Specialist nurses improve outcomes in heart failure

In this article...

- Why heart failure specialist nursing is of growing importance
- The evidence for nurses’ impact on readmission rates and quality of life
- Why chronic heart failure patients benefit from referral to a specialist nurse

Chronic heart failure (CHF) is rapidly becoming the highest priority for cardiac care providers in developed countries (Stewart and Blue, 2001), having a one-year mortality of 30-40% and high readmission rates, and causing a poor quality of life. The condition affects 900,000 people in the UK, costing the NHS £625m a year (National Institute for Health and Clinical Excellence, 2010). A specialised service is essential in delivering high-quality care because CHF is a complex disease with a high incidence in older people (mostly male), who tend to have co-morbidities (Jaarsma and Dracup, 2001).

Any health professional can refer a patient to the heart failure specialist nursing (HFSN) service, provided that the patient has a diagnosis of CHF confirmed through echocardiographic evidence of left ventricular dysfunction.

The HFSN service was initially a project with joint funding from the British Heart Foundation (BHF) and Big Lottery Fund; it was piloted with 76 nurses in primary care trusts in England. New posts are now being created as commissioners recognise the cost efficiency of the service. The BHF now supports a total of 300 HFSNs nationwide in hospital and community settings.

Analysis of four studies shows that the work of these nurses improves quality of life and reduces hospital admissions. However, fewer than half of the patients who could benefit from referral to a heart failure nurse are actually referred, and there is a need for health professionals to be educated about their role.

Studies selected and what they researched

A literature review of HFSN intervention and its effectiveness was undertaken, using CINAHL, Medline and the Cochrane library with the search terms heart failure, specialist nurse, cost effective, readmissions and mortality. The search went back just over 10 years (as many advances have been made in heart disease diagnosis and treatment).
treatment in this period) and the selection of research was narrowed to studies that focused solely on HFSN-led intervention, and also identified mortality and readmission rates. The four most pertinent studies were then selected for analysis: Strömberg et al (2003); Blue et al (2001); Thompson et al (2005); and Sisk et al (2006). All four were randomised controlled trials. Table 1 gives their details.

The Strömberg et al (2003) trial, which took place across one university hospital and two county hospitals in Sweden, randomised a total of 106 patients to either usual care (by a doctor) or to an intervention group (care supervised and delivered by an HFSN) for 12 months. The data for both groups was analysed after 12 months to ascertain readmission rates, death by any cause and self-care behaviour. This prospective trial involved patients admitted to hospital with a definite echocardiographic or radiographic diagnosis of heart failure.

Similarly, Blue et al (2001) enrolled 165 participants from an acute admissions unit in a Glasgow hospital, randomising individuals to usual care or intervention groups, and following them up over 12 months with analysis of readmission and death either from heart failure or any cause.

The Thompson et al study (2005) recruited 166 heart failure-diagnosed patients in two hospitals in the north of England, randomising them to either usual care or a nurse-led clinic plus home-based intervention. It followed up participants over six months with analysis of readmission and death rates and an assessment of quality of life using the Minnesota Living with Heart Failure questionnaire (Rector et al, 1987).

These three studies recruited from within a hospital and involved only inpatients.

Sisk et al (2006), by comparison, accessed a broader population from outpatient (“ambulatory care”) clinics at four hospital sites in the US, randomising them to either nurse-led intervention or usual care. Their larger sample size of 406 patients also enabled a more reliable result (Polit and Beck, 2006).

### The HFSN role within the studies

The HFSNs in the studies: provided education on heart failure and treatment options to patients; facilitated self-management of the condition by the patient, family and carers; provided access to clinic or telephone support; and provided social support for patients and families.

None of the studies provided detailed evidence on the levels of prior training and experience of the nurses involved. Three studies showed that the HFSNs, in line with national guidance (NICE, 2010), were proficient in the titration of heart failure medication in individual patients under clear directives (most likely through local prescribing protocols developed specifically for their use), and performed electrolyte concentration monitoring (through regular blood testing) to determine the effects of pharmacological interventions.

A combination of hospital-based and home-based intervention was used in three of the studies, beginning with a face-to-face visit and followed up by telephone (Sisk et al, 2006) or home visits (Blue et al 2001, Thompson et al 2005). Only Strömberg et al (2003) based their study solely in a hospital.

Although this was not discussed within the studies, HFSNs are required to provide lifestyle advice on driving, smoking cessation and access to rehabilitation (NICE, 2010) and to be able to provide support to individuals reaching the end stages of CHF, referring on to specialist palliative care services as appropriate (NHS Improvement and NHS End of Life Care Programme, 2010; DH, 2000).

In all four studies, the patients allocated to receive normal treatment were discharged and received follow-up with a doctor as per local protocol.

<table>
<thead>
<tr>
<th>Study name</th>
<th>Participants</th>
<th>Key findings</th>
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<tr>
<td>Blue et al (2001)</td>
<td>165 patients with a diagnosis of heart failure from an acute admissions unit</td>
<td>Risk reduction of 62% for hospital admission for worsening heart failure in intervention group</td>
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<tr>
<td>Strömberg et al (2003)</td>
<td>106 patients with a diagnosis of heart failure from three hospitals</td>
<td>42% reduction in hospital readmission in intervention arm in first three months of trial</td>
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<tr>
<td>Thompson et al (2005)</td>
<td>106 patients with a diagnosis of heart failure from two hospitals</td>
<td>22% reduction in admissions nurse-led intervention group</td>
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<td>Sisk et al (2006)</td>
<td>406 ambulatory care patients with heart failure</td>
<td>Fewer hospitalisations and better functioning in nurse management patients</td>
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### Study findings

#### Mortality

The Thompson et al (2005) study six-month follow-up showed that 9% of people in the intervention care arm had died, compared with 15% of those receiving usual care – a difference that did not reach statistical significance.

In the Blue et al (2001) study similar death rates, of 30% in the intervention and 31% in the usual care group, were reported; there were 22 deaths in each group in the Sisk et al (2006) study. In contrast to this, Strömberg et al (2003) showed that, after three months, three patients in the intervention group had died compared with 13 in the control group; after 12 months the differences in mortality remained, with seven of the intervention group and 20 of the control group deceased. In this study, the cumulative risk of death after 12 months was 13% in the intervention group and 37% in the control group. However, as its authors stated, it was a small study.

Across all the studies, therefore, there was no strong evidence that mortality was influenced by the intervention of HFSNs. However, since CHF is widely recognised as having a high morbidity and causing a very poor quality of life (Stewart and Blue, 2001) readmission rates and quality of life indicators are perhaps more important factors to consider.

#### Hospital readmission

Hospital readmission rates in all studies were reduced, although not all analyses were specific to heart failure. Strömberg et al (2003) showed a significant reduction, of 42%, in admissions to hospital in the intervention arm three months after follow-up at a nurse-led heart failure clinic. Thompson et al’s data (2005) showed a 22% reduction in admissions for the individuals receiving HFSN intervention, and Blue et al (2001) a risk reduction of 62% for hospital admission due to worsening heart failure in the intervention group. Sisk et al (2006) recorded 143 hospitalisations in the
intervention group compared with 180 in the usual care group.

In summary, it is evident that HFSN intervention reduces readmission rates in CHF patients, most likely because of close monitoring of physical status by the HFSN enabling prompt intervention, by medication adjustment and/or behaviour advice, to rectify any deterioration.

Quality of life
Quality of life in people with CHF is reported to worsen dramatically as symptoms become more severe and a greater proportion of hospitalised CHF patients are clinically depressed than those with any other condition (Stewart and Blue, 2001).

Thompson et al (2005) included the Minnesota Living With Heart Failure (MLWHF) score assessment (Rector et al, 1987) and an adherence to treatment analysis using the Hill-Bone compliance scale (Kim et al, 2000) as secondary outcomes in their trial. A consistent improvement at one and six months in mean scores in completed MLWHF questionnaires was seen in the intervention arm, though not reaching statistical significance. Patients assigned to the intervention group were more likely to adhere to a prescribed sodium-restricted diet as determined by the Hill-Bone adherence score.

The Sisk et al (2006) study also showed that patients in the HFSN-managed group maintained better physical functioning throughout the 12-month intervention, based upon a number of quality of life assessment scores than did patients who received usual care.

The HFSN in the future
The role of the HFSN is evolving in the NHS, with more emphasis placed upon inpatient review than previously (NICE, 2010). The importance of referral to the HFSN is recognised, and local and national audit measures are in place to monitor provision of inpatient HFSN intervention (Advancing Quality, 2011; NICE, 2010).

The National Heart Failure Audit (National Institute for Cardiovascular Outcomes Research, 2012) report confirms that patient outcomes are strongly associated with certain factors, including use of follow-up services in community and primary care services. A move towards a more patient-based HFSN service is essential to improve the management of CHF patients, and may affect mortality during admission and following discharge.

Appropriate treatment of CHF will lead to fewer hospital admissions, benefiting not just the individual in terms of improved quality of life, but also reducing strain upon healthcare resources. Collaboration between inpatient and community-based HFSN provision is imperative, and is likely to be developed in response to changes in healthcare commissioning (DH, 2011). Professionals involved in the care of CHF patients need to refer to HFSN services in order to benefit patients.

Conclusion
This literature review shows that HFSNs reduce hospital readmissions and have the potential to facilitate improved adherence to treatment and improve quality of life in CHF patients.

Management of CHF requires specialist monitoring, adjustment of medication dependent on the clinical picture, and provision of education to patients and family to enable self-management. Ideally, all inpatients with CHF should be referred to and seen by a HFSN while in hospital.

Local and national audit measures must continue to be used to monitor all aspects of HFSN intervention, including referral rates of eligible patients, service uptake, rates of medication prescription and continuing impact on readmission and mortality rates.

Patients’ experience of HFSN intervention would also be useful in tailoring the service to reduce demand on healthcare resources as well as to improve patients’ lived experience of CHF. This could be achieved by both research and service user evaluation.

Ongoing teaching, and dissemination into practice of the importance of referral to HFSN will improve awareness among health professionals and enable best practice to flourish.

References