HOSPITAL CHRONICLES 2010, SUPPLEMENT: 1–8

ATHENS CARDIOLOGY UPDATE 2010

Caring for the Heart Failure Patient: Contemporary Nursing Interventions

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ABSTRACT

Congestive heart failure is a major public health problem with steadily increasing prevalence, high morbidity and early mortality. A multidisciplinary approach seems the best way to manage patients with heart failure since it has been shown to improve clinical outcome and especially to reduce the rate of readmission due to acute or chronic decompensation. Nurses have a leading role in this "heart failure team" due to their excellent clinical assessment and communication skills as well as due to their ability to work closely with the patient. Thus, they are able to deliver care in many forms and contexts throughout the course of the disease. Specialized in heart failure care nurses can assess the signs and symptoms of cardiac destabilisation, monitor therapy compliance, provide education, psycho-social support and counselling, develop behaviour modification techniques, and also act as the healthcare liaison for the patients and their family at any stage of the disease. The ultimate aim is, through this integrated approach, to reduce mortality, prevent rehospitalisation, increase functional ability and improve quality of life for heart failure patients.

KEY WORDS: *cardiac decompensation, heart failure nurse, quality of life, patient education, psycho-social support, palliative care*

INTRODUCTION

Congestive heart failure (CHF) is the heart's inability to pump enough blood to meet the body's oxygen and nutrient demands. Heart failure can be systolic or diastolic, left or right sided, and acute or chronic[1]. CHF is a clinical syndrome, i.e. a constellation of symptoms and signs and can result from any structural or functional cardiac disease and even from several non-cardiac disorders (like anemia, thyroid disease, etc).

The insufficiency of the cardiac pump leads to volume overload of either the pulmonary circulation *(left-sided failure)* or the systemic one *(right-sided failure)* and to reduced cardiac output. Signs and symptoms of left-sided heart failure include: dyspnea, unexplained cough, pulmonary crackles, low oxygen saturation levels, third heart sound, reduced urine output, dizziness and light-headedness, confusion, fatigue and weakness. Signs and symptoms of right-sided heart failure include: lower extremity edema, liver enlargement, ascites, anorexia, abdominal pain, weight gain and weakness[2].

From an epidemiologic point of view, CHF is widespread in aging populations across the world[3]. The burden of CHF is manifested in poor quality of life[4], high morbidity and early mortality[5]. The annual ambulatory care and emergency department visits in the US are close to 3 million, which along with the one million hospitalizations per year lead to an exceedingly high annual cost of 29.6 billion dollars[6]. Indeed,

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hospital admission for CHF is frequent, and readmission rates of up to 44% within six months have been reported[7].

The natural history of CHF starts with the development of symptoms suggestive of the disease and the subsequent confirmation of the diagnosis based on clinical assessment and on a battery of laboratory and imaging studies (brain natriuretic peptide levels, chest X ray, electrocardiogram, cardiac ultrasound etc). Treatment with angiotensin converting enzyme inhibitors or angiotensin II receptor blockers, β-blockers and diuretics along with lifestyle modifications (salt restriction, smoking cessation, exercise) is started after the diagnosis has been established. A vicious cycle usually follows characterized by periods of stability alternating with periods of worsening symptoms, acute decompensation, hospitalization, and subsequent stabilization and discharge (Figure 1). Each time, stabilization is achieved through various interventions including drug therapy modifications, more intense life style management and various surgical therapies like implantation of defibrillators and biventricular pacemakers, implantation of left ventricular assist devices or even heart transplantation. Nevertheless, the condition becomes increasingly unstable and the whole pattern of gradual decline, punctuated by episodes of acute deterioration and eventually a seemingly unexpected death or death owing to progressive heart failure characterizes the patient's 'journey'[8,9].

Despite this ominous course, several things can be done to help patients 'down the road'. A multidisciplinary approach seems the best way to manage patients with CHF since it has been shown to improve clinical outcome and especially to reduce the rate of readmission due to acute or chronic decompensation[10]. Nurses have a leading role in this "CHF team" due to their excellent clinical assessment and communication skills as well as due to their ability to work closely with the patient. Thus, they are able to deliver care in many forms and contexts throughout the course of the disease.

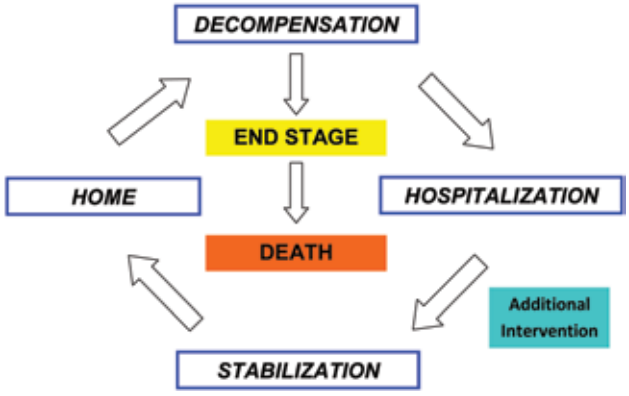

FIGURE 1. The vicious circle of repeated hospitalizations for heart failure.

TAKING CARE OF THE PATIENT WITH CHF: NURSING INTERVENTIONS

THE ROLE OF NURSES IN THE DIAGNOSIS OF HEART FAILURE

When a patient presents with symptoms of heart failure, an initial set of assessments, lab studies, and diagnostic tests must be done in order to confirm the diagnosis. The most important piece of the patient assessment is the initial medical history and physical exam. The nurse is often the first person to obtain data from the patient about his history. It is important to gather information regarding the patient's risk profile, history of cardiac events, and response to previous therapies if this is not a new diagnosis. There are also many questions the nurses can ask to elicit important clinical data to help the healthcare provider determine the cause and severity of heart failure and the treatment plan for the patient. Of note, the symptoms of heart failure are often non-specific and patients exhibit a number of signs and symptoms in varying degrees. This requires appropriate training and expertise and nurses taking care of CHF patients should be able not only to assess and record their symptoms but also to understand their relevance. The American Association of Heart Failure Nurses has developed a list of questions to help nurses complete their initial assessment of heart failure patients[11].

THE ROLE OF NURSES IN THE TREATMENT OF HEART FAILURE

Treatment of heart failure can be categorized into three basic strategies: pharmacologic management, devices and surgical management, and lifestyle management[12]. All three are very important when combined and provide the best prognosis for the patient. In both inpatient and outpatient settings, nurses have a critical role in the individual patient's treatment plan implementation. In practical terms nursing interventions for the patient with heart failure should include the following:

- administration of medications and assessment of the patient's response to them
- assessment of fluid balance, including intake and output, with a goal of optimizing fluid volume
- weighting the patient daily at the same time on the same scale, usually in the morning
- after the patient urinates (a 0.9- to 1.4-kg gain in a day or a 2.3 kg gain in a week indicates trouble)
- auscultation of lung sounds to detect an increase or decrease in pulmonary crackles
- determining the degree of jugular vein distension
- identification and evaluation of the severity of edema
- monitoring the patient's pulse rate and blood pressure and checking for postural hypotension due to dehydration
- examination of skin turgor and mucous membranes for signs of dehydration

TABLE 1. Diagnostic questionnaire developed by the American Association of Heart Failure Nurses

Assessment questions for heart failure	
Symptoms	**Diet**
What symptoms prompted you to seek medical care? When did they begin?	Have you recently eaten more salty foods or drank more water than usual?
Did your symptoms begin suddenly or gradually worsen over time?	How often do you eat out?
What makes the symptoms better or worse?	How often do you weigh yourself?
Do the symptoms occur continuously or only with certain activities?	Have you gained or lost weight recently?
Do symptoms improve with rest?	Have you experienced any swelling? Is swelling present all day or only evenings?
Do you have any pain now? Did you recently have pain? Rate it on a 0-to-10 scale.	Have you felt bloated or had edema?
Has your heartbeat felt any different than usual, such as racing, fluttering, or skipping?	How far up your legs do you have edema?
	Are your clothes, belt, rings, and shoes tighter than 1 week or 1 month ago?
Breathing	
Have you felt short of breath? Do you wake up short of breath at night?	Have you had nausea or abdominal pain?
Can you speak as much as you like before getting short of breath?	**Medications**
What makes your breathing easier?	Have you taken all prescribed medications?
Do you cough? Is it worse than usual?	Did you run out of any medications?
Do you cough throughout the day or mostly in the morning?	Have you had diarrhea or vomiting that may have affected absorption of medications?
Do you cough up any secretions?	Have you taken extra diuretic medications?
Do you use oxygen at home?	Have you changed the dose of any medication?
	Did any physician or nurse practitioner recently prescribe different medications for you or change the dose of your medications?
Sleep	
Have symptoms kept you from sleeping?	Do you take any over-the-counter medications or herbal supplements?
Do you sleep in bed or in a chair?	**Activity**
Are you able to lie flat in bed?	How far can you walk?
How many pillows do you use to sleep? Is this more or less than usual?	Can you dress, bathe, prepare food, and climb stairs without stopping to rest?
Have you recently slept more or less than usual? Do you feel rested?	What activities could you do recently but not now because of worsened symptoms?
Does your spouse or significant other tell you that you snore or intermittently stop breathing during sleep?	Have you decreased your activity level?
	Other
	Do you have difficulty remembering information or do you have feelings of confusion?
	Have you had other health problems that may make your heart failure worse?

- assessment for symptoms of fluid overload

There are several therapeutic options in addition to pharmacologic management for the treatment of heart failure, such as biventricular pacing; the use of an implantable cardioverter defibrillator, ventricular assist device, or artificial heart; and heart transplantation. Patients with advanced or end-stage heart failure are usually candidates for such type of therapies. Nurses involved in the care of these patients should be familiar with their devices[13]. A basic knowledge of their function, programming, adverse effect or even troubleshooting is required for the reason to assist the patient live with his device and to communicate directly to the responsible physician any problems associated with it.

Finally, the most important piece of management that nurses are responsible for, is that of lifestyle modifications. Smoking cessation, salt restriction, appropriate levels of exercise, adherence with discharge instructions, regular follow up appointments, self-monitoring for symptoms and signs of congestion and regular immunizations are all important parts of the patient's treatment plan. Nurses are the most appropriate health care providers in helping patients understand the lifestyle modifications that are necessary when living with this disease. Nurses must help patients learn how to change their lives to benefit their health[14].

THE FOLLOW UP OF PATIENTS WITH HEART FAILURE: NURSING INTERVENTIONS

Heart failure is a chronic condition and the need for patient's care does not end with the implementation of the diagnosis and the initial treatment plan. Indeed, it is exactly at this point that the multidisciplinary heart failure team has to put a lot of effort to improve long-term quality of life and prognosis of the patient. Nurses have a leading role in this phase. The majority of people with heart failure are managed in the community by the primary care team and only a minority are admitted or readmitted to hospital each year. United Kingdom studies suggest that, in the early 1990s, 0.2% of the population were admitted to hospital with heart failure each year[15]. This accounted for more than 5% of all adult general medical and care-of-the-elderly admissions to hospital. However, in view of the increasing incidence of heart failure in the population, the number of hospitalizations in both men and women is steadily increasing[16]. Moreover, early and frequent readmission to hospital is common in heart failure, particularly with elderly patients. Rates of readmission range from 27 to 47% within three to six months of initial discharge[17]. Hospital admission is often prolonged: in 1990 the mean length of stay for a heart failure admission was 11.4 days in an acute medical ward and 28.5 days in an acute care-of-the-elderly ward[15].

Estimates of the cost of heart failure to the NHS healthcare budget range from 1 to 4% and approximately 60% of this is from hospitalisations. In 1991, 360 million ponds were spent on heart failure in the UK[15]; this figure is now probably in excess of 1.4 billion pounds[16] or close to 34.8 billion dollars according to recent American statistics[18]. In view of the increasing incidence of heart failure in the population, the expenditure on heart failure is likely to rise in the future. At least half of this cost can be attributed to hospitalizations. However it has been shown that with appropriate follow up interventions approximately 54% of these admissions are predictable and therefore, with timely and correct intervention, preventable[19]. In the early 1980s it was recognized that a nurse led heart failure service could bring about significant reduction in rehospitalization and total days spent in hospital[20]. Subsequent studies demonstrated that intensive homecare programs delivered by nurses were associated with a notable decrease in the need for hospitalization and improved the functional status of elderly patients with severe CHF[21]. Moreover, among a cohort of high risk patients with CHF, home based intervention was associated with reduced frequency of unplanned readmissions plus out-of-hospital deaths within six months of discharge from hospital[22]. Care provided by specialist nurses has been shown to improve outcomes for patients with CHF, significantly reducing the number of unplanned readmissions, length of hospital stay, mortality, and hospital costs[23,24]. Furthermore, patients with CHF have fewer hospitalizations for heart failure and are significantly more active when managed by heart failure specialists working in a dedicated heart failure program rather than by physicians with limited expertise in heart failure[25].

Three types of CHF outpatient monitoring are currently in use: regular clinic visits, home-based follow up for specific categories of patients and tele-monitoring either with direct contact over the telephone[26] or through the more sophisticated recently developed implantable devices which offer the capability of data transmission over the web[27]. Specialist nurse can actively participate in any type of follow up protocol and may provide:

- Clinical assessment of the patient (seeking more specifically signs of hemodynamic decompensation, congestion and clinical deterioration)
- Facilitation of access to the patient's primary care physician and to his heart specialist. In addition, nurse can act as a liaison with other health care providers given the fact that most of the patients with heart failure have other co-morbidities too.
- Assessment of the degree of perception of treatment strategy and of the degree of compliance to both administered medications and required lifestyle modifications (smoking cessation, abstinence from alcohol, regular exercise etc)
- Patient education in self-care management aiming to ensure that he is able to correlate and understand his treatment regimen, can recognise signs and symptoms and understand the importance and significance of any changes and the appropriate action to be taken.

- Motivation to other family members to become actively involved in patient's care
- Early recognition of psycho-social problems (anxiety, depression, social isolation etc) and support of the patient and his family to deal with them.

This type of coordinated approach to the outpatient care has shown positive results in most of the studies published so far[28-30].

EDUCATING PATIENTS WITH HEART FAILURE

A common problem in the management of people with heart failure is that most of them are uninformed of a condition that will remain with them for life[31,32]. 'Heart failure' is an unfortunate title that is not immediately understood and requires detailed explanation and reassurance. The term is often not used or inadequately explained by health-care professionals and is replaced with other terms such as a 'weak' or 'damaged' heart that sound less daunting to the patient. In order for patients to fully understand their condition, comply with their treatment and to be able to report signs and symptoms of deterioration, a patient-centred education programme needs to be delivered to all patients. Verbal information should be reinforced with written information[33].

Heart failure nurses specialize in providing patient education and these nurses have the skills and motivation to provide individualised, evidence-based education to heart failure patients. The venue for the education can be the hospital, the outpatient clinic at the hospital or in primary care, the patient's home or a combination of all of these. Teaching often starts in primary care or in the hospital, depending of where the patient is diagnosed. Since many patients receive education at different times from different caregivers, the content of the education must be consistent throughout the chain of care in order to achieve greater compliance with treatment. Adherence has been shown to be decreased when patients receive unclear and contradictory information from health care professionals[34].

Teaching patients with heart failure is not an easy task to accomplish. Several barriers to learning may exist. The majority of CHF patients are elderly and with other co-morbidities such as diabetes, ocular disorders, dementia or chronic renal failure which can cause cognitive limitations. Patients suffering from heart failure have a higher prevalence of depression and axiety which can lead to low interest in learining how to perform self-care. Finally, poor social support may also impede education since the participation of close relatives to the education process may become very helpful in overcoming the above mentioned barriers[35].

The goals of education are to help the patient to actively participate in their own care, make informed choices about treatment and health care behaviors and engage in self-care with competence and confidence. Several topics need to be addressed with the patient. A relevant list is included into the European Society of Cardiology guidelines for the management of heart failure[36] (Table 2). Nevertheless, in everyday practice, when teaching a patient with heart failure, the nurse must be sure that she/he has covered:

- the disorder, diagnosis, and treatment
- signs and symptoms of worsening heart failure
- when to notify the healthcare provider
- the importance of follow-up care
- the need to avoid high-sodium foods
- the need to avoid fatigue
- instructions about fluid restrictions

TABLE 2. Topics for education to patients with heart failure (European Society of Cardiology)[36]

Topics for patient education	
General advice	• definition and symptoms/signs of heart failure
	• etiology
	• monitoring of symptoms
	• self-management of symptoms
	• daily weighing
	• rationale for treatment
	• adherence to treatment
	• prognosis
Drug counselling	• drug effects/adverse effects/signs of intoxication
	• administration
	• drugs to avoid or be aware of, e.g. NSAID
	• flexible diuretic intake
Rest and exercise	• rest
	• exercise training
	• work
	• daily physical activities
	• sexual activity
	• rehabilitation
Dietary and social habits	• restricted sodium intake when necessary
	• restricted fluid intake in severe heart failure
	• avoid excessive alcohol intake
	• smoking cessation
	• reduce overweight
Vaccinations	• pneumococcal and influenza immunisation
Travelling	• air flights
	• high altitude, hot/humid places

- the need for the patient to weigh himself every morning at the same time, before eating and after urinating, to keep a record of his weight, and to report a weight gain of (1.4 to 2.3 kg) in 1 week
- the importance of smoking cessation, if appropriate
- medication dosage, administration, adverse reactions, and monitoring.

PROVIDING PSYCO-SOCIAL SUPPORT TO THE PATIENT WITH HEART FAILURE

Living with heart failure places enormous stress on the individual and his or her family and significant others and adversely affects their quality of life. During the use of appropriate assessment skills, it is important that the psychosocial needs of individuals, families and significant others are identified. Issues, which the patients usually raise, include feelings of hopelessness, depression, fear, anxiety and poor quality of life[37-39]. Interventions to improve such effects include enhancement of positive coping mechanisms, maximizing ones internal resources, stress reduction therapies and participation in cardiac rehabilitation[40]. By spending time with the individual and family and utilizing all members of the health care team, nurses can play a vital role in improving one's emotional stability and feeling of well-being. Nurses can promote family homeostasis by supporting existing coping strategies or suggesting new strategies. Utilization of internal resources has also been shown to improve one's quality of life and should therefore be a major focus of nursing interventions. This includes meeting spiritual needs, promoting inner strength, providing control and encouraging hope. Encouragement of positive attitudes and enhancing the sense of hope, whilst being careful not to provide a false sense of hope is also vital. Stress reduction therapies to allay anxiety and fear may be taught, such as guided imagery, relaxation breathing and meditation. Finally, the implementation of cardiac rehabilitation and devising a plan to promote exercise and activity would be another important part of the psycho-social supporting strategy.

Within a busy care setting it can be difficult to find quality time to spend talking with patients. It is vital that nurses find this time in order to intervene and improve physical and psychological outcomes for the patient. As Barry states[41] «it has been shown that if psychosocial assessment interventions and ongoing patient evaluation is carried out by nurses, it can and does result in fewer physiological and psychological emergencies for patients and families both in the hospital and after discharge».

PALLIATIVE CARE FOR THE PATIENT WITH HEART FAILURE

People with heart failure have a poor prognosis, and when their condition becomes increasingly unstable, it is necessary to change the focus of management. Management at this stage needs to provide good symptom control and psychological support and to ensure open communication about outcomes to patients with heart failure. The ultimate aim is for a peaceful death, while maintaining good symptom control. This type of care for CHF patient, the so-called "palliative care", has gained interest recently to the point that a statement was issued by the European Society of Cardiology[42] last year. The following steps in the provision of palliative care for patients with heart failure have been described in this document:

- optimizing evidence-based therapy;
- sensitively breaking bad news to the patient and family;
- establishing an advanced care plan including documentation of the patients' preferences for treatment options;
- education and counseling on relevant optimal self-management;
- organizing multidisciplinary services;
- identifying end-stage heart failure;
- re-exploring goals of care;
- optimizing symptom management at the end of life;
- care after death including bereavement support.

As stated by the World Health Organization in 2004, "It is unrealistic to expect the wider needs for palliative care to be met by expanding the workforce of specialists in palliative care. It is more likely that a solution will be found by expanding the knowledge and skills of health professionals generally"[43]. It seems that the key to a coherent joined up approach to managing end stage heart failure is partnership between primary and secondary care, and collaboration with nursing staff, medical staff and allied health professionals. Nurses, among all the other health professionals, have the communication skills to identify their patient's physical, psychological and spiritual needs at this terminal stage of their illness. Basic nursing care applied appropriately, together with experience and knowledge from the existing palliative care services may contribute to the successful accomplishment of all the above-described tasks.

CONCLUSIONS

Congestive Heart Failure is a major public health problem. Hospital admissions are often readmission's that have a high mortality rate. A multidisciplinary approach seems the best way to manage patients with CHF since it has been shown to improve clinical outcome and especially to reduce the rate of readmission due to acute or chronic decompensation. Nurses have a leading role in this "CHF team" due to their excellent clinical assessment and communication skills as well as due to their ability to work closely with the patient. Specialized in heart failure care nurses can assess the signs and symptoms of cardiac destabilisation, monitor therapy compliance, provide education, emotional support, counsel, develop behaviour modification techniques, and also act as the healthcare liaison for the patients and their family. With this in mind, the ulti-

mate aim is to prevent rehospitalisation, increase functional ability and improve quality of life.

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