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module 238

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Welcome to the two hundred and thirty eighth module in the *Pharmacy Magazine* Continuing Professional Development Programme, which looks at the management of heart failure.

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forthismodule

GOAL

To update community pharmacists on medicines optimisation for patients with chronic heart failure.

OBJECTIVES:

After studying this module you should be able to:

- Describe the classes, signs and symptoms of chronic heart failure
- Discuss optimised therapies and classes of medicines used to manage chronic heart failure
- Plan and conduct a medicines optimisation consultation with a patient who has heart failure.

First in professional development **pharmacy magazine**

the continuing professional development programme

CPD

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Heart failure

Contributing author: Dr Rani Khatib, consultant pharmacist in cardiology & cardiovascular clinical research, Leeds Teaching Hospitals Trust

Introduction

A typical community pharmacy will dispense medicines for around 80 patients with heart failure. With the average age at diagnosis 76 years, most of these patients will also be on medication for other chronic conditions.

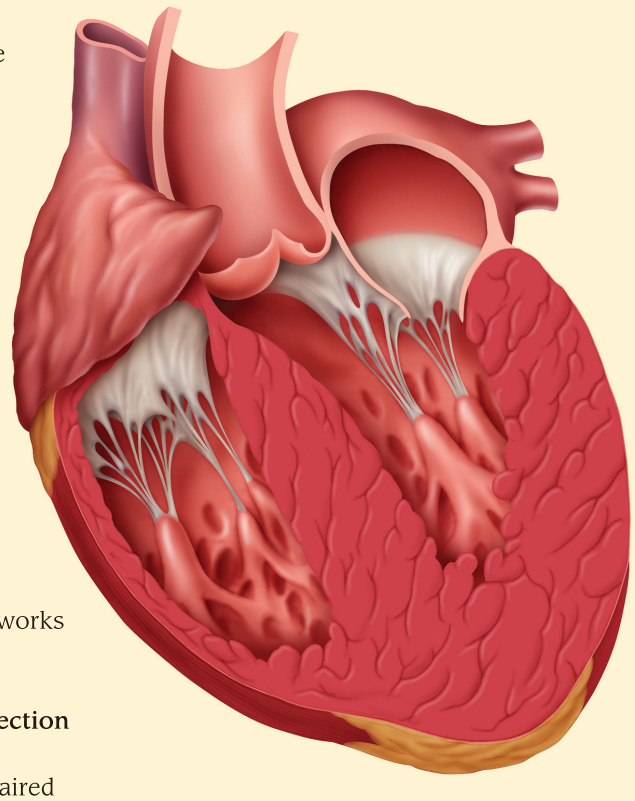
Any cardiovascular disease can potentially lead to heart failure, which shows itself as clinical signs such as breathlessness, fatigue and fluid retention. Although heart failure is difficult to define, it is easy to recognise in clinical practice. There are two main types of heart failure:

- **Left ventricular systolic dysfunction**

This is when the left ventricle that pumps the blood around the body works less well. This module will focus on this type of heart failure.

- **Heart failure with preserved ejection fraction**

This is usually associated with impaired left ventricular relaxation. There is normal or preserved left ventricular pumping.



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This module provides a summary of current management of heart failure based on the most recent NICE guideline: 'Chronic heart failure: management of chronic heart failure in adults in primary and secondary care (CG108)', issued in August 2010, and NICE technology appraisal TA267 – 'Ivabradine for treating chronic heart failure', which was issued in 2012.

On average, a GP will look after 30 patients with heart failure and will suspect the condition in a further 10 patients each year. Heart failure is estimated to account for one million inpatient bed days (equivalent to 2 per cent of all NHS inpatient bed days) and 5 per cent of all emergency medical admissions to hospital. The total cost of heart failure to the NHS may be over £700m per year, or around 1.8 per cent of the total NHS budget. In addition to the NHS costs, the disease places a significant burden on other agencies (e.g. social services).

A patient's quality of life is affected by the physical limitation imposed by the disease and the emotional problems that arise as a result. The challenge is combined with managing other co-morbidities as well as dealing with polypharmacy and potential side-effects from multi-drug therapy.

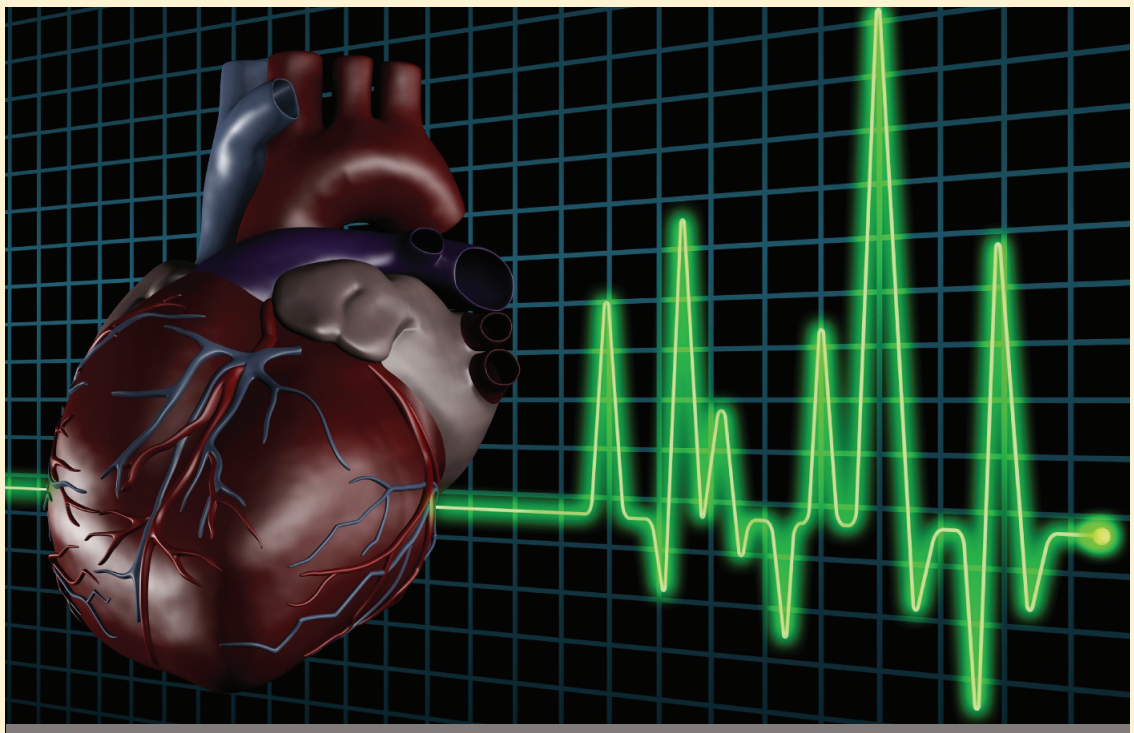
Causes, pathophysiology and prognosis

The commonest causes for functional deterioration of the heart include:

- Coronary artery disease (myocardial infarction, ischaemia)
- Hypertension
- Cardiomyopathy and congenital heart disease
- Arrhythmias (tachycardia and bradycardia)
- Alcohol
- Medication (including calcium antagonists, anti-arrhythmics, cytotoxic drugs).

Chronic heart failure has two major components: an abnormality of the heart itself and the response of the body to the diminished ability of the heart to function as a pump. (Reduced function of the heart as a pump is usually caused by an abnormality of the muscle, rhythm, valves or pericardium.)

The signs and symptoms of chronic heart failure are mainly as a consequence of long-term responses in the body to these two components. For example, salt and water retention is the result of abnormal function of the kidney, while the shortness of breath and fatigue are related to chronic changes in the skeletal muscle.



Management of heart failure causes a considerable drain on NHS resources

Chronic heart failure is a dynamic situation rather than a steady-state condition and, as heart function changes, many patients develop exacerbations. Many clinical features have been shown to have prognostic significance in patients. For example, severity of symptoms, exercise capacity, haemodynamics, plasma hormone concentrations such as noradrenaline, renin activity and B-type natriuretic peptide (BNP) are all indicative in terms of prognosis.

Signs and symptoms

The classical symptoms of heart failure are dyspnoea, ankle oedema and fatigue. Dyspnoea may be due to respiratory disease (particularly COPD) and therefore cannot be the only criterion for the diagnosis of heart failure. Orthopnoea (shortness of breath when lying flat) and paroxysmal nocturnal dyspnoea (a sensation of shortness of breath that wakes the patient after one to two hours of sleep) are more likely to be related to heart failure.

The clinical signs reflect the consequence of heart failure. For example, left ventricular dilatation is reflected in signs of cardiomegaly; fluid retention is reflected in signs of congestion (ankle oedema, jugular venous distension, pulmonary crackles); and low cardiac output in signs of poor perfusion.

Dyspnoea

Perhaps the most prominent symptom of heart failure is breathlessness or dyspnoea. The patient is aware of the increased respiratory effort as an uncomfortable sensation of not being able to get enough air.

Chronic fatigue

The second cardinal feature of heart failure is chronic fatigue. Fatigue is a non-specific symptom which, in the past, had been attributed to the low cardiac output, but the mechanism is now thought to be far more complex and poorly understood. It is also likely that abnormalities of the skeletal muscle and biochemistry contribute to poor exercise tolerance and chronic fatigue.

Circulatory congestion

The third sign and symptom of chronic heart failure is circulatory congestion, which shows itself as the presence of neck vein distension.

Table 1: The NYHA classification of the stages of heart failure

Stages of heart failure based on structure and damage to heart muscle	NYHA functional classification (based on symptoms and physical activity)
Stage A At high risk of developing heart failure. No identified structural or functional abnormality; no signs or symptoms	**Class 1** No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitations or dyspnoea
Stage B Developed structural heart disease that is strongly associated with the development of heart failure, but without signs and symptoms	**Class II** Slight limitation of physical activity. Comfortable at rest but ordinary physical activity results in fatigue, palpitations or dyspnoea
Stage C Symptomatic heart failure associated with underlying structural heart disease	**Class III** Marked limitation of physical activity. Comfortable at rest but less than ordinary physical activity results in fatigue, palpitations and dyspnoea
Stage D Advanced structural heart disease and marked symptoms of heart failure at rest despite maximal medical therapy	**Class IV** Unable to carry out any physical activity without discomfort. Symptoms at rest. If any physical activity is undertaken, discomfort is increased

A third heart sound and peripheral oedema are highly characteristic of the heart failure syndrome.

Heart failure classification

The American College of Cardiology and American Heart Association classify heart failure based on structural changes and symptoms. The New York Heart Association (NYHA) classification is used in determining the inclusion and exclusion of patients in heart failure clinical trials as well as routine diagnosis and management (see Table 1).

Following a cardiac examination to get an accurate evaluation of the heart failure, further clinical tests will be considered.

Routine laboratory tests include:

- **Chest x-ray**

Although a chest x-ray cannot be used on its own to diagnose heart failure, it is important to help exclude other causes of shortness of breath and to support a possible diagnosis of heart failure. It is mainly useful for showing the magnitude of the heart enlargement (cardiomegaly).

- **Echocardiography**

This is the single most effective tool in confirming diagnosis of heart failure. It provides information on wall thickness, valve action and ejection fraction estimated to reflect the ventricular functioning of the heart.

- **Electrocardiogram**

Electrocardiogram (ECG) is useful once a diagnosis of heart failure has been confirmed (if it has not been performed already) as it may help determine the underlying cause. The specificity of an abnormal ECG for heart failure is relatively poor, although patients with heart failure may show abnormalities in the Q wave, T wave and ST region.

- **Biochemistry**

Investigations would usually include renal function (urea and creatinine) and electrolytes (particularly serum sodium and potassium). The investigations are used to exclude other diagnoses and also include liver function and thyroid function tests, fasting lipids and glucose. They are also useful for baseline function prior to starting therapy and also to monitor disease progression.

- **Natriuretic peptides (mainly B-type natriuretic peptide)**

Secreted from the ventricles in response to volume expansion, B-type natriuretic peptide (BNP) causes an increase in renal excretion of sodium and water, and vasodilation.

Low or normal BNP levels can be used to rule out a diagnosis of heart failure.

Raised levels are suggestive of heart failure but are non-specific, so should be interpreted alongside other investigations before a diagnosis is reached.

BNP levels can be used to assess cardiac function – the higher the BNP levels, the poorer the prognosis.

- **Haematological tests**

These are used mainly to exclude anaemia and any other causes.

Definition of heart failure

Guidelines from the European Society of Cardiology define heart failure as a clinical syndrome in which patients have the following features:

- **Symptoms such as breathlessness at rest or with exercise, fatigue, tiredness, ankle swelling**
- **Signs such as tachycardia, tachypnoea (rapid breathing), pulmonary rales (crackles), pleural effusion, raised jugular venous pressure, peripheral oedema, hepatomegaly**
- **Objective evidence of structural or functional abnormality of the heart at rest (cardiomegaly, third heart sound, cardiac murmurs, abnormality of the heart on echocardiography, raised natriuretic peptide concentration).**

Pharmacological treatment

There is a wealth of evidence from a large number of high-quality clinical trials to support the use of pharmacological therapy in all stages of heart failure with left ventricular systolic dysfunction, from asymptomatic left ventricular systolic dysfunction to severe heart failure.

Pharmacological treatment can improve the quality of life by:

- Improving symptoms or slowing their deterioration
- Reducing admissions and re-admissions to hospital
- Reducing mortality.

Community pharmacists are well placed to support patients to derive the maximum benefits from these evidence-based therapies by ensuring that:

- Correct evidence-based medicines are prescribed
- Doses are up-titrated to the maximum tolerated or target doses
- Patients are counselled on monitoring the effectiveness of their medicines
- Patients are counselled on side-effects and how to monitor and reduce them
- Patients are supported to fit their medicines around their daily routine

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- Patients are empowered to self-manage their condition.

Pharmacists should also ensure they are able to answer any concerns a patient may have.

Although the National Heart Failure Audit (April 2010-March 2011) confirmed that there had been an improvement in the use of key treatments, such as ACE inhibitors and beta-blockers, the use of beta-blockers in particular remains far from optimal. While it was clearly demonstrated that the number of recommended disease modifying drugs a patient was prescribed on discharge from hospital had a significant impact on survival, not all patients with heart failure receive all the medicines. This is particularly an issue in patients discharged from non-cardiology wards.

Pharmacists can screen therapies prescribed for patients with heart failure post-discharge and target those who were admitted to non-cardiology wards.

All patients with heart failure should be prescribed an ACEI and a beta-blocker licensed for use in heart failure, unless contraindicated. The doses should be up-titrated to the target dose or maximum tolerated dose. Diuretics are prescribed to reduce symptoms of fluid overload. The dose and combination of diuretics are adjusted according to the patient's fluid status and symptoms. Patients are usually empowered by providing them with a self-management plan that clearly states when to increase and decrease their diuretic doses.

It is important to emphasise that aldosterone antagonists are usually prescribed at lower doses and mainly used for their 'aldosterone antagonist' effect, which is associated with lower mortality in patients with heart failure, rather than their diuretic effect, which is very minimal at lower doses.

It is important to be clear about the plan that was agreed with the patient in order not to provide confusing or contradictory information. Liaising with the multidisciplinary team looking after the patient is therefore essential. This includes the heart failure nurses, cardiology pharmacists and GPs.

Reflection exercise 1

Review the recent BNF, the NICE heart failure guidance and 'chronic heart failure – ivabradine technology appraisal' at www.nice.org.uk. Familiarise yourself with the pharmacological therapies and dose optimisation required for each class. How can you monitor and optimise medication for the next 10 patients you see with chronic heart failure?

Table 2: NICE recommendations for diuretics

Drug	Initial dose	Maximum dose
Loop diuretics		
Furosemide	20-40mg	250-500mg
Bumetanide	0.5-1mg	5-10mg
Thiazide diuretics		
Bendroflumethiazide	2.5mg	5mg
Indapamide	2.5mg	2.5mg
Metolazone*	2.5mg	10mg
*(withdrawn from the market, but available from 'special order' manufacturers or specialist-importing companies)		
Potassium-sparing diuretics	**With ACE (without ACE)**	**With ACE (without ACE)**
Amiloride	2.5mg (5mg)	20mg (40mg)
Triamterene	25mg (50mg)	100mg (200mg)

Diuretic therapy

Improving the management of fluid retention can minimise symptoms of breathlessness due to congestion. Loop diuretics, such as furosemide or bumetanide, are the main agents used. Thiazide or thiazide-like diuretics are less often used on their own in chronic heart failure as they tend to produce weak diuresis and are less effective when glomerular filtration rates are less than 30mL/min.

Metolazone, a thiazide-like diuretic, has been withdrawn from the UK market, so the advice from the British Society for Heart Failure is to use bendroflumethiazide instead at a dose of 2.5mg. Higher doses (5mg or more) might be necessary in patients with CrCl < 30mL/min. The frequency of dosing may range from daily to once a week when used as part of augmented diuresis (combining a loop diuretic with a thiazide or thiazide-like drug).

Electrolyte balance, particularly potassium, should be monitored on a regular basis for all patients with chronic heart failure on diuretic therapy. Renal function should also be monitored regularly to avoid worsening renal impairment or acute renal failure.

During episodes of heart failure exacerbation (or decompensation), gut oedema may reduce absorption of tablets and patients may require intravenous therapy in order to ensure 100 per cent bioavailability and clinical effect. This will require admission to hospital, a specialist heart failure outpatient setting for treatment, or special IV community cardiac services.

Diuretics improve symptoms of breathlessness and exercise performance in patients with heart failure. The NICE guideline recommends using diuretics routinely for the relief of congestive symptoms and fluid retention in heart failure, titrated (up and down) according to need following the initiation of subsequent therapies. The daily and maximum dose of diuretics recommended by NICE is shown in Table 2.

Activity

Identify if your area has a community cardiac service.
- **Which healthcare professionals are part of the service?**
- **How do they accept referrals?**
- **Do they offer an IV service?**
- **What help and support do they need from community pharmacy?**

ACE inhibitors

ACE inhibitors improve survival in heart failure patients with left ventricular systolic dysfunction. The benefit is significant in patients with more severe left ventricular systolic dysfunction or more severe symptoms although there is a benefit in all patients in all the NYHA classes.

There is also good evidence to suggest that ACE inhibitors reduce exacerbations of heart failure and the risk of hospitalisation from the disease.

Many of the pathophysiological abnormalities that characterise heart failure may be reversed with ACE inhibitors. Their main effect is to block the conversion of angiotensin I to angiotensin II – a very potent vasoconstrictor that stimulates the release of aldosterone, resulting in sodium and water retention, and it has a direct effect on the heart muscle causing enlargement of the heart (remodelling).

ACE inhibitors are therefore arterial and venous vasodilators that cause unloading of the heart. As a result, left ventricular mass and cavity size is reduced. Left ventricular systolic function is improved. Skeletal muscle blood flow is increased, which in turn improves exercise capacity in patients.

ACE inhibitors affect the renal system via neurohormonal pathways, preventing further deterioration in cardiac function and worsening of heart failure. They also reduce symptoms of fatigue and breathlessness and improve exercise capacity. ACE inhibitors should be initiated at a low dose and titrated upwards at short intervals (e.g. every two weeks) until the optimal tolerated or target dose is achieved.

Practice activity

- **Contact your hospital or community heart failure service to identify what local guidelines they have about the up-titration of ACEIs**
- **Identify heart failure patients on your PMR. What combination of medicines should such patients be on?**
- **Are these patients on optimal doses of ACEIs and beta-blockers? If not, why? Do they have a plan agreed with the heart failure service? Do they have low BP? Do they have low heart rate? If no clear contraindication, should their doses be increased?**

Table 3: Starting doses and target doses of some commonly used ACE inhibitors in heart failure

	Starting dose (mg)	Target dose (mg)
Enalapril	2.5mg *bd*	10-20mg *bd*
Lisinopril	2.5-5mg *od*	20-35mg *od*
Ramipril	1.25-2.5mg *od*	10mg *od*

Angiotensin II receptor blockers

Angiotensin II receptor blockers (ARB) act by reducing renin-angiotensin activity through inhibiting the angiotensin II receptor site. These agents are better tolerated than ACE inhibitors but the evidence for their use in heart failure is much weaker than that for ACE inhibitors. ARBs should be reserved for patients who are truly intolerant to ACE inhibitors and not seen as "ACEI without the cough".

The addition of an ARB can also be considered for symptomatic chronic heart failure patients who are already taking conventional therapy.

Similar to ACE inhibitors, ARBs require careful renal function monitoring but, unlike ACE inhibitors, they do not block the breakdown of bradykinin and therefore do not show signs of dry persistent cough as a side-effect.

The CHARM-Alternative clinical trial investigated the use of candesartan in chronic heart failure patients intolerant of ACEI and demonstrated that hospitalisation rates as well as all-cause mortality were reduced significantly. The trial showed that ARBs may be added to the maximum tolerated dose of ACE inhibitor plus beta-blocker if the patient is still symptomatic, under specialist supervision. The combination reduced cardiovascular death or hospitalisation for heart failure with no effect on all-cause mortality. That said, this approach is not used much in clinical practice due to the increased risk of hyperkalaemia and renal failure.

Beta-blockers

Beta-blockers are started on the lowest dose (e.g. bisoprolol 1.25mg daily) and gradually increased while monitoring heart rate, blood pressure and clinical status. Doses should be up-titrated at not less than two-weekly intervals, aiming for the target dose or the highest tolerated dose.

This slow up-titration (NICE calls it "start slow, go slow") is due to the fact that heart failure symptoms may be exacerbated during the initial period of therapy and patients need to be fully informed of the potential for this in order to minimise anxiety. These symptoms, which may include an increase in breathlessness and ankle oedema, will subside with time.

Some patients may require adjustment in the diuretic dose in order to control these symptoms. NHS Clinical Knowledge Summaries advises that "temporary deterioration occurs in 20-30 per cent of people during the titration stage". The effects of beta-blockers may take some time to become apparent and Clinical Knowledge Summaries advises that "symptoms may improve slowly after starting treatment (over three to six months)".

Meta analysis of clinical trials with beta-blockers (bisoprolol and carvedilol) in heart failure has shown significant reduction in heart

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Beta-blocker doses should be up-titrated slowly in heart failure

Reflection exercise 2

Contact your GP surgery, community cardiac services team or local hospital, and identify your local heart failure clinics. How do they operate and what policies are in place for heart failure drug therapy review and optimisation?

rate and therefore survival benefits for the disease. The SENIORS trial, where treatment of heart failure with nebivolol in the elderly (70 years) was evaluated, also was shown to reduce morbidity.

NICE guidelines recommend that both ACE inhibitors and beta-blockers licensed for the management of heart failure should be offered to all patients with left ventricular systolic dysfunction. These patients include older adults and patients with peripheral vascular disease, erectile dysfunction, diabetes mellitus, interstitial pulmonary disease and chronic obstructive pulmonary disease (COPD) without reversibility.

According to the NICE guideline, a patient who may already be on a beta-blocker for a co-morbidity, such as angina or hypertension, should be switched to a beta-blocker that is licensed for the management of heart failure.

Although NICE clearly recommends the use of beta-blockers there is sometimes reluctance among GPs to prescribe them because of the history of side-effects. Pharmacists can reinforce not only the need for beta-blockers but also the gradual increase in dose and can offer practical support for patients.

Aldosterone receptor antagonists

Spironolactone and eplerenone act by blocking aldosterone, thereby reducing water and salt retention. Spironolactone, added to conventional therapy, reduces both mortality and frequency of hospitalisation. The NICE guidance recommends that a licensed aldosterone antagonist may be added to the treatment regimen in patients with class III or IV heart failure or those who have suffered a myocardial infarction, if there are still symptoms despite optimal therapy with an ACE inhibitor plus beta-blocker.

Reflection exercise 3

What information does your local hospital and heart failure service provide to patients? Visit the British Heart Foundation website (www.bhf.org.uk) and identify what support and information is available for patients with chronic heart failure.

Since the publication of the NICE guidelines, the EMPHASIS-HF trial (2011) has shown benefit for the use of eplerenone in those with mild heart failure (mainly NYHA classification II) despite being on standard therapy.

Patients on spironolactone should be monitored for signs of renal dysfunction and gynaecomastia. Hyperkalaemia is also carefully monitored, in particular in combination therapy with ACE inhibitors.

Eplerenone is a newer aldosterone antagonist with a better side-effect profile as it is less likely to cause gynaecomastia. Other monitoring requirements are the same as for spironolactone. Eplerenone is licensed in post-myocardial infarction patients with heart failure and as an adjunct in chronic mild heart failure with left ventricular ejection fraction ≤30 per cent.

Practice activity

Consider the drug interactions for spironolactone and eplerenone. What advice would you give to patients taking them?

Alcohol consumption should be discussed with heart failure patients

Ivabradine

Ivabradine selectively and specifically inhibits the cardiac pacemaker leading to a reduction in heart rate. According to the NICE 2012 technology appraisal, ivabradine is an option for treating mild to severe stable chronic heart failure, in combination with standard therapy – beta-blockers, an ACEI, and an aldosterone antagonist (unless contraindicated or not tolerated). Patients should fulfil the following additional criteria: a left ventricular ejection fraction of ≤35 per cent and are in sinus rhythm with a heart rate of ≥75 beats per minute.

Ivabradine should be initiated by a heart failure specialist after four weeks of stable optimal standard therapy. Patients should be monitored for bradycardia and heart rate at rest should not be allowed to fall below 50 beats per minute. If patients develop visual side-effects described as transient enhanced brightness in a limited area of the visual field (phosphenes), then caution should be exercised when driving or using machines. Phosphenes were generally reported to be of mild to moderate intensity and the majority resolved during treatment.

Practice activity

What important drug and food interactions do you need to check for when clinically validating a prescription for ivabradine?

Cardiac glycosides

Digoxin may be used in patients with heart failure who are still symptomatic despite optimised conventional therapy. Trials with digoxin in heart failure patients have demonstrated no survival benefits but the rate of hospitalisation for worsening heart failure was reduced.

Digoxin is usually prescribed at low doses without loading for stable patients in sinus rhythm. Care should be taken in elderly patients who should be monitored for signs of toxicity such as nausea, confusion, disturbance of vision and dysrhythmias.

NICE guidelines for other drugs

The decision to prescribe or continue amiodarone in patients with heart failure should be reviewed regularly. Patients on amiodarone should have a routine six-monthly clinical review, including liver and thyroid function test and an assessment of side-effects.

Anticoagulation should be considered in patients with heart failure in sinus rhythm if there is a history of thromboembolism. Low dose aspirin should be prescribed if heart failure patients have atherosclerotic arterial disease such as coronary heart disease.

Hydralazine plus isosorbide dinitrate can be used in those who cannot tolerate ACEI or ARB, or as an add-on to standard treatment.

Lifestyle advice for patients

The following lifestyle advice should be given to all patients with chronic heart failure:

- Strong recommendation to stop smoking and referral to a smoking cessation clinic
- Alcohol consumption should be discussed and those with alcohol-related heart failure should abstain from drinking
- Annual influenza vaccination
- Once-only vaccination against pneumococcal disease
- A supervised group exercise-based rehabilitation programme
- Salt restriction – patients should avoid a salt intake of greater than 6g per day (2.5g sodium)
- Regular monitoring of weight and an understanding of the common signs and symptoms of worsening heart failure (e.g. increased shortness of breath with a decrease in exercise tolerance, weight gain of more than 2kg in two days).

The NICE Quality Standards for chronic heart failure state that people with stable chronic heart failure should receive a clinical assessment at least every six months, including a review of medication and measurement of renal function.

Reflection exercise 4

You are interested in providing a service to help with the optimisation of medication in patients with chronic heart failure. How would you establish the need for such a service in your pharmacy?

Contact your hospital and identify any members of the pharmacy team who are part of cardiology services. Discuss this with the community cardiac services team.

Points to bear in mind with MURs on heart failure patients

- **Use your PMR to review the history of the medicines prescribed and dose changes**
- **Ask the patient/carer how they have been getting on with the medicines when the doses were increased**
- **Establish if there is an agreed management plan with a heart failure nurse/pharmacist**
- **Assess patient adherence and find out if they have any concerns about their medicines**
- **Reconcile medicines after discharge and check that the patient is clear about all changes to their medicines and that they have no concerns**
- **Check for signs of dehydration and whether any increase in diuretic doses was temporary and not long-term (especially augmented diuresis)**
- **Look out for medicines with a high sodium content**
- **Check if the patient is using any OTC herbal remedies/supplements and if so whether suitable for use in heart failure**
- **Give a reminder on lifestyle advice**
- **Make sure your signposting list includes information on local exercise programmes for people with heart failure (may be provided as part of cardiac rehab)**
- **Watch out for worsening symptoms – NHS Clinical Knowledge Summaries advises that patients should "seek medical advice if they experience a rapid deterioration in symptoms, such as tiredness, fatigue or breathlessness. Worsening symptoms can usually be controlled by adjusting other medications, and beta-blockers should never be stopped without consulting a healthcare professional".**

Further information and support

British Heart Foundation
Heart Help Line: 0300 330 3311
Web: www.bhf.org.uk

Heart UK
Helpline: 0845 450 5988
Web: www.heartuk.org.uk

British Cardiac Patients Association
Helpline: 01223 846845
Web: www.bcpa.co.uk

This module is also online at pharmacymagazine.co.uk

HEART FAILURE

assessment questions

1. Patients with heart failure should be advised to:
a. Use potassium-based salt instead of sodium salt
b. Avoid a salt intake of greater than 6g per day
c. Increase their intake of food with a naturally high potassium content
d. Limit fluid intake to 1L a day

2. Which is TRUE? When advising patients to recognise signs of deterioration:
a. They should weigh themselves every other day
b. Weight gain of more than 2kg in two days requires no action
c. They should be made aware of the signs and symptoms of deterioration
d. They should never change the dose of their diuretics on their own

3. Which statement is FALSE?
a. Current evidence shows that an aldosterone antagonist can be initiated in patients with a NYHA II
b. ARBs may be used in patients intolerant to ACE inhibitors
c. Aldosterone antagonists have been shown to reduce mortality and hospitalisation
d. ACE inhibitors should be titrated at intervals of two to three months in order to avoid worsening of heart failure symptoms

4. Which is the least likely to be present in patients with chronic heart failure?
a. Fatigue
b. Breathlessness
c. Ankle oedema
d. Muscular chest pain

5. Which drug has no effect in improving survival but may be useful in symptomatic patients who are optimised on conventional therapies?
a. Ramipril
b. Digoxin
c. Candesartan
d. Bisoprolol

6. Which side-effect is more likely to be associated with spironolactone than with eplerenone?
a. Hyperkalaemia
b. Hypokalaemia
c. Gynaecomastia
d. Diarrhoea

7. Which of the following is most likely to cause rapid electrolyte imbalance?
a. Bendroflumethiazide
b. Furosemide
c. Furosemide and metolazone
d. Ramipril

8. Which statement is FALSE?
a. Bisoprolol, carvedilol and nebivolol are the only beta-blockers licensed for heart failure
b. A stable patient taking atenolol for angina who then develops heart failure should stay on the same beta-blocker
c. Temporary deterioration in heart failure symptoms occurs in up to one in three patients when a beta-blocker is introduced
d. Treatment with a beta-blocker may take six months for the full improvement to be seen

CPD record

Pharmacy Magazine CPD
August 2015

Use this form to record your learning and action points from this module on Heart Failure or record on your personal learning log at pharmacymagazine.co.uk. Any training, learning or development activities that you undertake for CPD can also be recorded as evidence as part of your RPS Faculty practice-based portfolio when preparing for Faculty membership. So start your RPS Faculty journey today by accessing the portfolio and tools at www.rpharms.com/Faculty

Activity completed. (Describe what you did to increase your learning. Be specific)
(ACT)

Date: Time taken to complete activity:

What did I learn that was new in terms of developing my skills, knowledge and behaviours? Have my learning objectives been met?*
(EVALUATE)

How have I put this into practice? (Give an example of how you applied your learning). Why did it benefit my practice? (How did your learning affect outcomes?)
(EVALUATE)

Do I need to learn anything else in this area? (List your learning action points. How do you intend to meet these action points?)
(REFLECT & PLAN)

You can also record in your personal learning log at pharmacymagazine.co.uk

*** If as a result of completing your evaluation you have identified another new learning objective, start a new cycle. This will enable you to start at Reflect and then go on to Plan, Act and Evaluate. This form can be photocopied to avoid having to cut this page out of the module. You can also complete the module at www.pharmacymagazine.co.uk and record on your personal learning log**

ENTER YOUR ANSWERS HERE

Please mark your answers on the sheet below by placing a cross in the box next to the correct answer. Only mark one box for each question. Once you have completed the answer sheet in ink, return it to the address below together with your payment of £3.75. Clear photocopies are acceptable. **You may need to consult other information sources to answer the questions.**

1.	a. ☐	2.	a. ☐	3.	a. ☐	4.	a. ☐	5.	a. ☐	6.	a. ☐	7.	a. ☐	8.	a. ☐
	b. ☐		b. ☐		b. ☐		b. ☐		b. ☐		b. ☐		b. ☐		b. ☐
	c. ☐		c. ☐		c. ☐		c. ☐		c. ☐		c. ☐		c. ☐		c. ☐
	d. ☐		d. ☐		d. ☐		d. ☐		d. ☐		d. ☐		d. ☐		d. ☐

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Processing of answers
Completed answer sheets should be sent to Precision Marketing Group, Precision House, Bury Road, Beyton, Bury St Edmunds IP30 9PP (tel: 01284 718912; fax: 01284 718920; email: cpd@precisionmarketing group.co.uk), together with credit/debit card/cheque details to cover administration costs. This assessment will be marked and you will be notified of your result and sent a copy of the correct answers. The assessors' decision is final and **no correspondence** will be entered into.

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