

# The benefit of adding a pharmacist to the heart failure team

By JANET LOCK, MSc, MRPHARMS

This article describes the establishment of a specialist clinic for heart failure patients that includes a pharmacist as a key member of the multidisciplinary team

**H**ear failure is a complex clinical syndrome caused by impaired left ventricular function, which leads to a reduction in cardiac output. This results in the heart failing to pump blood at a rate sufficient for the body's metabolic requirements. Patients typically exhibit ankle swelling, fatigue and breathlessness at rest or upon exertion. They may also complain of nausea, anorexia and cachexia. Most causes of heart failure in the United Kingdom arise from coronary heart disease (CHD).<sup>1</sup>

The incidence of heart failure is increasing, despite a decline in overall mortality from CHD. This is probably associated with an increase in the ageing population and improved survival rates in patients with acute myocardial infarction who subsequently develop left ventricular dysfunction (LVD). Prevalence of heart failure is estimated to be between three and 20 cases per 1,000, with

one new case per 1,000 per year. Incidence increases with age.<sup>1</sup>

Heart failure accounts for approximately 5 per cent of all medical admissions to hospital. Patients with heart failure are frequently readmitted, and readmission rates can be as high as 50 per cent over three months. Approximately half of these admissions are preventable and there is evidence that appropriate diagnosis, treatment and support can improve survival rates and quality of life.<sup>1</sup> Up to 40 per cent of readmissions are the result of non-compliance with drug therapy or failure to make suitable lifestyle changes. Inadequate drug treatment and doses account for 12 per cent of readmissions.<sup>2</sup>

A multidisciplinary approach to the management of heart failure has been shown to improve patient outcomes.<sup>3</sup> A recently published trial<sup>4</sup> looking at education and support to prevent readmissions concluded that a multidisciplinary approach substantially reduces adverse clinical outcomes and cost. The value of adding a pharmacist to a

multidisciplinary team has been demonstrated in the United States.<sup>5</sup> However, there is little published information and research about the value of pharmacists in such a role within the UK.

## CHANGES IN HEALTH CARE

**R**ecent changes to the structure of the National Health Service have led to a shift in emphasis in the delivery of health care within the UK. The traditional boundaries between different health care professionals are being redefined, with a multidisciplinary team approach to patient-focused care increasingly being adopted. This "re-engineering" process creates opportunities for pharmacists to expand and develop their role within such teams, taking greater responsibility for pharmaceutical care and increasing their overall contribution as patient-focused health care providers.

The publication of the National Service Framework for CHD<sup>1</sup> provided the impetus to establish and develop a heart failure service

*Ms Lock is medical directorate pharmacist at North Hampshire Hospitals NHS Trust, Basingstoke*

at the North Hampshire Hospital. Additionally, there were local financial pressures to reduce the number of hospital admissions and the length of stay for patients with heart failure. These pressures contributed to the development of a specialist heart failure clinic.

A further factor contributing to the need for a specialist clinic was the limited time doctors had available for discussing disease management and treatment with heart failure patients attending outpatient clinics. An additional problem was that patients were being seen by different doctors during follow-up appointments and they were not being offered any contact or support in the period between appointments. The treatments prescribed also varied depending on the doctor.

A specialist heart failure clinic was set up in December 2000 and its aims were to:

- Confirm or refute a diagnosis of heart failure
- Increase survival and improve symptom control
- Educate, support and advise patients and carers
- Standardise treatment of patients
- Measure the clinical effectiveness of treatment
- Reduce patient admissions to hospital
- Optimise the interface between primary and secondary care

#### THE HEART FAILURE TEAM

The clinic is staffed by the heart failure team, which consists of two doctors, a pharmacist, a clinical nurse specialist (CNS) and a cardiac technician. The team also has close links with a dietitian, a Macmillan nurse, the on site hospice, the social work department and the cardiac rehabilitation team.

Patients requiring the service are referred from general practitioners or via a ward referral from a junior doctor.

The first clinic appointment requires the patient to undergo an electrocardiogram, lung function tests and an echocardiogram. Patients are requested to have a chest X-ray performed a week before attending the clinic so that results are available at the first appointment. The CNS takes a blood sample to check full blood count, urea and electrolytes, liver function, blood glucose and cholesterol levels, and thyroid function.

Nine months ago, a brain natriuretic peptide (BNP) near-patient test kit was purchased, and all patients have the BNP level checked (levels of BNP are elevated in patients with LVD). Blood pressure, height and weight are also recorded. The patient is subsequently examined by a doctor to determine a diagnosis. Once a diagnosis of LVD has been made, the patient is referred to the pharmacist and the CNS with a treatment plan (written by the doctor) to optimise med-

**Table 1: Admission to North Hampshire Hospital for patients with heart failure**

	Pre-clinic		Post-clinic
	1999	2000	2001
Number of admissions	212	203	160
Number of readmissions	24	26	10
Maximum length of stay (days)	82	62	211
Minimum length of stay (days)	0	0	0
Average length of stay (days)	11	10	14
Average length of stay (days) for patients staying less than 50 days	Unknown	9.3	9.2

*A general increase in the number of long-term social care patients waiting for nursing homes has been observed. Removing these patients (ie, those whose stays are 50 days or more) illustrates that the mean length of stay has not altered before or after establishment of the clinic*

ication. The pharmacist and CNS work closely together, and their aims are to:

- Provide disease management that is patient-focused
- Empower the patient to take more control of their disease, thereby encouraging self-management
- Provide education, support and counselling on disease state management to patients and their carers
- Manage compliance with medication and with lifestyle changes
- Initiate and titrate, under agreed protocols, the medication necessary for the treatment of heart failure and monitor response to that medication (treatment is modified, where appropriate, according to patient signs and symptoms)
- Monitor for side effects of medication
- Order appropriate blood tests
- Refer to the dietitian, social work team, Macmillan nurse or hospice, where appropriate
- Liaise with the primary care team, district nurse, GP and practice nurse, where appropriate

On referral to the pharmacist and CNS, patients are given a personal folder. The aim of the folder is to reinforce any information given to the patient at the clinic and to provide a record of their progress, which they can share with other health care professionals.

The folder was written by the clinic team, and contains information on:

- The role of the clinic (including contact names and numbers)
- The causes of heart failure
- The signs and symptoms of heart failure
- The medicines used, including information on side effects, herbal remedies, and over the counter (OTC) medicines
- Lifestyle advice
- The Macmillan service
- The patient progress record, weight chart

#### Panel 1: Medication details of clinic patients

##### ● Beta-blockers

75 per cent of patients (47) were established on beta-blockers (45 per cent (21) were taking the maximum dose), and 25 per cent of patients (16) were considered to be unsuitable for beta-blocker therapy. Reasons why therapy was not given were chronic obstructive pulmonary disease/asthma (four patients), peripheral vascular disease (one), conduction abnormality (one), other reasons (seven), and drug not tolerated (three)

##### ● ACE inhibitor

83 per cent of patients (52) were established on an ACE inhibitor, of whom 83 per cent (43) were taking the maximum dose; 13 per cent (eight patients) were taking an angiotensin-II receptor antagonist, 1 per cent (one) a nitrate/hydralazine combination, and 3 per cent (two) could not tolerate either

##### ● Spironolactone

41 per cent of patients (26) were established on spironolactone; 62 per cent (39) had been started on the drug but a third had to discontinue because of side effects. Reasons for discontinuation were hyperkalaemia (eight patients), gynaecomastia (three) and gastrointestinal upset (two)

and dates of future appointments

The pharmacist and CNS discuss with the patient the aims of the clinic and advise the patient on the lifestyle changes that are deemed appropriate. A medication history, which includes the use of herbal and OTC preparations, is taken by the pharmacist. The purpose of any medicine that the patient is already taking is explained, the potential

## Panel 2: Patient outcomes

### ● Improvement in functional class over the period of beta-blocker titration

72 per cent of patients (45) had improved by one or more NYHA class, 26 per cent (16) had remained the same, and 2 per cent (two) had worsened by one or more NYHA classes. (NYHA is a means of classifying the severity of heart failure, where class I is asymptomatic, class II is mild, class III is moderate and class IV is severe)

### ● Improvement in the ejection fraction mean

Mean values improved from 31 per cent to 43 per cent over the period from the first clinic visit to the three-month follow-up scan post discharge ( $P < 0.0012$ )

side effects are discussed and the aim of any future medication is described.

Patients are also given advice on any medicines that they need to avoid taking. The pharmacist explains the role of diuretics and how patients can manage their symptoms by increasing or decreasing the dose of diuretic. The patient's folder includes information about weight management and about each medicine. There is also a chart to help patients remember their drug doses and schedules.

The pharmacist has written, in collaboration with the lead consultant and the director of nursing, the protocols for the initiation and modification of doses for angiotensin-converting enzyme (ACE) inhibitors, angiotensin-II receptor antagonists, diuretics and beta-blockers. The pharmacist and CNS follow these protocols and have access to medical staff if clinical advice needs to be sought.

Those suitable for beta-blocker therapy, as confirmed by medical staff, have their beta-blocker initiated in the clinic. The pharmacist is responsible for supporting and educating the patient about this therapy. Appropriate patient education is essential for successful initiation and titration of beta-blockers in patients with chronic heart failure. It is important to explain why beta-blockers are being used and that it may take some time before any improvement in disease symptoms are seen.

Patients should also be informed of the adverse effects that may be experienced and how to manage such effects. Patients are given a card stating that they are taking beta-blockers and that therapy should not be discontinued without first consulting the heart failure team. If they have any concerns at home, they are advised to contact the pharmacist or CNS. Once patients have

reached the maximum tolerated dose, they are discharged from the clinic. However, patients still have access to the service should they encounter any problems.

Three months after discharge, patients will have a repeat echocardiogram and BNP test and they will then be reviewed annually, or before, if the need arises.

### ■ PATIENT OUTCOMES

Over the past year, 168 patients have been referred to the clinic. Of these, 63 were diagnosed with heart failure. Patients had an average age of 70 years; age ranged from 44 to 87 years.

The improvements in patient care are illustrated in many ways. Improved patient support and education has led to greater compliance with therapy. Patients are self-managing their disease, and there has been a reduction in the number of admissions and readmissions to hospital following the establishment of the clinic (see Table 1, p82).

The clinic has enabled patients to have a greater continuity of care following discharge, and ready access to advice, should it be required. The availability of the pharmacist and CNS is an important aspect to the clinic's success.

The clinic has also ensured that all patients receive maximum tolerated doses of ACE inhibitors and beta-blockers.

Panel 1 (p82) shows the percentage of patients established on beta-blockers, ACE inhibitors and spironolactone. It also shows the reasons why, in some cases, the drugs were considered to be unsuitable.

The team's experience within the clinic shows that it is important to spend time on patient education, especially in relation to drug therapy. The reinforcement of counselling advice and simplification of drug regimens is essential.

The quality of life for patients has improved and they are now empowered to take control of their own health and treatment. Patients can recognise and act upon disease symptoms and can learn the importance of managing their medicines correctly. This helps patients to manage the depression and distress that is associated with chronic illness. The team has also been able to demonstrate an improvement in New York Heart Association (NYHA) functional class and an improvement in the echocardiogram results for patients initiated on beta-blockers within the clinic (see Panel 2).

A patient satisfaction survey has shown that the clinic provides a beneficial service. This exercise has recently been repeated and positive feedback has again been obtained.

The team has also been able to set up links with the hospice to develop a palliative care pathway for those patients with class IV heart failure who have difficult symptom control and require emotional and social support.

Nine patients have been referred for palliative care, either to the hospice for day care facilities or to the Macmillan nurse for symptom control.

To improve the provision of seamless care, the team is about to launch a set of guidelines, developed jointly between primary and secondary care, for the management of heart failure in primary care.

The team has also set up several teaching sessions for GPs and practice nurses, and is trying to build links with district nurses. These initiatives should improve the primary and secondary care interface and enable effective management of, and communication with, patients.

### ■ PRESENCE OF A PHARMACIST

There are many opportunities for pharmacists to become involved in the care of heart failure patients. The multidisciplinary team within the clinic at North Hampshire Hospital has contributed to improving the quality of life and clinical outcomes for patients, and has achieved a reduction in the number of readmissions to hospital.

The presence of a pharmacist within the clinic is important for its success because optimum clinical management depends on patients complying with their medication and understanding its importance.

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### REFERENCES

1. Department of Health. National Service Framework for Coronary Heart Disease. Modern standards and service models. London: DoH; 2000.
2. Michalsen A, Konig G, Thimme W. Preventable causative factors leading to hospital admission with decompensated heart failure. *Heart* 1998;80:437-41.
3. Rich M, Beckham V, Wittenberg C, Leven C, Freedland K, Carney R. A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. *N Engl J Med* 1995;333:1190-5.
4. Krumholz H, Amatruda J, Smith G, Mattered J, Roumanis R, Radford M et al. Randomised trial of an education and support intervention to prevent readmission of patients with heart failure. *J Am Coll Cardiol* 2002;39:471-80.
5. Gattis W, Hasselblad V, Whellan D, O'Connor C. Reduction in heart failure events by the addition of a clinical pharmacist to the heart failure management team. *Arch Intern Med* 1999;159:1939-45.