

# PHA-6020Y

## CVS – Clinical Workshop 6 – **ANSWERS**

### HEART FAILURE

#### Learning Outcomes

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

- Describe the therapeutic options for the treatment of heart failure in line with NICE guidance
- Identify pharmaceutical problems associated with the treatment of individual patients with heart failure
- Identify the therapeutic and toxic monitoring parameters for the drug used in the treatment of heart failure

#### Pre-workshop tasks:

- In advance of this workshop please complete **CASE 1** – you will be asked to feedback these in your groups during the workshop

#### Resources

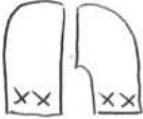
- On Bb:
  - Screencasts: Heart Failure
  - NICE Guidelines: Acute Heart Failure (<https://www.nice.org.uk/guidance/cg187>)
  - NICE Guidelines: Chronic Heart Failure (<https://www.nice.org.uk/guidance/ng106>)
  - NICE TA267: Ivabradine (<https://www.nice.org.uk/guidance/ta267>)
  - NICE TA388: Sacubitril- Valsartan (<https://www.nice.org.uk/guidance/ta388>)
  - NICE TA679: Dapagliflozin (<https://www.nice.org.uk/guidance/TA679> )
  - ESC 2021 Guidelines for the diagnosis and treatment of acute and chronic heart failure (<https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Acute-and-Chronic-Heart-Failure> )

(all accessed 21/11/23)

## CASE 1 TO BE COMPLETED IN ADVANCE OF WORKSHOP

### CASE 1

You have a new patient on your ward, Mr BB. His medical notes, blood tests and drug chart are below:

	<b>Patient:</b>	Mr BB
	<b>Hospital number:</b>	013580
	<b>DoB:</b>	1.7.1956
	<b>Address:</b>	24 Primrose Rd, Flatplace
<b>PC:</b>	Severe shortness of breath (SOB)	
<b>HPC:</b>	Over past week increasing SOB, waking up at night coughing and struggling to breathe. Feels very tired, becomes SOB when walking on flat, but returns to normal when rests.	
<b>PMH:</b>	STEMI (2 years) Hypertension (8 years)	
<b>DH:</b>	Atenolol 100mg om Lisinopril 5mg on Aspirin 75 mg od Atorvastatin 80mg on                      NKDA	
<b>OE:</b>	Patient short of breath, struggling to speak. SOA	
	BP:	150/98 mmHg
	Temperature:	36.8 degrees Celsius
	Pulse:	78 BPM
	Weight:	98kg (normally around 88kg)
	Lungs:	
		
<b>SH:</b>		
<b>Occupation:</b>	Retired salesman	
<b>Alcohol:</b>	30 units/week	
<b>Smoking status:</b>	Ex-smoker (gave up when had STEMI 2 years ago)	
<b>Investigations:</b>	Chest X-ray – pulmonary oedema Echo – LVH + EF 35%	
<b>Diagnosis:</b>	Acute Heart failure	
	<i>G Patel bleep 561</i>	

His blood test results on admission are as follows:

Norfolk and Norwich University Hospital NHS Trust <b>PATHOLOGY DEPARTMENT</b>		Consultant/GP: Dr J Sulfi		PATIENT LOCATION  <b>Cardiac Ward</b>
Patient Name: Mr BB			NHS No: 987654332	
Hosp no: 013580		Sex: M	Age: 64 Yr	Pathology
Patient Address:				
Lab Episode No:	3905		Date/Time Collection: Today	
Address for Report: Norfolk & Norwich University Hospital Colney Lane Norwich NORF NR4 7UY				

<b>BIOCHEMISTRY</b> Collection LAB No Today 8904		<b>Total chol</b> 3.8 mmol/L	<b>Bilirubin</b> 18 (3-20) µmol/l	<b>ALP</b> 70 (20-100) IU/l	<b>AST</b> 32 (5-40) IU/l
	<b>ALT</b> 22 (5-30) IU/l	<b>GGT</b> 42 (5-45) IU/l	<b>PT</b> 13.5 (10-15) secs	<b>Hb</b> 16.2 (14-18) g/dl	<b>WBC</b> 9.3 (4-11) x 10 <sup>9</sup> /l
	<b>Na</b> 138 (134-145) mmol/L	<b>K</b> 4.2 (3.6-5.0) mmol/L	<b>Urea</b> 6.8 (1.7-7.1) mmol/L	<b>Creatinine</b> 124 (55-125) µmol/L	<b>eGFR</b> 88 ml/min/m <sup>2</sup>

UEA Training Prescription Chart										Number of drug charts in use: <b>1</b>	
Date	Surname	Forename	Sex	D/O/B	Hospital No.	Weight (kg)	Height (cm)	Surface Area (m <sup>2</sup> )	SAM?		
Day 1	B	B	M	01/07/1956	13580	98 <small>Estimate / Actual</small>			Yes / No		
Ward/ward change:			Cardio		Patient address:		24 Primrose Rd, Flatplace				
Consultant(s)			Dr J Sulfi								
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>G Patel</i>		Day 1			
PRE-MEDICATION AND ONCE ONLY DRUGS											
Pharm	Date	Drug (approved name)	Dose	Directions/ route/ other	Time to be given	Signature	Administered by				
							Initials	Date			
Thromboprophylaxis Risk Assessment											
Drug thromboprophylaxis recommended			<b>X</b>								
Drug thromboprophylaxis NOT recommended											
Prescribing			Drug omissions			Prescribers					
<ul style="list-style-type: none"> <li>• Write clearly in black, indelible ink.</li> <li>• Use approved drug names.</li> <li>• All prescriptions must be signed and dated.</li> <li>• If a drug is to be intentionally omitted by a prescriber or pharmacist, indicate this with an 'X' in the drug administration box.</li> <li>• If a drug is being stopped, or a dose altered, draw a line through the whole prescription, sign and date.</li> <li>• Doctors to re-write charts as required. Start dates should be transferred to new chart. Include cross-reference to drugs on other charts.</li> </ul>			If a drug is omitted, one of the below codes must be entered into the drug administration box.			Signature	<i>Dr G Patel</i>				
			1. Nil by mouth                      6. Patient off ward			Bleep no.	561				
			2. Not required                      7. No IV access			Print name	Dr G Patel				
			3. Patient refused                      9. Contra-indicated			Signature	-----				
			4. Drug unavailable                      8. Other - reason must be recorded in notes			Bleep no.	-----				
			5. Vomiting/nausea			Print name	-----				
			Self administration of medicines (SAM)			Signature	-----				
			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.			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	06:00										
<b>Dalteparin</b>		<b>Day 1</b>		08:00										
Dose	Route	Frequency		12:00										
<b>5000IU</b>	<b>sc</b>	<b>OD</b>		14:00										
Indication		Pharm check		18:00	<input checked="" type="checkbox"/>									
				22:00										
Prescriber's signature			Supply	00:00										
<b>G Patel</b>														
2. Drug (approved name)		Start date	End date	06:00										
<b>Atenolol</b>		<b>Day 1</b>		08:00	<input checked="" type="checkbox"/>	<b>JA</b>								
Dose	Route	Frequency		12:00										
<b>100mg</b>	<b>Po</b>	<b>OD</b>		14:00										
Indication		Pharm check		18:00										
				22:00										
Prescriber's signature			Supply	00:00										
<b>G Patel</b>														
3. Drug (approved name)		Start date	End date	06:00										
<b>Atorvastatin</b>		<b>Day 1</b>		08:00										
Dose	Route	Frequency		12:00										
<b>80mg</b>	<b>Po</b>	<b>ON</b>		14:00										
Indication		Pharm check		18:00										
				22:00	<input checked="" type="checkbox"/>									
Prescriber's signature			Supply	00:00										
<b>G Patel</b>														
4. Drug (approved name)		Start date	End date	06:00										
<b>Aspirin</b>		<b>Day 1</b>		08:00	<input checked="" type="checkbox"/>	<b>JA</b>								
Dose	Route	Frequency		12:00										
<b>75mg</b>	<b>Po</b>	<b>OD</b>		14:00										
Indication		Pharm check		18:00										
				22:00										
Prescriber's signature			Supply	00:00										
<b>G Patel</b>														
5. Drug (approved name)		Start date	End date	06:00										
<b>Lisinopril</b>		<b>Day 1</b>		08:00										
Dose	Route	Frequency		12:00										
<b>5mg</b>	<b>PO</b>	<b>ON</b>		14:00										
Indication		Pharm check		18:00										
				22:00	<input checked="" type="checkbox"/>									
Prescriber's signature			Supply	00:00										
<b>G Patel</b>														

CHECK PAGE 1 FOR ALLERGY STATUS

## AS REQUIRED DRUGS

CHECK PAGE 1 FOR ALLERGY STATUS

1. Drug (approved name)		Start date	Date															
Dose	Route	Max Frequency	Time															
Indication		Pharm check	Dose															
			Route															
Prescriber's signature		Supply	Given by															
2. Drug (approved name)		Start date	Date															
Dose	Route	Max Frequency	Time															
Indication		Pharm check	Dose															
			Route															
Prescriber's signature		Supply	Given by															
3. Drug (approved name)		Start date	Date															
Dose	Route	Max Frequency	Time															
Indication		Pharm check	Dose															
			Route															
Prescriber's signature		Supply	Given by															
4. Drug (approved name)		Start date	Date															
Dose	Route	Max Frequency	Time															
Indication		Pharm check	Dose															
			Route															
Prescriber's signature		Supply	Given by															
5. Drug (approved name)		Start date	Date															
Dose	Route	Max Frequency	Time															
Indication		Pharm check	Dose															
			Route															
Prescriber's signature		Supply	Given by															

CHECK PAGE 1 FOR ALLERGY STATUS

1. What are Mr BB's risk factors for heart failure?

Ischaemic Heart Disease  
Previous MI  
Previous smoker  
High alcohol intake  
Hypertension  
Overweight  
65 years old  
Male

2. What signs and symptoms indicate that Mr BB has heart failure? Does he have right-sided or left-sided heart failure or both?

Breathlessness (L)  
Orthopnoea (L)  
Reduced exercise tolerance  
Swollen ankles (R)  
Weight gain = fluid overload  
Coughing  
Tiredness  
Pulmonary oedema (L)  
Left ventricular hypertrophy (L)  
Ejection fraction 35% (L)

He has a mixture of right & left sided-heart failure

Classic heart failure symptoms are exercise limitation, SOB and oedema

3. Where would you classify Mr BB's symptoms on the New York Heart Association (NYHA) classification of heart failure symptoms?

Class III merging in to IV

Class III – Moderate Heart Failure – Mr Blue returns to normal at rest, makes him breathless. Class III: Marked limitation of physical activity. Although patients are comfortable at rest, less than ordinary physical activity will lead to symptoms ('Moderate' heart failure).

Class IV - Inability to carry on any physical activity without discomfort. Symptoms of congestive cardiac failure are present even at rest. With any physical activity increased discomfort is experienced ('Severe' heart failure).

Now waking up at night SOB

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

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

<b>Drug: Atenolol</b>	<b>Indication: 2° prevention MI/(HT)</b>
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
↓CV events, pulse (aim for control down to 60bpm),	BP, pulse, S/E e.g. g.i., fatigue

<b>Drug: Lisinopril</b>	<b>Indication: 2° prevention MI/HT</b>
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
↓CV events, BP (<140/90), improvement long-term in symptoms of heart failure	BP, RF, K+, dry cough

<b>Drug: Atorvastatin</b>	<b>Indication: 2° prevention MI</b>
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
↓CV events, lipid profile	LFTs, myopathy, CK

<b>Drug: Dalteparin</b>	<b>Indication: VTE thromboprophylaxis</b>
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
Lack of VTE	RF, bleeding

5. 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
Need for IV diuretics as fluid overloaded	Ask Dr to prescribe e.g. furosemide IV 40mg/80 mg bd
Monitoring parameters	
Therapeutic	Toxic
Symptoms of heart failure (e.g. SOB), weight (aim 1kg/day loss), urine output (aim negative fluid balance)	BP, RF, U&Es (K+, Na+), rate of administration (max 4mg/min - ototoxicity)

Issue	Action required
Atenolol not licensed for heart failure	Request doctor to change to alternative e.g. bisoprolol 1.25mg od and titrate up – start low, go slow (usually atenolol is stopped on admission & then bisoprolol/carvedilol is started once stable – start low go slow)
Monitoring parameters	
Therapeutic	Toxic
↓CV events, pulse (aim for control down to 60bpm), improvement long-term in symptoms of heart failure	BP, pulse, initial worsening of symptoms of heart failure

Issue	Action required
Need to up-titrate dose of lisinopril (EBM Trial dose of lisinopril is 30-35mg daily for heart failure) + bp not controlled at 150/98	Need to ask Dr to titrate dose up towards after checking patient's BP and RF
Monitoring parameters	
Therapeutic	Toxic

Issue	Action required
Need for MRA (e.g. spironolactone) as per NICE guidelines for chronic heart failure	Request Dr to prescribe e.g. spironolactone 25mg om
Monitoring parameters	
Therapeutic	Toxic
Improvement long-term in symptoms of heart failure	BP, RF, K+, S/E: e.g. gynaecomastia

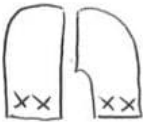
Issue	Action required
Counselling and education on drugs	All new drugs – counsel on indication, dose, frequency & side-effects DETAILS FOR INDIVIDUAL DRUGS AVOID OTC: NSAIDs, sodium containing antacids
Monitoring parameters	
Therapeutic	Toxic

Issue	Action required
Lifestyle counselling	Counsel on diet (low Na <sup>+</sup> , low fat, 5 a day), alcohol (max 14 units over week), exercise (30 mins 5x/week)
Monitoring parameters	
Therapeutic	Toxic

NB: ESC 2021 Guidelines: Recommend commencement of ARNI (Sacubitril/Valsartan) and SGLT2I also as first line – see case 2

## CASE 2

You have a patient on your ward, Mrs Red. Her medical notes, blood tests, TPR chart and drug chart are below:

	<b>Patient:</b>	Mrs Red
	<b>Hospital number:</b>	987654
	<b>DoB:</b>	3.2.1935
	<b>Address:</b>	99 Clover Rd, Flatplace
<b>PC:</b>	Severe shortness of breath (SOB)	
<b>HPC:</b>	Over past few weeks increasing SOB, not able to mobilise, SOB at rest, unable to get out of bed	
<b>PMH:</b>	NSTEMI (4 years) CCF (4 years) Atrial fibrillation (1 year)	
<b>DH:</b>	Furosemide 40mg bd Ramipril 10mg on (increased recently by GP from 5mg) Aspirin 75 mg od Atorvastatin 80mg on Bisoprolol 2.5mg om Digoxin 62.5mcg om	
		NKDA
<b>OE:</b>	Patient short of breath, struggling to speak. Significant SOA & legs (oedema to knees). Coughing +++	
	BP:	100/60 mmHg
	Temperature:	36.5 degrees Celsius
	Pulse:	65 BPM (regular)
	Weight:	92kg (normally around 80kg)
	Lungs:	Bibasal crackles +++
		
<b>SH:</b>		
<b>Alcohol:</b>	NIL	
<b>Smoking status:</b>	20/day	
<b>Investigations:</b>	Chest X-ray – pulmonary oedema Echo – LVH + EF 30%	
<b>Diagnosis:</b>	Acute Heart failure	
<b>Plan:</b>	Usual medication, Rx spironolactone, daily weights	
	<i>G Patel bleep 561</i>	

Mrs Red's blood tests on admission:

Norfolk and Norwich University Hospital NHS Trust <b>PATHOLOGY DEPARTMENT</b>		Consultant/GP: Dr C Maron		PATIENT LOCATION  <i>Cardiac Ward</i>
Patient Name: Mrs Red		NHS No: 6789543		
Hosp no: 987654		Sex: F	Age: 88 Yr	Pathology
Patient Address:				
Lab Episode No: 7896			Date/Time Collection: Day 1	
Address for Report: Norfolk & Norwich University Hospital Colney Lane Norwich NORF NR4 7UY				

<b>BIOCHEMISTRY</b> Collection LAB No Today 8904		<b>Total chol</b> 3.8 mmol/L	<b>Bilirubin</b> 18 (3-20) µmol/l	<b>ALP</b> 70 (20-100) IU/l	<b>AST</b> 32 (5-40) IU/l
	<b>ALT</b> 22 (5-30) IU/l	<b>GGT</b> 39 (5-45) IU/l	<b>PT</b> 13.5 (10-15) secs	<b>Hb</b> 16.2 (14-18) g/dl	<b>WBC</b> 9.3 (4-11) x 10 <sup>9</sup> /l
	<b>Na</b> 138 (134-145) mmol/L	<b>K</b> 4.2 (3.6-5.0) mmol/L	<b>Urea</b> 6.8 (1.7-7.1) mmol/L	<b>Creatinine</b> 124 (55-125) µmol/L	<b>eGFR</b> 88 ml/min/m <sup>2</sup>



Our Vision  
to provide every patient  
with the care we want  
for those we love the most



**B**

**Observations Frequency:**

**O<sub>2</sub> Code:**  
**N** = Nasal cannulae } **Inspired O<sub>2</sub>:**  
**SM** = Simple Mask } **Record flow rate in**  
**RM** = Reservoir Mask } **Litres (L)**  
  
**V** = Venturi } **Record %**  
**H** = Humidified } **Target Oxygen**  
**A** = Air } **Saturations;**

WARD:

**OBSERVATION CHART**

Name: **MRS RED**  
 Registration No: **123**  
 NHS Number: **987654**  
 Date of Birth: **88 YEARS OLD**

DATE	1	1	2	2	3							DATE	
TIME	12.30	1.00	1.30	2.00	2.30							TIME	
<b>B P A N D P U L S E</b>	240												<b>40 °C T</b>
	230												<b>39.5 E</b>
	220												<b>39 M</b>
	210												<b>38.5 P</b>
	200												<b>38 E</b>
	190												<b>37.5 R</b>
	180												<b>37 A</b>
	170												<b>36.5 T</b>
	160												<b>36 U</b>
	150												<b>35.5 R</b>
140												<b>35 E</b>	
130												<b>34.5</b>	
120													
110													
100													
90													
80													
70													
60													
50													
40													
<b>RESPS</b>													
<b>SATS %</b>													<b>SATS %</b>
<b>O<sub>2</sub> Code</b>													<b>O<sub>2</sub> Code</b>
<b>Inspired O<sub>2</sub></b>													<b>Inspired O<sub>2</sub></b>
<b>Weight</b>	<b>92</b>		<b>92.5</b>		<b>92</b>								<b>Weight</b>
Urine pH:													Urine pH:
Glucose													Glucose
Ketones													Ketones
Sp. Gravity													Sp. Gravity
Blood													Blood
Protein													Protein
Nitrite													Nitrite
Leucocytes													Leucocytes
Bowels													Bowels
Type stool													Type stool
<b>ENTER EARLY WARNING SCORE BELOW &amp; IF EWS TRIGGER 4 OR MORE DOCUMENT ACTIONS OVER PAGE</b>													
TEMP													TEMP
Systolic BP													Systolic BP
PULSE													PULSE
RESPS													RESPS
AVPU													AVPU
URINE													URINE
<b>TOTAL</b>													<b>TOTAL</b>
Sign initials													Sign initials

UEA Training Prescription Chart								Number of drug charts in use: <b>1</b>			
Date	Surname	Forename	Sex	D/O/B	Hospital No.	Weight (kg)	Height (cm)	Surface Area (m <sup>2</sup> )	SAM?		
Day 1	R	R	F	03/02/1933	987654	92 <small>Estimate / Actual</small>			Yes / No		
Ward/ward change:		Cardio			Patient address:		99 Clover Rd, Flatplace				
Consultant(s)		Dr C Maron									
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>G Patel</i>		Day 1			
PRE-MEDICATION AND ONCE ONLY DRUGS											
Pharm	Date	Drug (approved name)	Dose	Directions/ route/ other	Time to be given	Signature	Administered by				
							Initials	Date			
Thromboprophylaxis Risk Assessment											
Drug thromboprophylaxis recommended			<b>X</b>								
Drug thromboprophylaxis NOT recommended											
Prescribing			Drug omissions			Prescribers					
<ul style="list-style-type: none"> <li>Write clearly in black, indelible ink.</li> <li>Use approved drug names.</li> <li>All prescriptions must be signed and dated.</li> <li>If a drug is to be intentionally omitted by a prescriber or pharmacist, indicate this with an 'X' in the drug administration box.</li> <li>If a drug is being stopped, or a dose altered, draw a line through the whole prescription, sign and date.</li> <li>Doctors to re-write charts as required. Start dates should be transferred to new chart. Include cross-reference to drugs on other charts.</li> </ul>			If a drug is omitted, one of the below codes must be entered into the drug administration box.			Signature		<i>Dr G Patel</i>			
			1. Nil by mouth                      6. Patient off ward			Bleep no.		561			
			2. Not required                      7. No IV access			Print name		Dr G Patel			
			3. Patient refused                      9. Contra-indicated			Signature		.....			
			4. Drug unavailable                      8. Other - reason must be recorded in notes			Bleep no.		.....			
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		.....			
Pharmacy codes			Pharm: Signature confirms checked/date			Signature		.....			
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			Bleep no.		.....			
						Print name		.....			
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>Furosemide</i>	<i>Day 1</i>		08:00	✓	<i>JA</i>									
Dose	Route	Frequency	12:00											
<i>40mg</i>	<i>PO</i>	<i>BD</i>	14:00	✓										
Indication	Pharm check		18:00											
			22:00											
Prescriber's signature	Supply		00:00											
<i>G Patel</i>														
2. Drug (approved name)	Start date	End date	08:00											
<i>Bisoprolol</i>	<i>Day 1</i>		08:00	✓	<i>JA</i>									
Dose	Route	Frequency	12:00											
<i>2.5mg</i>	<i>Po</i>	<i>OD</i>	14:00											
Indication	Pharm check		18:00											
			22:00											
Prescriber's signature	Supply		00:00											
<i>G Patel</i>														
3. Drug (approved name)	Start date	End date	08:00											
<i>Digoxin</i>	<i>Day 1</i>		08:00	✓	<i>JA</i>									
Dose	Route	Frequency	12:00											
<i>62.5mcg</i>	<i>Po</i>	<i>OD</i>	14:00											
Indication	Pharm check		18:00											
			22:00											
Prescriber's signature	Supply		00:00											
<i>G Patel</i>														
4. Drug (approved name)	Start date	End date	08:00											
<i>Aspirin</i>	<i>Day 1</i>		08:00	✓	<i>JA</i>									
Dose	Route	Frequency	12:00											
<i>75mg</i>	<i>Po</i>	<i>OD</i>	14:00											
Indication	Pharm check		18:00											
			22:00											
Prescriber's signature	Supply		00:00											
<i>G Patel</i>														
5. Drug (approved name)	Start date	End date	08:00											
<i>Ramipril</i>	<i>Day 1</i>		08:00											
Dose	Route	Frequency	12:00											
<i>10mg</i>	<i>PO</i>	<i>ON</i>	14:00											
Indication	Pharm check		18:00											
			22:00	✓										
Prescriber's signature	Supply		00:00											
<i>G Patel</i>														

CHECK PAGE 1 FOR ALLERGY STATUS

## REGULAR MEDICINES 2

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														
6. Drug (approved name)		Start date	End date	06.00										
<i>Spironolactone</i>		<i>Day 1</i>		06.00	✓	JA								
Dose	Route	Frequency		12.00										
<i>2.5mg</i>	<i>PO</i>	<i>OD</i>		14.00										
Indication		Pharm check		18.00										
				22.00										
Prescriber's signature			Supply	00.00										
<i>G Patel</i>														
7. Drug (approved name)		Start date	End date	06.00										
				06.00										
Dose	Route	Frequency		12.00										
				14.00										
Indication		Pharm check		18.00										
				22.00										
Prescriber's signature			Supply	00.00										
8. Drug (approved name)		Start date	End date	06.00										
				06.00										
Dose	Route	Frequency		12.00										
				14.00										
Indication		Pharm check		18.00										
				22.00										
Prescriber's signature			Supply	00.00										
9. Drug (approved name)		Start date	End date	06.00										
				06.00										
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										
				06.00										
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														
Dose	Route	Max Frequency	Time														
Indication		Pharm check	Dose														
			Route														
Prescriber's signature		Supply	Given by														
2. Drug (approved name)		Start date	Date														
Dose	Route	Max Frequency	Time														
Indication		Pharm check	Dose														
			Route														
Prescriber's signature		Supply	Given by														
3. Drug (approved name)		Start date	Date														
Dose	Route	Max Frequency	Time														
Indication		Pharm check	Dose														
			Route														
Prescriber's signature		Supply	Given by														
4. Drug (approved name)		Start date	Date														
Dose	Route	Max Frequency	Time														
Indication		Pharm check	Dose														
			Route														
Prescriber's signature		Supply	Given by														
5. Drug (approved name)		Start date	Date														
Dose	Route	Max Frequency	Time														
Indication		Pharm check	Dose														
			Route														
Prescriber's signature		Supply	Given by														

CHECK PAGE 1 FOR ALLERGY STATUS

1. Where would you classify Mrs Red's symptoms on the New York Heart Association (NYHA) classification of heart failure symptoms?

**Class IV**

Inability to carry on any physical activity without discomfort. Symptoms of congestive cardiac failure are present even at rest. With any physical activity increased discomfort is experienced ('Severe' heart failure).

Mrs Red's consultant is considering starting her on:

**Sacubitril/valsartan 24/26 mg (Entresto®) bd**

and

**Dapagliflozin 10mg od**

2. Is this an appropriate prescription for Mrs Red's chronic heart failure?

NICE guidance recommends sacubitril/valsartan as an option if:

- New York Heart Association (NYHA) class II to IV symptoms and
- Left ventricular ejection fraction of 35% or less and
- Already taking a stable dose of angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor-blockers (ARBs)

Need to stop ramipril 36hrs before starting to prevent risk of ADRs e.g. angioedema from exposure to both ramipril and valsartan

NICE TA (Feb 2021) recommends dapagliflozin as an option to treat symptomatic chronic HFrEF as an add-on in people who are already taking optimised standard care based on an ACE inhibitor or ARB, or on sacubitril valsartan.

**Additional note:** NICE currently recommends above as "add-on" therapy whilst ESC recommend joint first-line with beta-blocker and MRA=> NICE due to update in 2024 and this likely to form new recommendation

3. 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
VTE assessment states thromboprophylaxis required and not prescribed	Ask Dr to prescribe e.g. dalteparin s/c 5000IU od, enoxaparin s/c 40mg od
Monitoring parameters	
Therapeutic	Toxic
Lack of VTE	RF, bleeding

Issue	Action required
Atorvastatin missing – on patient's drug history.	Ask doctor to prescribe (check not considered to stop/deprescribing in 90 year old)
Monitoring parameters	
Therapeutic	Toxic
Lack of CV events, lipid profile	LFTS, myopathy, CK

Issue	Action required
Dose and route not effective in severe acute heart failure	Advise change furosemide to IV (at max rate 4mg/min to prevent ototoxicity) and consider increased dose eg 80mg bd initially If no response consider 240mg iv infusion over 24 hrs If still no response, consider addition of metolazone (e.g. 2.5mg STAT/2.5mg od for 2-3 days – short term use)
Monitoring parameters	
Therapeutic	Toxic
Symptoms of heart failure (e.g. SOB), weight (aim 1kg/day loss), urine output (aim negative fluid balance)	BP, RF, U&Es (K+, Na+),

Issue	Action required
Bradycardia – pulse <45bpm	Stop digoxin and control AF with bisoprolol (bisoprolol also needed for secondary prevention of MI and CCF – if pulse continues to be low then consider reduction of bisoprolol dose as well)
Monitoring parameters	
Therapeutic	Toxic

Issue	Action required
Bisoprolol => Bradycardia => can make acute heart failure worse	Consider initial discontinuation until acute episode controlled then very slow uptitration of dose (start low, go slow). Aim for target dose (10mg OD) or the highest tolerated dose (discontinuation of digoxin to solve issue of bradycardia)
Monitoring parameters	
Therapeutic	Toxic

Issue	Action required
Need for anticoagulation as patient has AF and increased risk of stroke [CHA <sub>2</sub> DS <sub>2</sub> VAsc score =5]	Request doctor to prescribe DOAC if appropriate (review ORBIT) before discharge (see above – whilst on LMWt heparin e.g. dalteparin, this provides stroke prevention in AF as well – stop when DOAC started)
Monitoring parameters	
Therapeutic	Toxic
Lack of stroke	Bleeding, RF, COUNSELLING

Issue	Action required
Lifestyle counselling	Counsel smoking cessation, diet (low Na=, low fat, 5 a day), exercise (if able – mobility issue)
Monitoring parameters	
Therapeutic	Toxic

Issue	Action required
Counselling and education on drugs	All new drugs – counsel on indication, dose, frequency & side-effects DETAILS FOR INDIVIDUAL DRUGS

	AVOID OTC: NSAIDs, sodium containing antacids DETAILS of anticoagulant counselling
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4. For each of the drugs that is prescribed for Mrs Red, complete the following tables to detail the indication and the therapeutic and toxic monitoring parameters:

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

<b>Drug: Furosemide</b>	<b>Indication:</b> Heart failure
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
Symptoms of heart failure (e.g. SOB), weight (aim 1kg/day loss), urine output (aim negative fluid balance)	BP, RF, U&Es (K+, Na+),

<b>Drug: Ramipril</b>	<b>Indication:</b> 2° prevention MI/heart failure
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
↓CV events, improvement long-term in symptoms of heart failure	BP, RF, K+, dry cough

<b>Drug: Atorvastatin</b>	<b>Indication:</b> 2° prevention MI
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
↓CV events, lipid profile	LFTs, myopathy, CK

<b>Drug: Bisoprolol</b>	<b>Indication:</b> 2° prevention MI, heart failure, AF
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
↓CV events, pulse (aim for control down to 60bpm), improvement long-term in symptoms of heart failure	BP, pulse

<b>Drug: Digoxin</b>	<b>Indication:</b> AF, HF (add on therapy)
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>
Apex pulse	Apex pulse, RF, K+, Ca <sup>2+</sup>

<b>Drug: Spironolactone</b>	<b>Indication:</b> Heart failure
<b>Monitoring parameters</b>	
<b>Therapeutic</b>	<b>Toxic</b>

Improvement long-term in symptoms of heart failure	BP, RF, K <sup>+</sup> , S/E: e.g. gynaecomastia
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5. What other drug options are available to add to Mrs Red's current therapy should her heart failure continue to worsen?

Ivabradine (NB: must be in sinus rhythm – not appropriate for Mrs Red) – useful as does not drop BP.

Hydralazine + nitrates – evidence for use pre-dates ACEIs but occasionally useful if other routine treatment not tolerated/appropriate.