.5 P 210 38 200 37.5 R 190 180 36.5 T 170 U 36 160 35.5 R В 150 35 P 140 34.5 130 A N 120 D 110 100 P 90 U 80 L 70 S 60 E 50 40. 40 RESPS SATS % 97 SATS % O₂ Code O₂ Code Inspired O2 A10 Inspired O₂ Weight % Weight Urine pH: Urine pH: Glucose Glucose Ketones Ketones Sp. Gravity Sp. Gravity Blood Blood Protein Protein Nitrite Nitrite Leucocytes Leucocytes Bowels 80 60 Bowels Type stool Type stool ENTER EARLY WARNING SCORE BELOW & IF EWS TRIGGER 4 OR MORE DOCUMENT ACTIONS OVER PAGE TEMP Systolic BP Systolic BP PULSE PULSE RESPS RESPS AVPU AVPU URINE URINE

TOTAL

V5 revised Jan 2014

Sign initials

NNR775

TOTAL

Sign initials

1. For each of the drugs that is prescribed for Mr HL, complete the following tables to detail the indication and the therapeutic and toxic monitoring parameters:

Drug: Aspirin	Indication: 2° prevention of MI			
Monitoring parameters				
Therapeutic	Toxic			
↓CV events	Signs of bleeding, Hb, S/E:GI			

Drug: Clopidogrel	Indication: 2° prevention of MI		
Monitoring parameters			
Therapeutic	Toxic		
↓CV events	Signs of bleeding, Hb, S/E:GI		

Drug: Bisoprolol	Indication: 2° prevention of MI		
Monitoring parameters			
Therapeutic	Toxic		
↓CV events	BP, pulse, awareness of hypoglycaemia		

Drug: Metformin	Indication: Type 2 DM			
Monitoring parameters				
Therapeutic	Toxic			
BG, HbA1c	RF, S/E e.g. GI			

Drug: Ramipril	Indication: 2° prevention of MI (+ prevention of diabetic nephropathy)		
Monitoring parameters			
Therapeutic	Toxic		
↓CV events, (BP-target<140/90), (RF)	BP, RF, K+, dry cough		

Drug: GTN	Indication: Ischaemic chest pain	
Monitoring parameters		
Therapeutic	Toxic	
Chest pain, usage	Bp, pulse, flushing/dizziness	

Drug: Diamorphine	Indication: Severe chest pain on admission		
Monitoring parameters			
Therapeutic Toxic			
Control of pain	RR, S/E: N&V		

Drug: Metoclopramide	Indication: N&V from diamorphine	
Monitoring parameters		
Therapeutic	Toxic	
Control of N&V	RF, S/Es e.g. EPSE	

2. Identify any actual and potential pharmaceutical care issues for your patient. Document the issue(s) and the action(s) in the following tables.

Where you recommend the patient to start on any **NEW** medication, please also complete details of the monitoring parameters for the new drug, otherwise leave it blank.

(the workshop template contains a standard number of boxes – this does **NOT** give any indication to the number of issues to be identified – could be more, could be less!!)

Issue	Action required
Bisoprolol not been given	Check pulse on TPR chart (pulse dropped to 40 bpm) – potentially reduce dose to 1.25mg od. (Long term aim to titrate up to evidence based dose of 10mg od with rate control down towards 60bpm)
Monito	oring parameters
Therapeutic	Toxic

Issue	Action required
Metformin frequency states od, but administration times bd	Confirm as part of drug history with patient and ask Dr to amend Rx
Monitoring	parameters
Therapeutic	Toxic
Therapeutic	TOXIC

Issue	Action required
Metformin being omitted	Ensure restarted once renal function checked to be OK post PPCI (usually 48hrs)*
Monitoring	parameters
Therapeutic	Toxic

^{*} Metformin C/I in recent myocardial infarction (due to risk of lactic acidosis increased by hypoxia) but can be used once patient stable.

Use of iodine-containing X-ray contrast media (as used in angio) is contraindicated in a patient on Metformin due to risk of renal impairment. Need to stop metformin 48hrs before angio (obviously not possible with PPCI) and only restart when confirmed renal function is normal (48hrs) (see SPC for metformin accessed at www.medicines.org.uk/emc)

Issue	Action required
Optimisation of Type 2 DM management	Consider addition of SGLT2I e.g. dapagliflozin 10mg od) to optimised metformin prescription as per NICE guidelines for Type 2 DM)
Monitoring	parameters
Therapeutic	Toxic

Issue	Action required
Ramipril frequency not prescribed clearly	Confirm with Dr and ask to clarify prescription (usually od at night) (betablockers in morning and ACEIs to help prevent hypotension)
Monitoring	g parameters
Therapeutic	Toxic

Issue	Action required
Need to up-titrate dose of ramipril - EBM trial dose of ramipril is 10mg daily	Need to ask Dr to titrate dose up after checking patient's Bp and RF
Monitoring	parameters
Therapeutic	Toxic

Issue	Action required
Need for atorvastatin (one of five drugs recommended by NICE for secondary prevention of MI)	Request Dr to prescribe atorvastatin 80mg on
Monitorir	ng parameters
Therapeutic	Toxic
↓CV events, Lipid profile	LFTs, myopathy/muscle pain, creatine
	kinase (CK)

Issue	Action required
Need for gastric protection (now on DAPT and PMH GORD) – previously on prn lansoprazole	Ask Dr to prescribe regular lansoprazole 15mg od
Monitoring	parameters
Therapeutic	Toxic
G.I. symptom control, lack of GI bleed	S/E: e.g. diarrhoea, low sodium

Issue	Action required	
Lack of pain control for OA – previously on meloxicam which is associated with increased risk of thrombotic events	Request Dr to prescribe alternative e.g. paracetamol/co-codamol or naproxen/ibuprofen (max 1.2g daily) if needs to continue NSAID	
Monitoring parameters		
Therapeutic	Toxic	
Pain control	Paracetamol/co-codamol: LFTS, S/E: e.g. constipation NSAIDs: g.i., bleed, RF, bp	

Issue	Action required
Lifestyle counselling	Counsel on diet (low Na ⁺ , low fat, 5/day), exercise (30mins/day/min 5days/wk), alcohol, (smoking cessation – not relevant for this patient) **
Monitoring parameters	
Therapeutic	Toxic

^{**} Most cardiac units off a follow-up rehabilitation service for MI patients after they have been discharged (potential pharmacist involvement)

Issue	Action required
Counselling and education on drugs	All new drugs – counsel on indication, dose, frequency & side-effects (give examples of DETAILS FOR INDIVIDUAL DRUGS e.g DAPT for 12 months + risk of bleeding, atorvastatin and muscle pain etc)
Monitor	ing parameters
Therapeutic	Toxic
•	