

# Canadian Journal of Cardiovascular Nursing

## Revue canadienne de Nursing cardiovasculaire



### **In this issue:**

#### What is the Experience of Men and Women with Congestive Heart Failure?

*Three hypotheses were generated through this qualitative study: 1) the psychosocial impact of CHF outweighs the physical impact, 2) sex differences exist in relation to living with CHF and 3) the experience of CHF is influenced by age with physical experiences and depression mentioned more frequently in younger age groups.*

*Trois hypothèses ont été produites par cette étude qualitative : 1) l'impact psychosocial de CHF est plus important que l'impact physique, 2) les différences de sexe existent par rapport à la vie avec CHF et 3) l'expérience de CHF est influencée par âge. Expériences physiques et la dépression a mentionné plus fréquemment dans les catégories d'âge inférieures.*

#### Biatrial Myxoma: Rare Incidence in Cardiac Surgery

*This case presentation describes a gentleman with biatrial myxomas and reviews the location, epidemiology, pathology, clinical presentation, assessment, diagnosis, and treatment aspects of cardiac myxomas.*

*Cette présentation de cas décrit un monsieur avec les myxomas biatrial et passe en revue l'endroit, l'épidémiologie, la pathologie, la présentation clinique, l'évaluation, le diagnostic, et les aspects de traitement des myxomas cardiaques.*

#### Registered Nurses' Experiences with an Evidence-based Home Care Pathway for Myocardial Infarction Clients

*Most nurses commented on benefits of the pathway on the provision of quality nursing care and on increased job satisfaction. The home health nurses reported that the pathway increased clients' knowledge of medications and diet.*

*La plupart des infirmières ont présenté leurs observations sur des avantages de la voie sur la fourniture de soins de garde-malade de qualité et sur la satisfaction professionnelle accrue. Les infirmières à la maison de santé ont rapporté que la connaissance des clients accrue par voie des médicaments et du régime.*

#### Coronary Artery Bypass Patients' Pain Perception during Epicardial Pacing Wire Removal

*Pain intensity was reported as mild while the main sensation experienced was pulling. Age, sex, previous cardiac surgery, and use of analgesics did not influence the pain and sensations experienced.*

*L'intensité de douleur a été rapportée comme douce tandis que la sensation principale éprouvée tirait. L'âge, le sexe, la chirurgie cardiaque précédente, et l'utilisation des analgésiques n'ont pas influencé la douleur et les sensations ont éprouvé.*

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## Ms. Cardiovascular Nurse, RN, MP

Recent events (most notably the federal election) have made me and, I am sure, many of you think a bit more about politics. As citizens, we accept that we have some role in politics, even if it is restricted to voting in federal, provincial and municipal elections. As nurses, how much time do we spend thinking about our role in politics?

Nurses do run for office. For instance, Marion Dewar (BSc, Nursing) was mayor of the City of Ottawa for three terms until 1985, and then served as an NDP Member of Parliament from 1987 to 1988. This type of commitment often requires the sacrifice of other important nursing roles such as clinical practice, research, and teaching. So what should those of us who are not willing or able to make this type of commitment do? How political should we be and in what way?

The CCCN's Standards for Cardiovascular Nursing (March 2000) state that cardiovascular nurses should "demonstrate both leadership and professionalism by advocating for clients,... and *participating in social/political lobbying for continued enhancement of health service programs*". Lobbying is the attempt to convince someone who has more decision-making power than you have to take a course of action that you want. This could include working with other nurses on your unit to convince management to take a course of action such as improving patient safety by increasing nurse/patient ratios. It could also include meeting with a municipal representative to support a non-smoking bylaw, or writing your member of parliament to convince her/him to work to increase funding for prevention of cardiovascular disease.

Health policy is "a set of decisions or commitments to pursue courses of action aimed at achieving defined goals of improving health" (Glossary of Medical Education Terms). The range of health policy issues that you could be involved in lobbying for is almost limitless. A review of the Romanow Report (2002) reveals a number of issues of concern specifically related to nurses, including:

- Supply and distribution of nurses in Canada (Canada has fewer nurses today than it did 10 years ago);
- Skills and roles of nurses;
- Patterns of practice and professional autonomy; and
- Quality of working life for nurses.

Politics is the process by which decisions are influenced and control is exerted. I don't know about you, but when I think health care, I tend to think of fairly high-minded approaches to improving humanity's lot. I do not think this of politics. So what have they to do with

each other? The reality is that politics are a necessary part of the policy process when various groups compete to achieve goals which may differ, even among and between groups of health professionals.

Nurses can positively influence health policies through political action. Political influence can arise from money, knowledge, relationships, information, talent, or control over large groups of votes. Nurses may not have large amounts of influence as it relates to money, but they do have access to the last five sources of influence on this list. The Canadian Nurses Association has resources to help you become more active in "participating in social/political lobbying for continued enhancement of health service programs" (Canadian Nurses Association, 2000). If running for government is not in your cards, there are many ways to become involved at the grassroots level. These include:

- Registering to vote, and voting in all elections
- Joining a professional nursing organization
- Working in campaigns
- Attending town hall meetings
- Visiting with policy-makers and staff, and
- Writing letters and/or telephoning people with decision-making/influencing power. Also, check with your provincial voluntary body. I think you may be surprised at the resources they have in place to help you become more socially and politically active in influencing health policy.

Here is another way to get involved and make your voice heard. The fifth annual World Heart Day will be held on September 26, 2004. This year, it is dedicated to children, adolescents and heart disease, and the core messages this year are curbing obesity and smoking to prevent future heart disease in today's children. Information on risk factors and health policy needs related to these risk factors is downloadable from the site. You could make your MP or MPP aware of World Heart Day and share some of this information with them. ...Or plan an activity for that day and log it on the World Heart Day website at [www.worldheartday.org](http://www.worldheartday.org) ♥

**Kirsten Woodend, Editor, CJC/N**

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## Hyponatremia and the Nursing Implications

Rosalind Benoit, RN, MN, CCN(C), and Anna Svendsen, RN, MS, CCN(C)

Serum sodium concentration plays a major role in the body's volume status. Low serum sodium levels can be dangerous and even fatal if hyponatremia is severe. The key to understanding hyponatremia is relating it to

volume status. Hyponatremia is frequently associated with hypovolemia or fluid overload. Sharp assessment skills and client teaching can prove invaluable in the prevention and treatment of hyponatremia.

### Address for correspondence:

*Mrs. S. is a 76-year-old female admitted to the cardiology floor with angina. Her electrolytes have just come back from the lab and the sodium is 126. What does this mean for Mrs. S., and what should you, as Mrs. S.'s nurse, do about it? This article will review the mechanisms of hyponatremia and discuss therapy as well as the nursing implications.*

Hyponatremia is defined as serum sodium of less than 134 mmol/L and is considered severe if the serum sodium is less than 124 mmol/L. Serum sodium levels between 125 and 134 mmol/L are common. Severe hyponatremia is relatively uncommon but it is associated with significant morbidity and mortality (Craig, 2003; Fall, 2000). In fact, hyponatremia has been demonstrated to be a predictor of mortality for heart failure patients at both 30 days and one year post discharge (Lee et al., 2003; Kearney et al., 2002). The symptoms of hyponatremia vary depending on the degree of severity, ranging from no symptoms to headache, lethargy, dizziness and ataxia, mild confusion, psychosis, seizures and, finally, coma (Yeates, Singer & Morton, 2004).

Sodium is important cation that contributes to the regulation of the body's fluid status by affecting the osmolality of vascular fluids. Serum sodium levels actually reflect a ratio of the balance between sodium and water in the body, because sodium is responsible for water retention (Kee & Paulanka, 1994; Tressler, 1995). Sodium is vital for cellular depolarization and repolarization necessary for the transmission and conduction of nerve impulses. Sodium also plays a key role in maintaining the body's acid-base regulation by combining readily with chloride or bicarbonate (Kee & Paulanka, 1994).

In order to understand hyponatremia, one must begin with serum osmolality. Serum osmolality is basically the concentration of particles in the serum. The concentration of sodium ions is the main determinant of osmolality. True hyponatremia occurs when the concentration of sodium particles in the serum is diminished and serum osmolality is low (less than 280 mosm/kg). This can occur in a state of hypovolemia, fluid overload, or when the volume status is normal (Tierney, McPhee & Papadakis, 1996).

Pseudohyponatremia may be present due to hypertriglyceridemia or increased concentration of glucose or mannitol. In this case, there is a lower concentration of sodium ions in the serum due to the presence of other particles, but serum osmolality is normal or high. In the case of hypertriglyceridemia, the lipids reside in the space within serum volume, thereby producing lower sodium/free water concentrations. Hyponatremia may also be present in patients with hyperglycemia which causes the water to move out of the cells producing a diluted serum sodium level (each 3.4 mmol/L increase in glucose produces a 1 mmol/L decrease in sodium level) (Milionis, Liamis & Elisaf, 2002) (Table 1).

Medications may also cause hyponatremia. These medications stimulate the release of ADH

### Quiz Answers

Answers to Hyponatremia quiz on page 8...

1. e, 2. d, 3. f, 4. f, 5. c, 6. a

(carbamazepine, antidepressants, clofibrate, chlorpropamide & opiates) or potentiate the effects of ADH on the kidney (NSAIDS, & cyclophosphamide). Another group of medications which have an unclear mechanism of action include haloperidone, amitriptyline and ecstasy (Yeates, Singer & Morton, 2004).

### Treatment and Nursing Implications

The following recommendations have been adapted from Foster, 2001; Potter & Perry, 2001; Tierney, McPhee & Papadakis, 1996; and Tressler, 1995.

### General implications

- Serum osmolality of less than 280 mOsm/kg will confirm presence of hyponatremia. Using the Groer & Shekleton (1983) equation will provide an estimation of the serum osmolality – serum osmolality = plasma sodium x 2.
- Monitor patients with conditions that predispose them to hyponatremia including: those on high dose diuretics, patients with vomiting and diarrhea, patients who aggressively exercise, patients with fluid overload due to CHF or renal disease.

Summary	Volume Depletion Hyponatremia	Volume Overload Hyponatremia	Normal Volume Hyponatremia	Pseudo Hyponatremia
Mechanism	Loss of sodium and water More sodium than water	Abnormal water retention	Body inappropriately retains water and sodium More sodium than water	Lipids, glucose or mannitol in excess in serum, because of high concentrations of these particles Water moves out of cells into serum causing diluted Na level
Cause	Vomiting/diarrhea – especially diarrhea in an ileostomy or prolonged vomiting causing loss of intestinal fluids as well as gastric adrenal insufficiency	- Liver disease with ascites - Congestive heart failure with edema - Renal insufficiency with edema	Syndrome of inappropriate ADH (SIADH) - Should be suspected with low sodium levels in lung cancer, head trauma, myxedema, tuberculosis or meningitis	Hyperglycemia, hyperlipidemia or presence of mannitol
Cause	Prolonged use of diuretics (especially thiazide diuretics) without adequate electrolyte replacement	Excessive water intake due to psychosis or replenishing loss with free water		
Cause	Addisons disease with mineral corticoid insufficiency			
Lab Values	Low serum Na, low serum osmolality, high urine osmolality	Low serum Na, low serum osmolality, low urine osmolality	Low serum Na, low serum osmolality, urine osmolality and Na higher than expected	Low serum Na, normal or high serum osmolality, urine osmolality normal

*Adapted from Foster, 2001; Tierney, McPhee, & Papadakis, 1996; and Tressler, 1995.*

- Expect changes in serum sodium following surgery due to the rapid administration of intravenous fluids or the body's tendency to conserve extracellular fluid postoperatively.
- When treating volume sensitive patients remember
  - Strict intake/output with daily weights
  - Monitor for signs of volume change – vital signs q4h or more frequently, assess blood pressure for postural drop, assess jugular venous pressure (JVP), daily weights, assess for edema – dependent edema in ankles if ambulatory and sacral if bedridden
  - If serum sodium decreases to 125 mEq/L or lower, observe patient for signs of inattention, confusion, drowsiness, delirium, weight gain, increased rate and depth of respiration, muscle cramping after usage, isolated muscle twitching, weakness, headache, signs of increased intracranial pressure (increased blood pressure, slow pulse and respiration, projectile vomiting and papilledema). In SIADH, onset of these more advanced symptoms may be rapid (often bypassing the earlier symptoms of drowsiness, inattention), thus it is important that patients with low sodium be monitored closely to prevent progression to coma or death.

### *Hyponatremia/Volume Overload*

#### *Treatment*

- Restrict intake of free water

#### *Nursing implications/patient teaching*

- Lab data suggestive of excess water include: serum sodium levels less than 130 mEq/L, low or normal potassium, decreased Hgb. & Hct, increased MCV, decreased MCHC. Changes in these hematology lab data indicate swelling of RBCs as well as other cells within the body.
- Do not try to increase the serum sodium by giving high sodium foods
- Restrict intake of fluid to less than 1500 ml/day
- Inform patients with a tendency to retain fluid to limit sodium intake. Instruct them to read labels for sodium content on foods and medications. Teach patients to be aware of high sodium content in other things as well – toothpaste, drugs such as laxatives, pain relievers, sedatives, cough syrups and some antibiotics.
- Those involved in active sports or those working in hot climates should be advised to replace salt lost in perspiration with fluids containing sodium or salty foods. Advise against drinking water only to quench thirst.
- Instruct patients who have a history of volume overload or who are on diuretics to monitor daily weight. Weight gain of more than 1 kg in two days indicates fluid overload.

- Inform patients with regard to signs/symptoms of fluid overload including rapid increase in weight, increase swelling, increased shortness of breath.

### *Hyponatremia/Volume Depletion*

#### *Treatment*

- Replace loss with isotonic solutions
- Discontinue or reduce diuretic if indicated
- Address GI cause

#### *Nursing implications/patient teaching*

- Replace nasogastric/intestinal tube loss with equivalent volume of normal saline
- Irrigate nasogastric/intestinal tubes with saline solution only (water irrigation may result in conditions of excess water)
- Replace volume with isotonic solutions
- Do not increase Na level more than 12 meq/day
- Cautious hydration to prevent volume overload especially with older adults and young children. Homeostatic mechanisms in young patients are immature while those in the elderly and patients with renal or cardiac dysfunction require longer times to achieve an osmotic balance.
- Daily urine specific gravity
- Assess for use and possible abuse of diuretics
- Prolonged NPO increases risk of water imbalance
- Caution against taking extra diuretics except under conditions described by their health care provider
- Inform patients with regard to signs of dehydration including concentrated urine, lightheadedness when standing, dry mouth, increased thirst, sudden decrease in weight
- Teach patients taking diuretics to monitor for symptoms of low sodium

### *Hyponatremia/Normal Volume Status*

#### *Treatment*

- Free water restriction
- Address cause
- Demeclocycline for severe hyponatremia

#### *Nursing implications/patient teaching*

- Monitor electrolytes, renal function closely
- Monitor urine NA and osmolality
- Closely monitor for signs of hyponatremia

### **Now, back to Mrs. S.**

- You should be aware of her volume status. Is she dehydrated, or volume overloaded? Is she on diuretics? Has she recently had the flu? Is she volume overloaded because of heart failure or renal disease?
- She will require close monitoring of her weight, vital signs, presence of edema and JVP

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- Daily bloodwork for electrolytes, urea and creatinine as well as serum and urine osmolality if indicated
- She may need to have close follow-up and bloodwork when she is discharged and she should be instructed with regard to this.
- She may need instruction about her medication and her diet and how to determine her fluid status by weighing herself daily. ♥

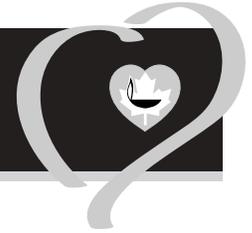
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# Clinical practice questions



*CCCN is now pleased to offer you sample questions based on the Clinical Column found in this edition of the journal. These questions will test your knowledge and ability to apply information found in the article as well as critical thinking (similar to the types of questions you might find on the certification exam). Answers to the questions are located in the journal.*

Mrs. S. has been taking twice her normal diuretic dose because of misunderstanding information given to her. She is hypovolemic and hyponatremic.

1. Which of the following is not a sign of hypovolemia?

- a) Thirst
- b) Concentrated urine
- c) Lightheaded when standing
- d) Dry mouth
- e) Weight gain of more than 1 kg in two days

2. What lab data would support a diagnosis of hyponatremia caused by over-diuresis?

- a) Serum sodium of 125 mmol/L
- b) High urine osmolality
- c) High serum hemoglobin and hematocrit
- d) All of the above

3. You are hydrating Mrs. S. What would be indicators of concern?

- a) Serum sodium increase to 139 mmol/L the next day
- b) Weight gain of 1 kg within a day
- c) Drop in blood pressure of 5 mm/hg when Mrs. S. gets out of bed
- d) Suggestion to increase Mrs. S. intake of water to three litres a day to combat dehydration
- e) All of the above
- f) a, b and d
- g) b and c

4. You are helping Mr. S. get ready for discharge. She wants to know how she can prevent another hospitalization because of dehydration and hyponatremia.

- a) Assess her level of understanding regarding medications including effects, dosages and adverse effects
- b) Instruct her to weigh herself daily and report a weight gain or loss of greater than 1 kg in two days or 5 kg a week to health care professionals
- c) Instruct her to increase daily intake of sodium
- d) Inform her that frequent monitoring of her bloodwork is necessary while she is taking diuretics
- e) All of the above
- f) a, b and d

5. Mrs. S. has been diagnosed with diabetes. Her blood glucose is 31.6 and her sodium is now 125 mmol/L. Which type of hyponatremia does Mrs S. have?

- a) Hypovolemia hyponatremia
- b) Hypervolemia hyponatremia
- c) Pseudohyponatremia
- d) Euvolemic hyponatremia

6. Mrs S. also has congestive heart failure. She is on a 2000 mg sodium restricted diet with two litre fluid intake restriction. Today, her sodium is 128. What should you do?

- a) Restrict fluid intake to 1200-1500 cc/day
- b) Increase sodium intake to 2400 mg/day
- c) Decrease sodium intake to 1500 mg/day
- d) Increase fluid intake to 2400 cc/day

*Answers to questions are found on page 4.*

# What is the Experience of Men and Women with Congestive Heart Failure?

Jo-Anne Costello, RN, MScN, and Sheryl Boblin, RN, PhD

Congestive heart failure (CHF) is increasing in incidence and prevalence in both men and women in Canada. Research findings to date have been inconsistent with respect to whether gender differences influence quality of life, treatment and survival. There is a paucity of qualitative research describing the experience of patients with CHF. This qualitative case study approach used semi-structured interviews with women and men with New York Heart Association (NYHA) class three or four CHF who were referred to a CHF clinic. In addition to quality of life measures, data related to medical history, medical management and NYHA scores were collected to offer a thorough description of these clients' experiences. Three hypotheses were generated from 13 themes that

emerged. First, the psychosocial impact of CHF outweighs the physical impact. Second, sex differences exist in relation to living with CHF, with men being more accepting of CHF and more likely to experience social isolation and loss than women, while women are more likely to describe fear. Third, the experience of CHF is influenced by age with physical experiences and depression mentioned more frequently in younger age groups. Findings from this study have generated nursing implications and recommendations for further research.

**Key words:** congestive heart failure, qualitative studies, psychosocial aspect of illness, gender specific care, age specific care

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## Introduction

In congestive heart failure (CHF), the ability of the left ventricle to eject blood is impaired. Clinical symptoms include fatigue, dyspnea and fluid retention leading to pulmonary and vascular edema. Symptomatic CHF impairs functional ability and often leads to a poor quality of life. It is a progressive disorder that may eventually lead to symptoms at rest and sudden death (Liu et al., 2001).

Of all the cardiovascular conditions among Canadians, the incidence of CHF is rising the most rapidly, which is contradictory to the declining mortality of cardiovascular disease in general (Liu et al., 2001). Currently, there are more than 350,000 Canadians diagnosed with heart failure, and the one-year mortality ranges between 25 and 40% (Liu et al., 2001). The Framingham study estimated an overall annual incidence of CHF in those over 45 years to be 7.2/1000 in men and 4.7/1000 in women (Ho, Pinsky, Kannel, & Levy, 1993). CHF can be incapacitating, causing victims to relinquish many of their normal activities of daily life. The initial experience of CHF symptoms is described as a crisis event involving loss of energy, difficulty breathing, frightening, and devastating (Stull, Starling, Haas, & Young, 1999).

Many patients with CHF have access to interdisciplinary congestive heart failure clinics, cardiac rehabilitation programs, physicians and nurses to follow their course and maximize medical management. However, mortality remains very high for this patient population

and prevalence is increasing (Liu et al., 2001). Quality of life is consistently reported as poor (Chin & Goldman, 1998; Petrie, Dawson, Murdoch, Davie, & McMurray, 1999). Research, although conflicting, has suggested differences in survival between men and women, and that women tend to present with more severe symptoms (De Maria et al., 1993). Women also tend to be under-represented in the research (Richardson & Rocks, 2001). Review of the literature has shown little is known about the experiences of patients with CHF, especially if they are women and are young. Understanding these experiences is necessary to plan services to meet the needs of this patient population.

This paper presents the results of a qualitative case study approach that explored the experiences of men and women with CHF. Thirteen themes describing their experiences were revealed. These themes, in turn, generated three hypotheses. The themes have been linked to previous literature and have been used to suggest nursing implications. Themes and hypotheses have also been used to suggest further research to help us understand the experiences of men and women with CHF.

## Literature Review

In an attempt to understand the experiences of both men and women with CHF, and position this research within a larger context, both qualitative and quantitative literature was sought (Creswell, 1998). The search strategy focused on recent literature (within 10

years), as research in cardiovascular disease is abundant and practice rapidly changes due to evidence. Quantitative studies were sought to identify what research had previously looked at sex differences, and the outcomes of CHF such as mortality, morbidity and quality of life, while qualitative studies were sought to understand the experience of CHF for both men and women. The databases searched included Medline 1996-2002, CINAHL, Cochrane Database of Systematic Review, Database of Abstracts and Reviews of Effectiveness (DARE), Cochrane Controlled Trials Register (CCTR) and PubMed.

The qualitative literature revealed a number of inconsistencies, related in particular to sex differences. Inconsistencies in reported survival rates, quality of life and treatment responses were revealed. Ho et al. (1993) and Adams et al. (1996) reported longer survival rates in women than in men after diagnosis of CHF. De Maria et al. (1993) reported no survival difference, while Liao, Cooper, Mensah, and McGee (1995) found a larger relative risk of death in women than men. Burns et al. (1997) measured quality of life and reported there was no significant difference between men and women in their perceived health. Conversely, Chin and Goldman (1998) reported a significantly lower score in quality of life measurement in women than men. Petrie et al. (1999) supported this finding.

Richardson and Rocks (2001) in a review of literature related to women and heart failure identified two large angiotensin converting enzyme (ACE) inhibitor drug trials, CONSENSUS and SOLVD, which failed to demonstrate a significant reduction in mortality in women, unlike their male counterparts. The authors also commented on the poor representation of women in large, randomized controlled drug trials.

An initial search for research that used qualitative approaches to address the question of the experience of CHF for both men and women revealed only three articles (Mahoney, 2001; Martensson, Karlson, & Fridlund, 1997; Martensson, Karlson, & Fridlund, 1998). Using Forchuk and Roberts' (1993) recommendations for critiquing qualitative studies, limitations were revealed in all three. Consequently, the results are limited in their transferability to clinical practice.

While the literature review confirmed that CHF has a negative impact on quality of life and lifespan, it also revealed a number of inconsistencies related, in particular, to sex differences between men and women with CHF. Women typically are under-represented, therefore generalizability of the results to women needs to be considered cautiously.

Despite the increasing incidence of CHF, and very high mortality rate, it is surprising to see the paucity of qualitative research describing the experience of CHF

for men and women. Additionally, inconsistencies in the literature regarding the possibility of sex differences existing in response to CHF are intriguing, and assist in understanding the larger context within which this study would fit (Creswell, 1998). It is apparent that a broad qualitative case study, purposely sampling both men and women, would be an early step in understanding the experience of both men and women with CHF and would answer the question "What is the experience of men and women with CHF?"

## **Method**

Since a conclusion of the literature review was that the experiences of men and women with CHF are poorly understood, a qualitative design was deemed most appropriate for exploring this phenomenon. Morse and Field (1995) state that qualitative methods should be used when little is known about the phenomenon, and when describing the phenomenon from the "native's point of view". This perspective may come from the patient, caregiver or relatives and is usually conducted in a natural setting. John Creswell (1998) states "qualitative research is a process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting" (p. 15).

A qualitative case study approach was used to conduct the study. Scanlon (2000) describes the case study approach as "an exploration of a question and a phenomenon of interest when little is known in advance, and where the situation may be complex" (p. 1). Case studies explore a phenomenon using a variety of data sources and from the participants' perspectives (Tellis, 1997). Stake (1994) suggests a researcher may study several cases jointly in order to inquire into the phenomenon, population, or general condition. Cases are chosen because it is believed that understanding them will lead to a better understanding, or theorizing, about a still larger collection of cases (Stake, 1994). Using the case study approach, this research conducted an in-depth exploration of the experiences of six patients – three men and three women of differing ages. In qualitative research, sample sizes are typically small due to the large volume of verbal data that must be analyzed. In addition, sampling in this study is theoretical rather than statistical. These cases were chosen based on their ability to illuminate the phenomena being studied as supported by Sandelowski (1986).

### **Study Setting**

The research was conducted at a CHF clinic located in a community in southwestern Ontario; participants were accessed through this clinic. Typical patients for this clinic exhibit symptoms of New York Heart

Association (NYHA) Class three or four heart failure. They range in age from 37 to 82, usually have comorbid conditions such as renal impairment, and have had frequent hospitalizations. The researcher was familiar with this setting and was known within the environment. This provided an opportunity for ease of entry and a connection with the potential participants. Ethics approval was provided by the Tri-Hospital Ethics Committee of Cambridge and Kitchener, as well as the McMaster University Ethics Committee.

### *Study Participants/Cases*

Six patients with CHF comprised the cases. They were selected based on age, sex and NYHA classification as well as their ability to articulate their experience of living with CHF. The NYHA score is used to describe symptoms associated with CHF. This subjective scale is used in clinical practice to gauge the severity of symptoms (Consensus Recommendations for Heart Failure, 1999). NYHA scores of three or four were chosen for the participants due to the severity of symptoms which have been suggested by Dracup, Walden, Stevenson & Brecht (1992) to influence the psychosocial adjustment to CHF, therefore making them rich sources of data.

A purposeful sampling method was utilized, which included three men and three women, one man and one woman each between the ages of 30 to 50, 51 to 60, and 61 and over. These criteria were intended to capture a range of patients with this disease and to understand how the experience may be influenced by age and sex. Four of the cases interviewed had been diagnosed within the previous year, one was within two years, and the last had been diagnosed seven years before, but had experienced a recent exacerbation of symptoms requiring hospitalization.

The advance practice nurse (APN) in the heart function clinic, the physician, or the researcher identified patients who met the selection criteria for the study. The NYHA score for each participant was determined through interview and physical assessment by the APN or physician and agreed upon by the researcher. Each identified patient was approached by the researcher for consent to participate. Following written consent, an interview was scheduled at a convenient time and place for the participant. Participants were also asked to identify a family member who would be willing to be interviewed. The family member was included if they were able to articulate how the experience of CHF had influenced their loved one.

### *Researcher Perspective*

The researcher was a registered nurse pursuing a Master of Science degree in Clinical Health Sciences (Nursing). She had 13 years experience with cardiac

patients. At the time of the initiation of the study, she worked in a cardiac rehabilitation program at the same hospital as the congestive heart failure clinic. She had a keen interest in further understanding the experience of CHF as there were many referrals to the cardiac rehabilitation program for patients with CHF. The second rater was the thesis supervisor of the MScN student. She was a PhD prepared RN with expertise in conducting qualitative research. She had a special interest in case study research, having conducted several studies, as well as serving as thesis supervisor or committee member for other students conducting case study research.

### *Data Collection/Analyses*

In keeping with Creswell's (1998) recommendation to use a wide array of data collection methods so that an in-depth picture of the case is developed, two approaches were used. The first consisted of a thorough description of each of the cases; the second explored the participants' experiences with CHF. Data collection and analyses occurred concurrently, as is typical in qualitative research (Miles & Huberman, 1994). Data collection and analysis began in July 2002 and ended in September 2002.

### *Description of the Cases*

The following data were collected on each study participant: a) history of diagnosis and medical management over the past six months obtained through chart review; b) social, cultural, economic, spiritual, intellectual and environmental contexts revealed through the interview process; c) physical presentation described through NYHA scores and medical chart notations; and d) influence of CHF on quality of life as measured using the validated Minnesota Living With Heart Failure Questionnaire (MLWHFQ) (Rector and Cohn, 1992). The questionnaire was self-administered prior to the interview. The intent was not to look for statistical differences in the data; the intent was to use the scores to add to the description of the experience of CHF.

### *Experience of the Cases*

The second approach to data collection focused on the experience of the women and men with CHF. There were two sources of data for this component. The first source was individuals with CHF. The second source was a family member for each of the participants. Data were collected using individual one-to-one semi-structured interviews. Interviews typically lasted one hour and were scheduled at the participant's convenience. Interviews occurred in a room near the CHF clinic or in the participant's home. This approach was based on the recommendations of Creswell (1998) who states that, in a qualitative study, "we ask open-ended research questions, wanting to listen to the

participants we are studying and shape the questions as we “explore”, we refrain from assuming the role of the “expert” researcher with the best questions” (p. 19).

Interview questions were developed based on the research nurse’s knowledge and experience of working with patients with CHF. The prompt questions were built from a number of sources including themes identified in the literature and, as analyses occurred, from previous participant responses. The questions were pilot tested on two individuals in their mid-sixties, one man and one woman. Examples of interview questions include: What is it like to have CHF? How has it influenced your life? Further probing questions were, at times, required. Memos were written to describe the participant and researcher reactions during the interviews, creating an audit trail. All interviews were taped and then transcribed for analysis.

Study participants were asked for permission to interview family members. A family member was chosen based on the recommendations of the participant as someone who could provide insight into the influence CHF has had on their family member. The primary intent of using this source of data was to capture a more complete picture of each participant’s experience of CHF. Once given permission, a family member (spouse, child or caregiver) was asked to participate. If they preferred, the study participants could identify a friend instead of a family member.

Five family members and one friend were interviewed on an individual basis using a semi-structured interview. Interview questions were intended to mirror questions asked of the participants. Examples of interview questions included: What has it been like for you to have a (mother, father, partner, or friend) living with CHF? How has it influenced his or her life?

A data analysis is described by Patton (2002) as “organizing the data by specific cases for in-depth study and comparison” (p.447). The process used in this research consisted of: a) coding of the data from the interviews to reveal themes; b) synthesis of the information to form a case synopsis (within case analysis); c) cross case analysis; and d) interpretation. The recommendations of Willms and Johnson (1993) were used to code the data; the recommendations of Miles and Huberman (1994) were used to conduct the within and cross case analysis. Each phase used an iterative approach with the researcher moving back and forth between the data, codes, concepts and themes.

#### *Within Case Analysis*

Within case analysis is defined as detailed case study write-ups for each “case”. They are descriptive, with the intention of becoming intimately familiar with each case as a stand-alone entity. This process allows unique

patterns of each case to emerge before researchers try to generalize patterns across cases (Eisenhart, 2002). All pieces of the data collected were considered in writing a detailed story for each case.

In keeping with Sandelowski’s recommendations (1986), to promote consistency (reliability), a second person experienced in qualitative research methods analyzed the data to ensure the themes truthfully portrayed the information from the interviews. Themes were agreed upon after each interview prior to progressing to the next. Additionally, multiple cases were used and multiple sources of data within each case were used to elicit data. All decisions made about data collection, analysis, and interpretations were recorded as memos so that the process and resulting decisions could be reviewed as necessary (audit trail) (Sandelowski, 1986). This study met the criteria established by Forchuk and Roberts (1993) to test truth-value and consistency in that care providers and participants have supported the believability of the findings, and transferability of results has been demonstrated in the results section.

#### *Cross Case Analysis*

Cross case analysis is defined as searching for patterns across cases. The key to cross case comparison is to look at data in divergent ways (Eisenhart, 2002). Creation of a matrix contributed to a cross case analysis. Matrices are tables in which one set of variables forms the headings for rows and another set forms the headings for the columns. They function as data display tools used to make connections between data. According to Miles and Huberman (1994), matrices enable verification, encourage comparability, and facilitate counting of the codes. Cross case analysis occurred through comparing and contrasting themes across cases to identify similarities and differences. Interpretation of the findings consisted of returning to the literature to make theoretical connections between the research results and what is known. Hypotheses generated from the findings of the cross case analyses were searched for in the literature to determine if they had previously been addressed.

## **Results**

The within case analysis of the six cases revealed a total of 13 themes: a) burden to others, b) frustration, c) loss, d) acceptance, e) hope for the future, f) fatigue, maintenance of independence, g) fear, h) physical i) symptoms, j) confusion due to lack of knowledge, k) isolation, l) depression, and m) shock and disbelief. Themes emerged not only from the text words, but also from the emphasis each case placed on the descriptors.

*Burden to others.* The first theme presented is burden to others. This theme is intended to describe a negative or unwanted feeling of dependency on others. It was derived from codes such as “feeling like a burden”,

“can’t do’s” such as yard work, which required the assistance of family. As one gentleman (Mr. S.) described: “The kids have their own lives”. “...other people got a life. You can’t depend on them. You know, you take away their life because you can’t do anything”. The concern Mr. S. had of becoming a burden was reiterated in the interview with Mr. S.’s son D., who spoke of the “pressure” on the family, “But it’s the calls at any hour of the day, being tracked down, ...calls in the middle of the night”. D. also spoke of the days when being the primary caregiver for his father was very difficult. “Some days I just can’t go over. I have had enough. I don’t want to hear it; I don’t want to see it.” A return to the literature found research reporting caregiver burden and financial burden in the congestive heart failure population. There was a paucity of literature reflecting the patients’ sense of burden to others.

*Frustration.* One participant described her visit to the emergency department: “It is very frustrating. It is frustrating for my husband because when I come out of there I’m just in tears... I feel like such an idiot. I really feel like an idiot”, while the second participant describes physical limitations as being frustrating. “Why the hell did I bother not eating salt and not doing all these things, being really good and going to exercise classes...like what did it matter, I need a heart transplant...you know, why did it matter?” The experience of frustration by patients with CHF is not reflected in the literature.

*Loss.* A sense of loss has been used to describe the psychosocial experience of CHF when the emphasis has been on the loss of an activity, or the outcome of living with CHF such as losing a driver’s licence versus the physical symptomology causing the loss. When describing these losses, participants appeared saddened and at times remorseful for lifestyles that may have contributed to their losses. Loss was clearly a part of the experience of CHF for Mr. B. His physical symptoms and medical management had influenced many aspects of his life. He spoke of being an avid baseball player and now when he played he “feels terrible after”. He felt limited by his fluid restriction, as well as diet and alcohol restrictions. He told his friends “Hey, I’ve got this disability so, if I don’t go out drinking tonight, it’s not because I don’t want to hang out with you guys, but you know, don’t try to make me drink ‘cause I can’t and everything else”.

Mrs. B. also spoke of the losses. “I know he used to enjoy doing weights... I know they said that was something he needed to be careful about...heavy lifting and things”. “I know he always loved to go tobogganing and just being outside in the winter and I don’t know...outdoors in the winter would be an area that definitely has been affected...”

Mr. H. used terms such as having to follow “rules and regulations” to describe a loss of control. “Just doing what I’m told”, “I’m just a dumb country boy, I’m going to have to learn to do what I’m told”. Additionally, he had lost activities he associated with his social life including fishing, eating what he wanted, drinking, and smoking. “Well, I can’t do any of that because I can’t have any of that food anymore, so that’s done and ah, I can’t drink beer anymore because of the wheat germ and Dr. S. does not want me to drink alcohol at all anymore so then that’s out. So now I’ve lost my smoking, my drinking (laughing), I have lost my sex. To a man that’s pretty well zip, gone, you’re done!”

A return to the literature revealed several studies on loss, however, there was no literature specific to CHF. Thorne and Paterson (1998) report a meta-analysis of qualitative research on loss and burden looking at chronic disease and suggest the descriptors of loss and burden are reflective of qualitative research done in the 1980s and more recent researchers tend to use less negative terms to describe themes. This may explain the lack of literature using terms such as loss or burden to others, as it reflects the experience of the patient with congestive heart failure.

*Acceptance.* Acceptance is an expression used to describe acceptance with one’s life situation. Acceptance is defined as “to endure without protest or reaction” (Merriam-Webster’s Collegiate Dictionary, 1993). The initial shock of being diagnosed with CHF was no longer an issue. Participants who expressed acceptance had not lost hope, nor were they depressed, they simply “accepted” their situation, considered it in their decision-making and were prepared to move on with their life to the best of their ability.

Mr. B. recognized his illness as being degenerative and had made many lifestyle and value adjustments as a result. “...there is not a day that goes by that you don’t know that you have a heart problem and that it’s probably degenerative... or at least I assume that it’s just going to get worse and worse, and so it makes me change the way I make decisions. I try to get out there and do things and enjoy what I am doing as if I won’t be able to in the future sort of thing...”.

The acceptance of CHF influenced how Mr. B. made life decisions. When he was considering asking V. to marry him, he gave it very careful consideration, given the poor prognosis associated with his condition. Although he did decide to propose, it reflected his decision to “...go on with everything as if you know, nothing was really that different, but always keeping that in mind when I was making decisions”. The feeling of acceptance seemed to have influenced Mrs. B. as well. She described her desire to have a traditional family environment with Mom being at home with children,

yet realized this might not be an option. "You think about how this affects his life span then how old our kids will be if, you know, Dad passes away".

Searching the literature using terms of "acceptance" and "congestive heart failure" revealed two publications supportive of the findings in this study (Mahoney, 2001; Stull et al., 1999). They were used to assist in the interpretation of themes as well as suggest implications for nursing practice.

*Hope for the future.* Hope for the future was a theme common to all participants. It is intended to illustrate that even participants near death still had hope that their condition would improve, or at least allow them to enjoy some aspect of life. The experience of CHF had not diminished all hope for the future for Mr. S. When asked if planning to take up golfing again "Oh I sure hope I can. I mean I can walk, I could walk you know, a distance. ... I hope, just I wouldn't be able to hit far, never hit far before anyhow, so it doesn't bother me either, I just like it." Mr. S. still planned to go golfing with his grandson in the future but, unfortunately, passed away only days after this interview.

Mr. H. still considered trying to reach the age of 61. "I have managed to 60 and I didn't think I could, and so that gets me a little bright...this morning, and I figure if I made it to 60, let's try for 61." Mrs T. spoke of feeling positive about her future and even considered the possibility that her heart disease would reverse itself and she really won't ever need a transplant, while Mr. B. looked forward to the possibility of a transplant. "... so I am not on the transplant list. I don't know when I will be. I hope it's sooner than my Dad got one because he got very ill before he did and I am really worried that ... I don't want to get that sick before something happens, if I am lucky enough to get a transplant sometime...so I think the future for me is just hope I suppose (laugh)... just hope that I'll have like more good years and that when I do get sick that there might be some sort of remedy that will, you know, still make life liveable and everything".

A return to the literature to search for research related to this theme revealed published literature focused on hopelessness and subsequent interventions rather than hope for the future. Martensson et al. (1997) were the only authors to report a similar theme in their study of male patients with CHF.

*Fatigue.* The term 'fatigue' reflected a lack of either emotional or physical energy, depending on emphasis placed by the participant. It is separated from the larger category of physical symptoms because of the prominence placed on this particular symptom. "I can't go out for long walks...it takes some energy just to walk up to the store and back again; and there are some days I can't even walk to the bank. The bank is not that

far away, but I really get short of breath some days. I find it very difficult to go out and do anything". The lack of energy was also described as it diminished one woman's ability to engage in sexual activity. "It plays terrible on my sex life...too tired". Mrs. S. spoke also of emotional energy conservation. She described a few of her friends as "People that aren't supportive of me, I see in small doses that I can manage and I don't, ...you know...I don't get myself beat up about them anymore. You know, I don't try to save the world".

The description and explanations of fatigue in heart failure are abundant in the literature. The vast majority of this literature reflected pharmaceutical studies, particularly the impact of beta-blockers on reports of fatigue (Ko, Hebert, Sedrakyan, Curtis, & Krumholz, 2002; Gottlieb et al., 2002). There was one article reflecting the impact of exercise and fatigue in patients with congestive heart failure (Belardinelli, Georgiou, Cianci, & Purcaro, 1999). There was no qualitative research identified in a separate search. Abstracts were scanned looking for relevant literature and one publication by Schaefer and Potylycki (1993) was felt to add depth to the understanding of the theme of fatigue and congestive heart failure.

*Maintenance of independence.* This theme refers to the participants' need to remain in control of the participants' environment and health care. It describes an experience very different from becoming a burden to others. It is really the opposite experience, or a need to limit feeling like a burden. "It sent me to do a lot of research and a lot of sort of consulting with other people who are my age to find out how they were doing with it and that sort of thing, so..." He described how he advocated for his care and actively participated in his medical management. "I understand the procedures, I try to understand the terminology and ask questions when I don't... like I have been able to catch them right away, so when they send my bloodwork for uric acid instead of urea then like I can say "we don't want to know what my uric acid level is, we want to know if my kidneys are failing. There is no sense taking my blood for this right now if this is what you are going to do."

"I am very independent. If somebody tries to help me, they probably won't do it right, so I will do it myself. If I do a little bit and then I sit down and then I do a little bit". A return to the literature to identify research in relation to maintenance of independence and CHF did not reveal research in relation to this theme.

*Fear.* The eighth theme, fear, is used to capture feelings such as fear of death, fear of the diagnosis, fear of increasing disability, being afraid of "everything" scary and fear of dying. When describing fear, the participants became tearful. Mrs. L. shared that her greatest fear was dying, then added "My greatest fear

is that I would be, um...more disability than I have now". "I was afraid to go to sleep. I was afraid I would die in my bed. I was afraid to walk 50 feet... I was afraid of everything, I was afraid of my shadow and that's not like me". Stull et al. (1999) report similar findings when clients are initially diagnosed.

*Physical symptoms.* This theme represents the wide range of physical symptoms described as part of the experience of CHF, with the exception of fatigue. "I just felt like I was getting older or something you know... like don't do that stuff anymore (laugh) you know... so you start to avoid the things that you know make you feel ill and you don't even realize you are doing it... and so you get to the point where you don't have to do those things anymore to feel ill because you're just feeling that way normally". "I couldn't get out of bed for awhile, that I was all like swollen up and my throat was closed and I couldn't breathe...". Mrs. B. recognized his physical limitation and described their experience at Disney. "...instead of being able to do everything, he just can't do quite as much... He needs to be more careful...I think he is more aware of things...he probably wouldn't do weights anymore".

There is an abundance of literature describing the physical symptoms of heart failure. A search limited to the previous five years using search terms of "dyspnea" and "heart failure", identified 34 publications. Reviewing the abstracts, one publication was found relevant to understanding the theme of dyspnea in the patient with CHF. Once again, it was the qualitative study by Stull et al. (1999).

*Confusion due to lack of knowledge.* This theme describes the participants' poor understanding of the cause of the disease, what to expect and how to manage symptoms. It did not appear to be a cause for frustration, as they often didn't realize how misinformed they were. One gentleman was clearly surprised at the diagnosis once it was made. "There's no way in my dreams I ever figured this would happen to me". He commented that his wife believed she would cause another heart attack if they had sex so "I think I'm confused". There was also confusion noted when he described the initial cause of his congestive heart failure. He believed the chemicals he worked with and the type of work he did contributed to his illness: "I'd go there and unload it, and ah, driving a tow motor for them and sometimes I feel that's what contributed to my illness was that, breathing all that propane gas and dust and everything...". When he spoke of the cause of his congestive heart failure, he didn't mention the years of smoking or other cardiac risk factors associated with his lifestyle.

He also described first being diagnosed with CHF several years after the onset of symptoms. "He told me I had congestive heart failure, and I said, 'well what's

that', and he went on to explain it and I got outside, and the wife said, 'you understand what he said'? And I said I don't understand one word of it. I said I'm lost, in fact I'm confused".

Literature in this area is limited. Two qualitative studies were found in the return to the literature which described knowledge and communication difficulties for patients with chronic heart failure. Rogers et al. (2000) explored the patients' understanding of heart failure and found patients lacked a clear understanding of why they had developed heart failure, what it was, and what this implied for them. Patients reported confusion and short-term memory loss as symptoms which may have contributed to their lack of knowledge. Similar findings are reported by Stull et al. (1999).

*Isolation.* The term isolation describes social isolation caused by dietary and alcohol restrictions, inability to drive, or inability to participate in leisure activities due to physical symptoms of dyspnea and fatigue. Mr. H. noted that his friends "don't come around anymore because...well, they drink, they smoke, they carry on...they do everything so well let's not go see how he is, I mean he can't do any of them things anymore".

"I thought I'd be a club member at some golf club and go out three or four times a week. When you go to the clubhouse you yak, yak, yak, how good you were or how bad the hole was.". Mr. S. spoke further about loneliness. "It can be a lonely life, kids got their own life, and they got a good life. I've got a few friends drop over, most of mine are in the hospital or got a bunch of their own problems, can't even go see them".

The concept of social isolation and heart failure has been previously reported in the literature by Murberg and Bru (2001) of Norway.

*Depression.* The term depression was used by one participant to describe how he felt when initially diagnosed with CHF. "Oh... emotionally though, I find that as I get a bit sicker, I get more depressed along with that, so it reminds me of the disability that I have... because sometimes you like to think that you are getting better and then when all of a sudden you wake up and you can't breathe again and ah... you know, you are getting pains in your chest and you can't get rid of them and ah... it throws you back again and forces you to look at the situation that you are in".

Recently there has been a surge of literature published on depression associated with CHF. Friedman and Griffin (2001) and Jiang et al. (2001) have contributed to this body of knowledge and the understanding of this theme.

*Shock and disbelief.* As was described by two participants when initially diagnosed with CHF, "At first it was a terrible shock to me because of my relatively young age and though my dad has congestive heart failure, it was a

surprise to me because we felt there was a cause for his and so that probably wasn't a correct diagnosis, so it seems like it is familial and so I was shocked at first by the whole thing and I think the first few weeks I was just coming to terms with..." During the time of his diagnostic tests, he referred to everything breaking loose, "They found that my ejection fraction was very low and so they were very concerned and they knew I was out of breath...and then I was in the dark about what was really going on". He later compared his diagnosis to that of his father's and described how this influenced his reaction. "...so it had a great effect because I saw all of that and then to find out that I had it, it was like a horror story almost...". A return to the literature did not reveal any information on the feeling of shock and disbelief in relation to the experience of CHF.

### *Interpretation of Themes*

The themes of acceptance, fear, fatigue, physical symptoms, confusion due to lack of knowledge, isolation, and depression, identified in this study have been previously reported in the literature, and will be addressed through recommendations for nursing interventions, based on Firestone's (1993) concept of theoretical transferability of findings.

The remaining themes identified including, burden to others, frustration, loss, hope for the future, maintenance of independence, and shock and disbelief, are unique to this study. They need to be considered on the basis of confidence in the findings prior to making recommendations for case-to-case transferability or being used to generate hypotheses for future research. Burden to others was reported by four of the six participants and was strongly supported by family members as part of the experience of CHF. Frustration

was emphasized as part of the experience by five of the participants and, again, addressed as an issue for the participants by the family members. Three male participants spoke of loss as did their family members. Hope for the future was addressed by all participants, lending support to the truthfulness of this finding. These themes can inform nursing practice in similar settings, age groups, and sex through case-to-case transferability with confidence because of the consistency of these findings across cases, but were not previously reported in the literature, therefore theoretical transferability is limited.

Maintenance of independence and shock and disbelief were talked about by only two participants, one male, and one female, of differing age groups. Family members supported these themes, but they cannot be used to inform nursing practice with the same confidence as earlier themes. They may be considered ideas for future research.

### *Cross Case analyses*

The purpose of cross case analysis is to reveal themes and generate hypotheses. Cross case analysis occurred through comparing and contrasting themes across cases to identify similarities and differences. Matrices were used to display data and facilitate the comparison of themes emerging from analysis of interviews and descriptions of the participants (Table 1, Table 2, Table 3).

The cross case analysis was completed by comparing and contrasting themes across ages and sex. Also, consideration was given to the emphasis placed on themes by the participants. Review of the audit trail assisted in accurately reflecting this emphasis. Through discussion of these themes with the second rater, three

<b>Cross Case Analysis of Themes</b>						
<b>Themes</b>	<b>1 M 70</b>	<b>2F 73</b>	<b>3 F 50</b>	<b>4 M 60</b>	<b>5 F 54</b>	<b>6 M 33</b>
Hope for the future	*	*	*	*	*	*
Frustration	*	*	*	*	*	
Burden to others	*		*	*		*
Fatigue		*	*		*	*
Loss	*			*		*
Acceptance	*			*		*
Maintenance of independence		*				*
Fear			*		*	
Physical symptoms			*		*	
Isolation	*			*		
Shock/ disbelief					*	*
Confusion due to lack of knowledge				*		
Depression						*

hypotheses were generated. The first hypothesis is that the experience of CHF is influenced by psychosocial aspects of living with CHF as much as, if not more so than the physical symptomatology associated with the disease. The second hypothesis is that sex differences exist in relation to living with CHF, with men being more accepting of CHF than women. Men were also more likely to experience social isolation than women and women were more likely to describe fear as part of their experience with CHF. The third hypothesis is that the experience of CHF is influenced by age. The physical experience of CHF and depression is discussed more in younger participants. A return to the literature did not yield research on these hypotheses permitting further interpretation.

## Implications for Nursing Practice

Theoretical/analytical transferability suggests that where linkages have been drawn between the findings of this research and published concepts and theories, then these findings can be used to inform nursing practice for patients with CHF. Case-to-case transferability suggests that the findings from this research also can be used to inform nursing practice in situations where the cases (CHF patients with similar characteristics) and the setting (CHF clinic) are similar to the cases used in this research. In the latter situation, the nurse considering these findings would need to determine similarity and transferability. The

<b>Cross Case Analysis by Age</b>				
<b>Themes</b>	<b>Age 30-50</b>	<b>Age 51-60</b>	<b>Age 61-73</b>	<b>Analysis</b>
Hope for the future	**	**	**	All age groups
Frustration	*	**	**	All age groups
Burden to others	**	*	*	All age groups
Fatigue	**	*	*	All age groups
Loss	*	*	*	All age groups
Acceptance	*	*	*	All age groups
Maintenance of independence	*		*	Oldest and youngest
Fear	*	*		30-60
Physical symptoms	**			30-50 only
Confusion due to lack of knowledge		*		51-60 only
Isolation		*	*	> 50
Depression	*			30-50 only
Shock/ Disbelief	*	*		30-60

<b>Cross Case Analysis by Sex</b>			
<b>Themes</b>	<b>Female</b>	<b>Male</b>	<b>Analysis</b>
Hope for the Future	***	***	All expressed hope
Burden to others	*	***	More males discussed
Frustration	***	**	Discussed by both
Loss		***	Male only
Acceptance		***	Male only
Fatigue	***	*	More females discussed
Maintenance of independence	*	*	Discussed by both
Fear	**		Female only
Physical symptoms	*	*	Discussed by both
Confusion/unexpected		*	One male
Isolation		**	Male only
Depression		*	One male
Shock /disbelief	*	*	Discussed by both

nursing process, in particular the assessment and nursing intervention phases, is used to present the implications for nursing practice.

Ten out of a total of 13 themes revealed through the analysis can be classified as psychosocial rather than physical in nature. These themes include: burden to others, frustration, loss, acceptance, hope for the future, maintenance of independence, fear, isolation, depression, and shock and disbelief. These findings suggest that the experience of CHF is influenced by psychosocial aspects of living with CHF as much as, if not more so than the physical symptomatology associated with the disease. Although not all themes have been researched and reported in the literature as associated with CHF, the results of this case study suggest that nursing assessment of patients with CHF should address in detail the psychosocial domain. A holistic assessment including psychosocial needs would provide a more complete picture of how CHF is influencing the patient's life. Time needs to be provided to allow the patient the opportunity to verbalize feelings, as well as an opportunity for the nurse to establish a therapeutic relationship.

Depression scales should be included as part of the ongoing assessment of patients with CHF. The incidence of depression in CHF has recently been well-documented (Jiang et al., 2001; Friedman & Griffin, 2001). Quality of life surveys have demonstrated inconsistent results in the literature, but may be useful screening tools to open discussion about sensitive topics such as sexuality.

The findings also suggest that deliberate thought be given to how nursing interventions might address the needs revealed by the themes. The following six nursing interventions were identified based on those findings that can be applied with confidence.

#### *Patient Education*

Confusion due to lack of knowledge was identified as a theme in this case study. A return to the literature revealed that the benefit of education for the CHF patient has been well-researched (Krumholz et al., 2002; Umana, 2000; Rutledge, Donaldson, & Pravikoff, 2001; Rogers et al., 2000). Results of this case study suggest possible content for that education. Due to the linkage with previous research (Rogers et al. 2000; Stull et al., 1999) and the strength of this finding, this theme needs to be considered in relation to nursing practice. In this study, participants described initial confusion when first diagnosed with CHF. Patients who have experienced CHF also describe fear and shock, and need time to make sense of their illness before they become receptive to more detailed education (Stull et al., 1999).

Participants in this study described a need for maintenance of independence. Although a weaker finding as it was only mentioned by two participants, this theme may be considered when planning education about CHF. Education about diet, fluid restriction, risk factors and medications may lead to a better understanding of the disease and support independence through patient self-management.

#### *Self-care*

Participants in this case study expressed a desire to avoid being a burden to others; they also expressed frustration with the health care system. Two expressed a desire to maintain independence. Nursing practice can be influenced by these themes by encouraging self-care. One example of an intervention to promote self-care is providing patients with titration tables to take furosemide according to their weight. Daily weights could be recorded and patients taught to take diuretics according to their weight just as individuals with diabetes manage blood sugars through glucometer testing. Nurses must also recognize self-care may not be beneficial to all.

#### *Telephone/electronic support*

Providing telephone support for this patient population may reduce the feeling of dependence patients have on family. It may also be a tool used by family members to ease caregiver burden. Isolation may be lessened through access to electronic "chat lines", e-mail messages and websites with linkages to other appropriate sites.

#### *Exercise and cardiac rehabilitation*

Nurses working in CHF clinics need to advocate for access to cardiac rehabilitation programs for their patient population. Fatigue, isolation, and depression measured through quality of life instruments may all be positively influenced by participation in a cardiac rehabilitation program. Belardinelli et al. (1999) reported that patients who participated in a supervised exercise program significantly improved their quality of life scores within the first two months and were able to sustain the improvement until retested at 12 months.

#### *Group support*

Including families and bringing patients with CHF together in a group environment may meet some of the psychosocial and educational needs identified in this study. Stull et al. (1999) suggest bringing in a patient who is further along the trajectory of illness. Meeting with other patients with heart failure who have had the condition longer may provide and reinforce needed and valuable information for patients and their families at this time.

### *Pharmacological management*

As described in the literature (Grady et al., 2000), an interdisciplinary approach to patient care is essential to the management of the patient with CHF. It is recognized from the findings that physical symptoms will influence how the patient copes, therefore maximizing pharmacological management to reduce physical symptoms and improve outcomes is equally essential to providing psychosocial care. Friedman and Griffin (2001) reported patients with increased physical symptoms and poorer physical functioning reported increased symptoms of depression. This case study is linked to these findings in that participants described physical symptoms and depression as being part of their experience. Nurse-led heart function clinics have been shown to be effective in titrating medications to target doses as recommended in the pharmacological research to reduce or limit the progression of physical symptoms. The younger patients interviewed in this study emphasized the impact of physical symptoms when describing their experience of living with CHF. Physical symptoms need to be assessed and addressed on a regular basis to prevent re-admission to hospital and related frustrations.

In conclusion, the first hypothesis being; the experience of CHF is influenced by psychosocial aspects of living with CHF as much as, if not more so than the physical symptomatology associated with the disease is addressed through nursing implications emphasizing the need for time to be provided for the nurse and the patient to promote a holistic assessment, verbalization of feelings, as well as development of a therapeutic relationship. Patient education, self-care, group therapy, and linkages through electronic or telephone support have been suggested as ideas to address psychosocial needs. The second hypothesis is that sex differences exist in relation to living with CHF, with men being more accepting of CHF than women. Men were also more likely to experience social isolation than women and women were more likely to describe fear as part of their experience with CHF. Being aware that men and women may respond differently to acceptance of their illness or vulnerability to social isolation and fear should influence nursing assessment and evaluation of how their patients are coping with this disease. Nursing interventions discussed earlier may be implemented more appropriately as a result of this knowledge. The third hypothesis is that the experience of CHF is influenced by age. The physical experience of CHF and depression is discussed more in younger participants. Although these findings are not supported in the literature at present, heightened awareness of depression in this patient population should influence practice. Nursing implications suggested include the administration of depression scales as well as time to

thoroughly and holistically assess patients, encouraging verbalization of feelings. Being aware of literature tying poor physical symptoms with increased depression may encourage nurses to be more aggressive in their patient management, and more sensitive to the possibility of depression during an exacerbation of symptoms.

Recommendations for future research have been generated: a) for the themes which arose from the within case analyses, b) for the hypotheses that emerged from the cross case analyses, considering sex and age differences, and c) to evaluate the recommendations for nursing interventions. ♥

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### **Appendix**

#### **Appendix: Research Questions**

##### **Patients**

1. What are the top two to three daily issues that you need help with in relation to your chronic stable angina?
2. If you were invited to attend a program that would help you to better manage your angina pain, what kinds of things would you want to learn about in that program?
3. Do you have any questions, or is there anything else that you would like to discuss at this time?

##### **Clinicians**

1. Based on your experience, what do you think are the most common day-to-day problems that chronic stable angina patients have in relation to their angina symptoms?
2. What content areas do you think should be included in a psychoeducation program designed to help increase chronic stable angina patients' daily angina self-management skills?
3. Do you have any questions, or is there anything else that you would like to discuss at this time?

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# Biatrial Myxoma: Rare Incidence in Cardiac Surgery

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A myxoma is a rare, usually noncancerous primary tumour of the heart. It is the most common benign cardiac tumour in adults, yet has a very low incidence in the cardiac surgery population, representing less than 1% of all cases. Biatrial myxomas are extremely rare, comprising only 2.5% of cardiac myxomas. Myxomas can be fatal due to embolic events or sudden death, however, prognosis after surgery is extremely good. The challenge for health care professionals is early recognition, diagnosis and treatment to prevent life-threatening events. This case presentation describes a gentleman with biatrial myxomas, and further

discussion reviews the location, epidemiology, pathology, clinical presentation, assessment, diagnosis, and treatment aspects of cardiac myxomas. Since myxomas are a rare occurrence in cardiac surgery, it is hoped that this report may increase awareness and enhance cardiovascular nurses' understanding and knowledge in caring for the myxoma patient.

**Key words:** heart, atrium, myxoma, surgery, echocardiogram

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## Case Study

A 58-year-old gentleman presented for investigation of a right pleural and right atrial mass detected by routine chest film and transthoracic echocardiogram (TTE), respectively. The patient was receiving rehabilitative care after a below-knee prosthesis fitting. Routine work-up prior to advancing activity level was completed due to a previous history of coronary artery disease (CAD) and a myocardial infarct (MI). He had recently received antibiotics for an infected amputation site, but otherwise was generally well. There was a documented weight loss of 55 pounds over a three-month period and an elevated erythrocyte sedimentation rate (ESR).

Physical examination was unremarkable except the cardiac assessment revealed a split S<sub>1</sub> and an audible S<sub>3</sub>. Computerized tomography of the thorax confirmed the possibility of myxomas in both atria and suggested a pulmonary embolus on the right side. Transesophageal echocardiogram (TEE) confirmed right and left atrial masses consistent with biatrial myxomas. The right atrial mass, measuring 5.1 x 2.5 cm, was mobile and attached to the lateral wall of the right atrium. The left atrial mass was also mobile, measured 3.1 x 2.5 cm, and was attached at the foramen ovale. Coronary angiography was considered appropriate due to the past medical history of CAD and MI and revealed significant stenosis of the proximal left anterior descending (LAD) artery, amendable to surgery.

Biatrial masses were successfully resected using a biatrial surgical approach. The right mass was removed completely as was the entire base of the tumour

involving the right atrial wall. The left atrial mass attached to the fossa ovalis was then excised including the entire stalk and the underlying normal tissue. A single coronary artery bypass graft (CABG) using the left internal mammary artery to the LAD artery was performed.

Pathologic examination confirmed the diagnosis of biatrial myxomas. The right myxoma was an oval, slightly lobulated, whitish tumour that measured 4x3x2.5 cm. The left myxoma was an oval, lobulated, yellowish-white tumour that measured 4.2x3x2.5 cm. The post-operative course was uneventful except for the need for pacing initially after surgery. The patient was discharged home one week after cardiac surgery and there has been no recurrence of the myxomas to date.

## Introduction

A myxoma is a rare, usually noncancerous primary tumour of the heart (Brazil, 2001; Hall, Cooley, McAllister, Frazier, & Wilansky, 2001; Percell, Henning, & Patel, 2003). It is the most common benign cardiac tumour in adults, yet has a very low incidence in the cardiac surgery population, representing less than 1% of all cases (Bhan et al., 1998). Myxomas can be fatal due to embolic events or sudden death. Emboli can result in occlusion of distal vessels giving rise to local ischemia causing a variety of problems ranging from mild peripheral emboli with few residual sequelae to life-threatening events such as stroke and acute mesenteric ischemia; fatalities in such cases are not unusual and are quite commonly sudden (K. Melvin, personal communication, December 15, 2003).

## Location and Epidemiology

Approximately 75% of cardiac myxomas have a predilection for the left atrium. However, they can occur in other chambers of the heart (Parsons & Deterbeck, 2003; Reber & Birnbaum, 2001). Biatrial myxomas (tumours in both the right and left atria) are extremely rare, comprising only 2.5% of cardiac myxomas (Peachell, Mullen, Bentley, & Taylor, 1998; Umana, Alpert, Massey, Tucker, & Damrich, 1999). Myxomas often attach to opposite sides of the atrial septum close to the fossa ovalis by a stalk, or may be directly attached to the atrial wall (Le et al., 2003; Umana et al., 1999). Although myxomas can occur at any age, they are most prevalent in individuals 30 to 60 years of age, and more common in the female population (Banerjee, 2004; Hall et al., 2001; Umana et al.).

## Pathology

Myxomas may be polypoid, round, oval, gelatinous with a smooth or lobular surface, white, yellow or brown, and tumour surfaces are often covered with thrombi (Reynen, 1995). Although most myxomas are between five and six centimetres in diameter, they can vary from very small lesions to masses encapsulating a whole atrium (Reynen, 1995). The growth rate of myxoma tumours is unknown, but there is speculation that they grow rather quickly (Banerjee, 2004; Bhan et al., 1998).

## Clinical Presentation

Clinical features are often determined by location, size, and mobility of the myxoma. Most patients present with one or more of the classic triad of embolic, obstructive, and constitutional manifestations. However, sometimes, there may be no symptoms. Embolic episodes occur in over 30% of patients when fragments of the tumour, or thrombi outside the tumour, are released and enter the bloodstream (Le et al., 2003; Reynen, 1995). Both pulmonary and systemic embolization can occur with biatrial myxomas. Myxomas in the right atrium may emboli to the lungs and those in the left may emboli to various systemic organs. Obstructive symptoms including pulmonary edema, syncope, shortness of breath, and sudden death occur in over 50% of patients as the tumour obstructs blood flow and interferes with valve function (Le et al., 2003; Umana et al., 1999). Finally, a necrotic or an autoimmune response to the myxoma tissue is thought to be responsible for the constitutional symptoms that may occur including weight loss, fever, malaise, swelling, erythematous rash, arthralgia, myalgia, and abnormal laboratory findings (anemia and elevated ESR, C-reactive protein, and globulin levels) (Reynen, 1995).

## Cardiac Assessment and Diagnosis

Physical examination of a patient with a cardiac myxoma may reveal a loud  $S_1$ , split  $S_1$ ,  $S_3$ ,  $S_4$ , systolic or diastolic murmur (Hall et al., 2001; Reynen, 1995), or a pericardial friction rub (Reynen, 1995). A 'tumour plop', an early diastolic sound, is audible in more than 30% of myxoma cases resulting from the movement of the tumour (Umana et al., 1999).

Physical assessment, chest film, coronary angiography, computerized tomography, and magnetic resonance imaging may have a role in diagnosis, but echocardiograms are considered the test of choice in detecting cardiac myxomas. Although the role of echocardiograms in identifying myxomas is very well-established, approximately five per cent of atrial myxomas are missed on TTE (Percell et al., 2003). While a TTE may determine location, size, shape, and mobility of the myxoma, a TEE can better identify the attachment and morphological changes of the tumour (Banerjee, 2004; Umana et al., 1999).

## Treatment and Nursing Considerations

Since no medical treatment exists to reduce or prevent further growth of a cardiac myxoma, diagnosis of such a tumour indicates the need of urgent, extensive removal to prevent embolic events or sudden death. Open heart surgery enables the tumour to be excised, using a median sternotomy and cardiopulmonary bypass. Prognosis after surgery is extremely good and, with complete resection of the tumour, there is a very low recurrence rate (Percell, Henning, & Patel, 2003). If CAD is suspected in a patient with a myxoma, especially males over 40 years old, it is suggested that coronary angiography be completed to rule out need for CABG surgery with the tumour resection (Erdil et al., 2003; Reynen, 1995).

Cardiovascular nurses' awareness, understanding, and knowledge of the entity of cardiac myxomas are essential in contributing to enhanced pre- and post-operative care. Nurses must be vigilant in assessment and recognition of the clinical manifestations of cardiac myxomas to deliver quality patient care. An astute pre-operative assessment of myxoma patients is a crucial skill for nurses as it provides baseline data for post-operative evaluation. Post-operative care is consistent with nursing care of any cardiac surgery patient with cardiopulmonary bypass, while being cognizant of the possibility for intra-operative tumour embolization. It is important for nurses to understand that although care is taken to ensure the friable tumour is removed without embolization, thrombi or fragments of the tumour may enter the blood stream. Awareness of this entity enables nurses to assess and identify post-operative signs of intra-operative embolization, thus providing competent care for myxoma patients. Cardiovascular nurses also

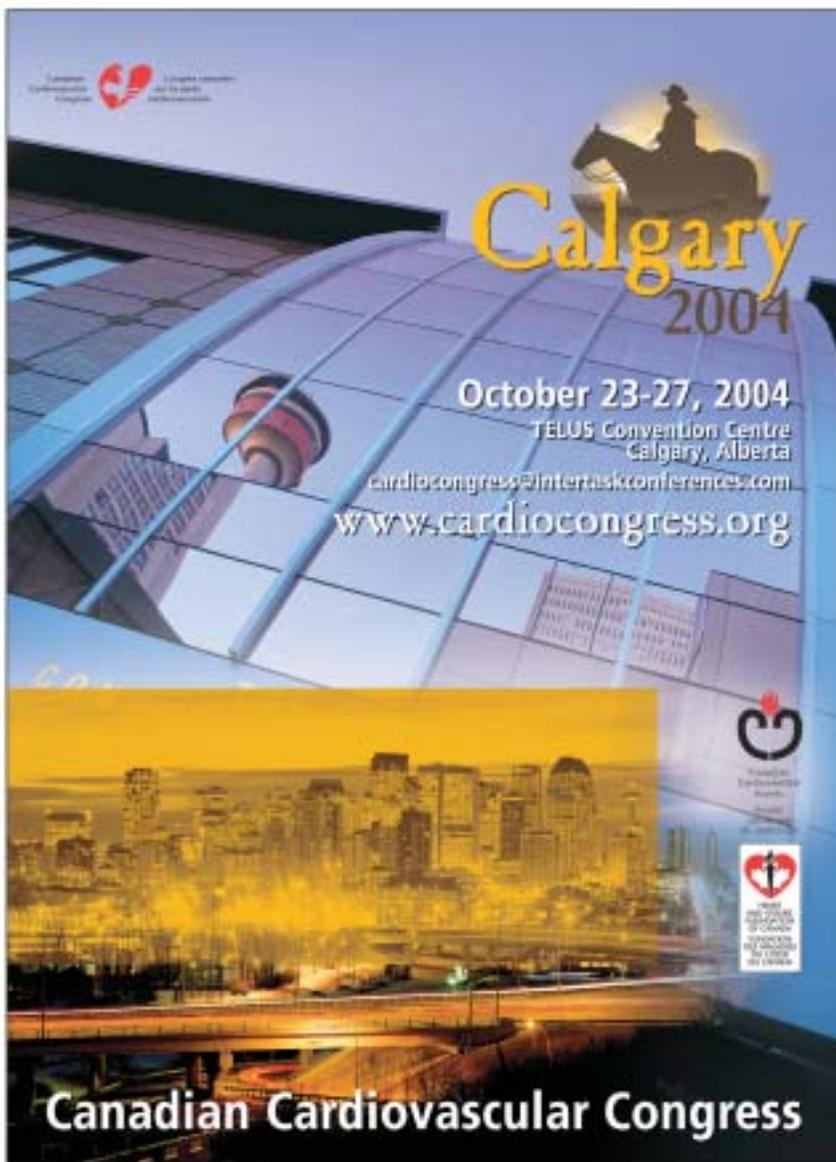
play a major role in educating myxoma patients and their family members. Understanding the pathophysiology and implications of cardiac myxomas enables nurses to provide more thorough education for their patients. Valuable education in the pre- and post-operative phase may enhance nursing care, and help alleviate undue stress and fear for myxoma patients and their family members.

### Conclusion

Biatrial myxomas are quite rare and can be fatal if not detected and treated. Suspicion should be raised in all patients presenting with any of the classic triad of symptoms. Cardiac myxomas have surgical cures, low recurrence, and good long-term survival. Challenges for health professionals are early recognition, diagnosis, and treatment to prevent any life-threatening events. Awareness of this disorder can make early detection and treatment possible. While myxomas are rare occurrences in cardiac surgery, it is vital that cardiovascular nurses continue to enhance their understanding and knowledge to optimize care for the myxoma patient. ♥

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# Registered Nurses' Experiences with an Evidence-Based Home Care Pathway for Myocardial Infarction Clients

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**Objectives:** To obtain home health nurses' comments on an evidence-based care pathway for post myocardial infarction.

**Design:** A qualitative design was used.

**Setting:** Culturally diverse, lower income area of a large city.

**Participants:** All home health nurses from one nursing agency who participated in a comparative study on the impact of the evidence-based care pathway.

**Results:** The largest number of comments made by the nurses were related to the beneficial impact of the pathway on the provision of quality nursing care and on increased job satisfaction. The home health nurses reported that the pathway increased clients' knowledge

of medications and diet. In addition, they commented that they were able to use the pathway effectively because of the training they received from the inpatient cardiac nurses.

**Conclusions:** This qualitative study demonstrates the benefits of investing in the implementation of best practice guidelines by home health nurses. However, nursing associations, such as the Canadian Community Health Nurses Initiatives Group, will need to continue to champion for additional funds to support the additional expenses incurred.

**Key words:** home health care, myocardial infarction, professional practice, evidence-based, qualitative studies

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Nurses, professional organizations, academic institutions, insurers, hospitals and governments are searching for tools that will advance the nursing discipline, meet client needs and reduce resources required to deliver quality care. Home care pathways are one of the tools that have been developed to help nurses deliver the right care at the right time and at the right cost. After their introduction to health in the 1980s, pathway techniques caught the interest of many practitioners and have been widely implemented as part of the evidence-based movement. Every, Hochman, Becker, Kopecky, and Cannon (2000) note that pathways detail the tasks involved in caring for a patient with a given diagnosis and add that pathways should be based on clinical guidelines. Guidelines are consensus statements that are designed to help in making patient management decisions. The proponents of pathways have reported that pathways increase the quality and continuity of care, improve multidisciplinary communication and collaboration, reduce costs by eliminating unnecessary procedures and length of stay, and are useful in educating staff on how to treat a given condition. Others question the widespread promotion of pathways. They caution that the proliferation of pathways has continued at a rapid pace despite serious concerns and questions about their true potential to reduce costs or improve quality for patients.

To address the gap in knowledge regarding the value of pathways for cardiac patients, the Change Foundation awarded a grant to Partners for Health (PFH) and the Home and Community Care Evaluation and Research Centre (HCERC) to assist with the development, implementation and evaluation using a rigorous clinical trial of a pathway for post-myocardial infarction patients. The home care pathway based on valid clinical practice guidelines (CPGs) for myocardial infarction (MI) patients was developed and then implemented in the context of a randomized controlled trial (RCT). The results of the RCT indicated that the pathway had a positive impact on re-admission days for angina, congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) and on OHIP claims for diagnostic and therapeutic services ( $z=-2.5$ ,  $p < 0.01$ ); emergency room visits ( $z=-2.7$ ,  $p < 0.007$ ), and laboratory services ( $z=-2.7$ ,  $p < 0.003$ ).

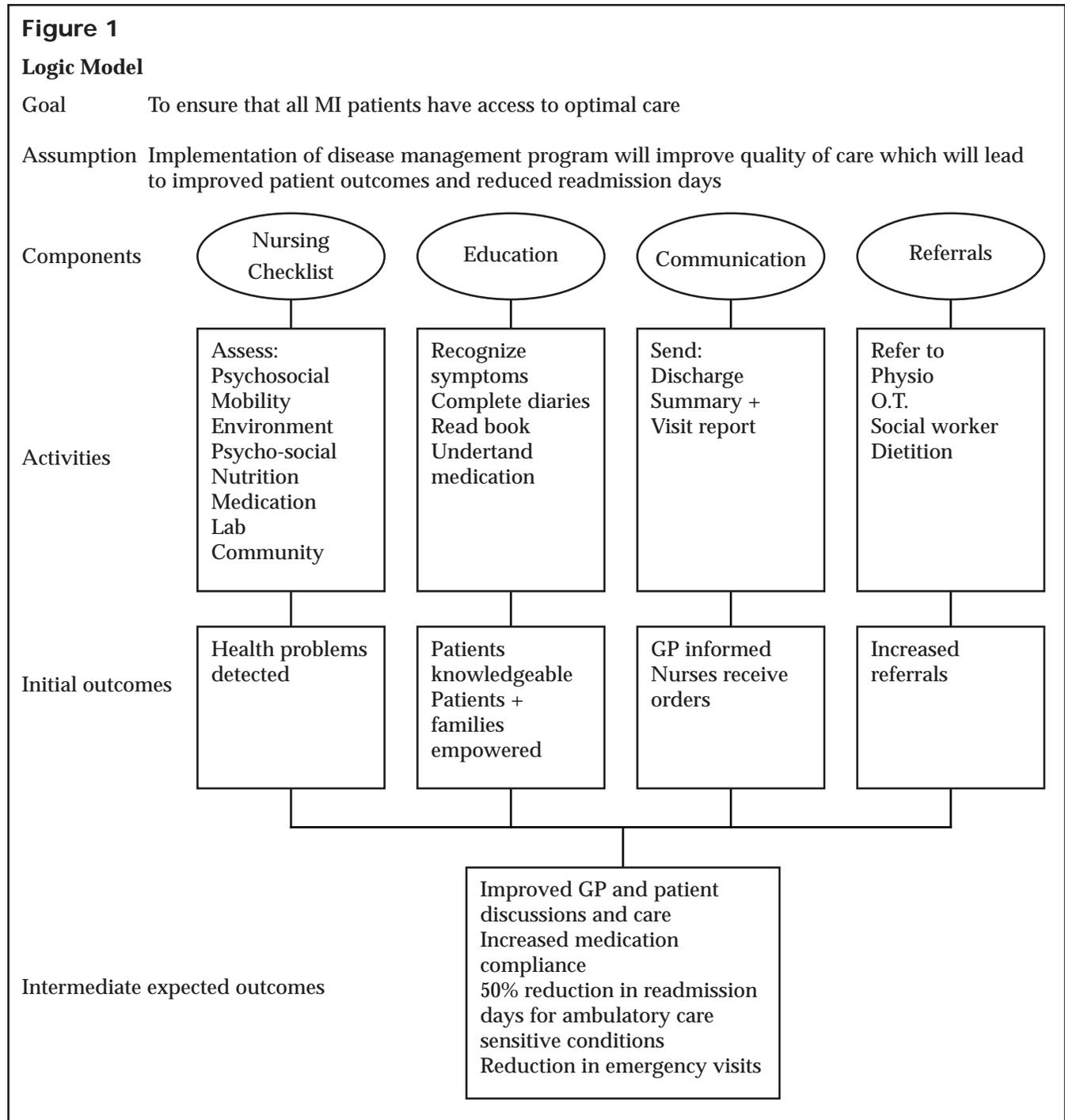
To help us understand the experience of the nurses who delivered the care to the pathway patients, we conducted a focus group. The experiences of RNs who have implemented an evidence-based home care pathway have not previously been reported. The study protocol required a minimum of two visits by home health nurses within the first week after discharge, an additional two visits in the second week, and one visit in each of weeks three, six and eight. The tasks

provided by the home health nurse included: physical assessment; risk factor issues; mobility guidelines; environment, safety, functioning assessment; psychosocial management and caregiver issues assessment; nutrition assessment; medication compliance; lab/diagnostic test compliance; community resources/follow-up. The following logic model clarifies the underlying assumptions about how the pathway for MI patients would lead to the expected outcomes and goals of the change initiative (Figure 1).

## Methodology

### Setting

This project targeted a high-risk population in a region of Metropolitan Toronto, Ontario. The population is culturally diverse with more than 40 per cent of residents having been born outside of Canada. Five hundred immigrants arrive in the catchment area per month. Rates of both low income and low education levels in this area are greater than that of Metro Toronto. The community has more single parent families, more



widows, more divorced/separated individuals and more single households than typically found in Metro Toronto. The pathway was not individualized as the home health nurses have experience involving family members in the care of individuals with low levels of literacy. The mean age of patients was 69.0 overall with 26.7% of participants under the age of 60 and 25.3% of participants 80 years of age or older ( $p>0.05$ ); 40.4% of the study participants were female; a majority lived with a partner; approximately one-third of patients had grade eight or less; one-half of patients were either current smokers or were ex-smokers; and approximately three-quarters of the patients were retired. Participants in the RCT were born in 27 countries. Approximately one-third of the patients were non-English speaking. Sixty patients were said to have had a q-wave infarct and, of these, 35 patients received thrombolytic therapy. One-third of patients had diabetes, 43.8% had a diagnosis of CHF, 53.4% had a diagnosis of hypertension, 15.7% had angina and 23.9% had a diagnosis of COPD.

### **Subjects**

All of the home health nurses who participated in the focus group were involved in the RCT and had attended an educational cardiac session. Didactic and interactive sessions were led by the patient care coordinator of the cardiac care unit, a pharmacist, the researcher, and a cardiologist (G.R.). The sessions included a description of basic cardiac anatomy and physiology, the care of a person with coronary artery disease, cardiac diagnostic procedures, common cardiac drugs and their side effects, and the role of the nurse in the home care of the post-MI patient. During the interactive session, home health nurses applied the pathway to a case study scenario. Each nurse attended the focus group on a voluntary basis. These nurses were from a nursing agency that pays for the time they spend in the home (within preset guidelines) rather than by the number of visits they do. These nurses had treated over two-thirds of those enrolled in the study.

### **Procedures**

This study used focus group techniques to obtain rich and detailed information from home health nurses. The main benefit of focus group methodology is to draw upon respondents' attitudes, feelings, beliefs, experiences and reactions in depth. The focus group was conducted during business hours and lasted approximately one hour. Signed consent was obtained by each member to participate and to audiotape the session. The audiotapes were transcribed verbatim.

Focus group questions were related to activities, outcomes and barriers/enablers. The nurses were asked if they were able to implement the activities as planned. In addition, the nurses were asked if, in their opinions, the outcomes for the nurses, for the patients

and for the families were achieved. Finally, questions were asked about the barriers/facilitators to implementation and what might influence the nurses to try other pathways in future.

### **Data analysis procedures**

Members of the working group overseeing this project agreed to participate in the analysis of the focus group data. The members included a social worker, an inpatient cardiorespiratory nurse, the director of the Cardiorespiratory Health Services, a home health care clinical consultant, and an administrator. Two of the five members had previous experience with qualitative research.

The method of analysis was based on Glauber et al.'s recommendation that the impact of clinical pathways be evaluated from the perspective of quality improvement (QI). The quality improvement tool that was chosen to analyze the focus group data is known as the affinity map which helps to structure and analyze qualitative data. The analysis of verbal response data from focus groups requires a means of organizing the thoughts of many individuals to surface themes and issues in their thinking on a particular topic. The affinity map is a tool found in quality management that was developed to discover meaningful groups of ideas within a list. In **Seven New QC Tools**, Mizuno recommends using the affinity diagram when facts or thoughts are uncertain and need to be organized. Thus, instead of one researcher or two researchers identifying themes, a group of participants must agree on the themes and the inter-relationships. The Affinity Diagram is useful for understanding complex problems.

The nurses' comments, each on a separate piece of paper, were placed on a large table. Members of the working group clustered the comments and worked together in silence until everybody agreed on the groupings. After one-and-a-half hours, the expert panel members stopped moving the notes, indicating that they were finished and that consensus was reached. All comments in each group were then read aloud to ensure that all comments truly belonged in the group. A few comments were moved. Working group members then created a descriptive title for each group ("theme") of ideas and then grouped the themes into three broader groups and identified a key word that summarized the central theme that the grouping of the themes communicated.

### **Results**

During the focus group session, the home health nurses generated 170 comments related to the MI pathway. These comments were organized by the working group members into an affinity diagram with 14 themes (See Figure 2): quality nursing care; psychosocial support; client education; tool; client empowerment; diet; G.P.

involvement; age; communication; educational training; medication; weights and chairs; interdisciplinary communication; cost/time. These 14 themes were further grouped by the working group under the headings of benefits, compliance, and barriers. Compliance in this context is defined as the discrepancy between those services prescribed for clients and those actually used.

**Benefits**

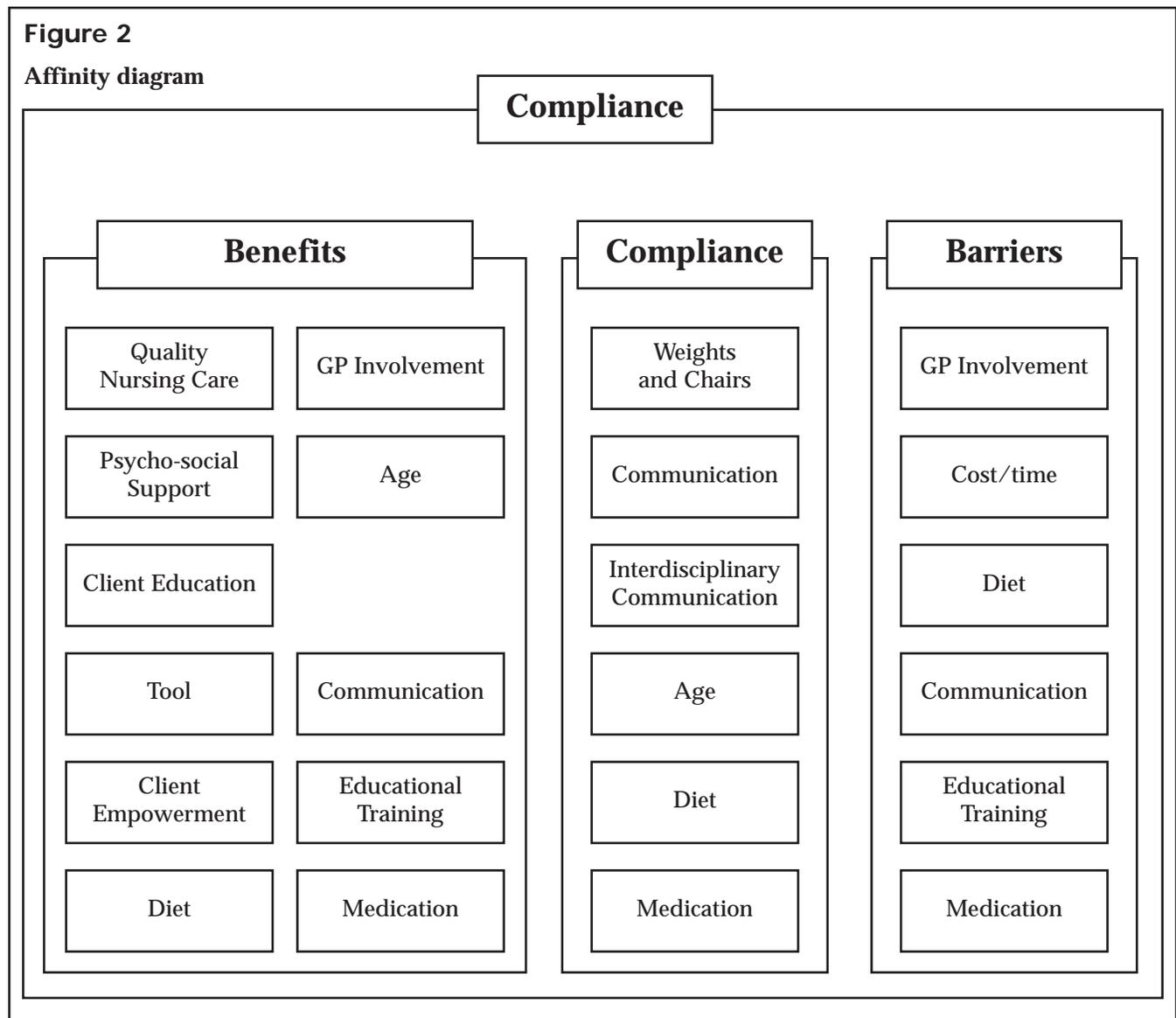
Over 60% (108 out of 170) of the home health nurses' comments were grouped under the super group of "benefits" with the largest number of benefits comprised of the themes "quality nursing care", "tool" and "client empowerment".

*Provision of quality nursing care/job satisfaction*

The largest number of comments made by the nurses was related to the beneficial impact of the pathway on the provision of quality nursing care and on increased job satisfaction. Nurses felt that the quality of care

improved for several reasons. First, there was increased time with patients. The nurses stated that they were "not just taking their blood pressure and rushing out again" ... "Because of the time, I think you felt that you were able to do a better job. And more time to do the teaching. More time to talk to the family. Because often it is the caregiver who has the questions. The patient is doing fine thank you. It is the caregiver, the wife/husband, who is doing the worrying."

Second, the nurses stated that the standardization of the information on one consistent form improved the quality of nursing care. Standardization led nurses to complete more detailed assessments and required them to complete all interventions which were identified as reflecting best practices for post-acute care of heart attack patients. "It was really reassuring, I found, to have it so you knew that you were doing a proper assessment. To me, if I went in to teach, I would be helter skelter, but it certainly gave the guidelines."



Third, the nurses stated that nursing care improved with the pathway because psychosocial support was provided to help patients overcome denial and deal with depression. Some stated that it was new for them to complete a psychosocial assessment and that with the pathway, they were reminded to ask everyone about depression and the stresses.

Fourth, nursing care improved because of the teaching that was provided by the nurses to patients. "Basically, with a little bit of teaching, they sort of realize that they could take charge and we gave them tools, hopefully in many cases to lead a healthier, better life and prevent re-admissions I guess, too." "It is about time that we spent the time looking at the need for teaching and be given the time for it."

#### *Tool*

The second largest number of comments was grouped into a category that the experts labelled as 'Tool'. Here, the nurses were referring to the materials that they received, i.e., the nursing checklist, the patient booklet, and the visit report. They found this material very specific, clear, informative, comprehensive, easy to use, and "well set up." "Had a U. of T. student with me in the fall and it was technically over then, but we were still following the pathway. She was able to do the visit by the last visit. She was able to do the whole thing and felt really good about it. With me, of course." "I found it good for me because I don't have a lot of experience and it was really good because every day there is something different. From one house to the next, it is somebody different. A different problem, a different history. And it was really nice to be able to focus and have reminders there."

#### *Client empowerment*

The home health nurses reported that approximately three-quarters of the patients took an active role, read the patient booklet and used the patient diary. The nurses stated that the increased knowledge that the patients gained led to their empowerment. "They wouldn't wait. They would act." "Some of the spouses got very militant about those books. They were reading religiously. They would have all the questions. And they'd be on the phone to the doctor. It was a lot of information and was really good. And they would know what they should tell you when you walked in the door. They would be prepared for you."

#### *Diet*

The home health nurses made many positive comments that clustered into the group given the title 'Diet'. They reported that they were asked a lot of questions about diet by pathway patients, that many patients were referred to a dietitian and that the patients made lifestyle changes related to diet. Some of the questions were from diabetics or from ethnic

minorities. "I referred several times to a VON dietitian and she was very good about hunting down what they could eat depending on nationality."

#### *GP involvement*

Some GPs became more receptive to the home health nurses' calls. "Often we'll get no phone numbers. No GP even listed for some patients. So that was certainly a help." "I think the doctors, in general, the ones that I had - I had a sense that they were taking note, paying more particular attention because of the pathway and being faxed. I just feel that they were more receptive."

#### *Age*

Home health nurses commented that the pathway benefited older, isolated patients as well as younger patients anxious to return to work. It was their opinion that the older patients would usually be discharged to home care, but that younger patients who could benefit from the pathway would be missed. "In the younger people, it seems to be more of an impact on family. Even if they didn't have young children, just the interactions between husbands and wives and that sort of thing."

#### *Communication*

The pathway was reported to have increased communication, especially for patients who could not read English. "The book was also there for family members. I had some say that they couldn't read it. So I'd say, 'Well get your daughter to read.' Or, if family members had questions, I would tell them to take it home and read it." "I think the communication both ways from the hospital when the client is discharged to our communicating with the family doctor, all the way around. Communication is highlighted. That was an important thing in all aspects of it."

#### *Educational training*

The home health nurses were grateful to have received education on the pathway. "It made me more relaxed going in. You could sit and just take the time to go through things slowly."

#### *Medication*

One nurse noted that the pathway reminded them to ask patients about herbal and alternative medications. "And the herbal and alternative medications. Patients, when they go through their medications, never tell you about the alternatives."

#### *Compliance*

The second super header was a cluster of themes which related to issues surrounding how well they and the patients were able to follow directions. The nurses noted that they and the patients were able to do what the pathway said to do. In particular, they noted that their patients kept their appointments and took their medication. Because of the high compliance achieved, the nurses stated that they would recommend that it be

continued and introduced in other communities. Nevertheless, compliance issues were noted and grouped into themes that were labelled as weights and chairs, communication, interdisciplinary community linkage, age, and diet.

#### *Weights and chairs*

The nurses commented on the two tests, the walking test using chairs and the weight lifting test. There were two weights (five and 10 pounds) that the nurse was required to carry. "Chairs and weights were a problem. I had more patients dizzy over those chairs."

#### *Communication*

Nurses reported that they found it challenging to communicate with physicians.

#### *Interdisciplinary community linkages*

The nurses noted that they did not increase their referrals to occupational therapists or physiotherapists. "We seem to do, I think, physiotherapy, OT, social work all bundled up into the nurse's role."

#### *Age*

The nurses observed that the age of the patient prevented them from doing what the pathway said to do. One-half of the patients could not learn to take their own pulse and one-quarter of the patients did not use the diary.

#### *Diet*

Nurses observed that compliance with completing the patient diary was low at the end of the six-week period. "I think by end of week six, they were tired of keeping track of everything they eat."

#### *Medication*

Nurses stated that initial medication compliance was poor. Patients did take their medications after the nurses had taught them. "Once you taught them why they were taking the pill, then they started complying. Once they understood the reasons."

#### *Barriers*

##### *GP involvement*

The most substantial number of comments made by the nurses related to barriers were assigned the label 'GP involvement'. Nurses would identify issues on the visit report, fax that information to the GP, and request that the GP provide the nurse with additional instructions. However, not all GPs responded.

##### *Cost/time*

The nurses noted that it would not have been possible to implement the pathway without having an hour per visit. "Couldn't have done it. I mean, you would have done it. You wouldn't have zeroed in on the important things: the teaching, the support, the psychosocial aspect."

#### *Diet*

The home health nurses noted that the lack of a 'dial-a-dietitian' is a barrier to addressing patients' concerns.

#### *Communication*

Language, literacy and vision impairments were seen as barriers by some of the home health nurses. "Doesn't work for non-English speaking patients."

#### *Educational training*

Nurses commented that the requirement to attend an educational session on the use of the pathway was a barrier. "I think in our group, X could have done this no problem and she wasn't here for the training."

#### *Medication*

Finally, the nurses said that drug coverage for new drugs is a barrier. "I've forgotten the name [of the drug], but the one that is very expensive and isn't covered, that was an issue for some of the patients. Some weren't aware that it wasn't covered and that they would have to pay for it and it was going to be expensive. Getting information on new drugs to nurses has always been an issue."

## **Discussion**

This is the first pilot study to examine the experiences of home health nurses using an evidence-based home care pathway for post-MI patients. The affinity diagram used in this study helps us understand the home health nurses' experience of the pathway. The home health nurses made overwhelmingly positive comments about the impact of the checklist on standardizing care and patient empowerment. The home health nurses stated that they were successful in teaching patients to take their own pulse, to monitor their weight, to monitor their food intake, and to understand the reason their medications are required. In addition, the home health nurses taught the patients when to call their family physician, when to call the home care case coordinator and when to call the emergency telephone number 911. The nurses encouraged the patients to acquire the necessary skills to look after themselves. As a result of this teaching, patients' knowledge of medications and diet increased. In turn, behaviour changed. Patients and families increased medication compliance, made dietary changes and were empowered to navigate their way through the health care system. They, according to the nurses, learned to accept that they had a chronic disease and to make long term lifestyle changes.

The patient education was appreciated by some patients, but not all. Some patients wanted to be very involved in their care. Others wanted the home health nurses to check their vital signs, but they did not want to take any actions themselves. Still others stated that they were well looked after by their physician and that they did not need additional help at home. Some older patients were unable to learn to take their own pulse or to complete the diary.

Nikolaus, Specht-Leible, Bach, Oster, and Schlierf, (1999b) emphasized the role of home health nurses as educators in their randomized trial of medical patients, as did McCorkle et al. in their evaluation of a home care intervention for post-surgical cancer patients. Nikolaus et al. reported that the intervention patients' increased knowledge about and use of community services resulted in increased client satisfaction and health status perception. McCorkle et al. speculated that the educational component may have led to earlier reporting of problems to health care providers. This increased knowledge, the researchers speculated, may have helped patients and caregivers to develop a sense of control, which may have enabled them to engage in better self-care activities.

The home health nurses in this study stressed the importance of teaching psychosocial skills to all patients to help them deal with depression. Depressed patients have been shown by DiMatteo et al. to be significantly less likely to follow recommendations that reduce the risk of subsequent cardiac events. The home health nurses noted that it was new for them to conduct a psychosocial assessment and to educate patients about depression and cardiac disease.

Taken together, these comments from the nurses suggest that the benefits were achieved through enhanced and new services for a chronic disease, not through coordination. Moving post-MI care from a non-system to an integrated health care continuum through linking existing services will not likely lead to improved outcomes. This speculation is consistent with Jolly et al.'s findings that a program designed to coordinate and support follow-up care for patients after a hospitalization for MI or angina did not improve health outcome. Simply coordinating existing health care services was insufficient. Jolly et al. reported that existing services were often inadequate. They suggested that the secondary prevention of heart disease requires a disease management approach similar to that used for other chronic conditions such as diabetes mellitus. The recommended components of a heart disease management model highlighted by Jolly et al. include: a register, a recall system, clear quality standards and staff training. The intervention used in this study had all of these components.

The nurses in our pilot RCT received satisfaction from empowering patients from a unique catchment area. The patients reside in an area with low to middle income and low educational levels, and they tend to be culturally diverse. It is possible that there was an atypical need to empower this community, given its characteristics. If younger, English-speaking patients are more knowledgeable, have a regular source of care, or can effectively communicate with family physicians, then the experience of the nurses in our pilot RCT may

not be generalizable. To test generalizability, researchers may want to consider the collection of patient-specific data on these individual characteristics and data on additional outcomes such as retention when designing future studies.

The study results also suggest that decision-makers would benefit from linking with researchers. The nurses in our study stated that they would consider participating in another study if "the pathway was well set up". They remarked that they were required to participate in the implementation of a "non-research" pathway. Their reaction to the non-research project was not positive. The nurses' comments suggest that decision-makers should consider implementing pathways only if the pathway has been systematically developed, is based on guidelines that meet the criteria for "good" guidelines, and if adequate resources are made available. Decision-makers may also want to consider the possibility that the very positive reaction to the introduction of standardized care by these nurses may be attributable to the unique contextual characteristics of this one nursing agency. Nurses from other nursing agencies may not support research and may not value the introduction of standardized care.

### **Implications for Home Health Nurses**

The findings from our study provide home health nurses and decision-makers with important insights regarding pathways, their implementation, and future research. We believe that home health nurses should consider implementing pathways into their practice only if the pathway has been systematically developed, only if adequate resources are made available for implementation, and if it is implemented in the context of a research study. Hospital and community decision-makers allocated substantial resources to the provision of care to this group of clients. Clients required more time with the pathway than they had previously allocated to cardiac clients. Each visit lasted approximately 50% longer than most home care visits. In addition, the total number of visits for the post-acute episode was greater than usual. Many of the clients had stabilized after the third week and would have been discharged from home care had they not been on the pathway.

Home health nurses who are interested in introducing pathways in home care need to address the educational training that is required to implement an evidence-based pathway. The home health nurses commented that they were able to use the pathway effectively largely because of the training received from the inpatient cardiac nurses. These comments are consistent with Skwarska et al. who reported that in a randomized controlled trial of home care with clients with chronic obstructive pulmonary disease, specialized respiratory knowledge was required to accurately assess clients.

Registered nurses, who are skilled at the provision of home health care and have additional cardiac knowledge, could customize the number and length of visits in order to improve cost-effectiveness. Who in our health care sector will assume the responsibility and costs required to implement an evidence-based pathway? In the current financial climate, it is unlikely that funding will be found for evidence-based practice unless nursing associations, such as the Canadian Community Health Nurses Initiatives Group, champion pathways. Wider provision of home follow-up for cardiac clients will not occur without champions. ♥

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# Coronary Artery Bypass Graft Patients' Pain Perception during Epicardial Pacing Wire Removal

Sylvia Roschkov, RN, MN, and Louise Jensen, RN, PhD

Surgical placement of temporary epicardial pacing wires (EPWs) onto the epicardial surface of the heart is standard practice during cardiac surgery. The purpose of this study was to determine the intensity and quality of pain and sensations experienced during the procedure of EPWs removal for coronary artery bypass graft (CABG) patients. A descriptive study, incorporating the McGill Pain Questionnaire-short form and visual analogue scales, was used with 100 CABG patients requiring EPW removal. The pain intensity was reported as mild (47%), while the main sensation experienced was pulling (70%). Age, gender,

previous cardiac surgery and EPW removal experience, and use of analgesics did not influence the pain and sensations experienced. However, subjects who had EPWs removed on post-operative day five or earlier did present with higher MPO-SF affective and combined scores. CABG patients can be prepared for EPW removal by providing information that the procedure is a mildly painful, pulling sensation.

**Key words:** pain, sensation, epicardial pacing wire removal, coronary artery bypass graft surgery

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In Canada, cardiovascular disease (CVD) accounts for one-third of all Canadian deaths annually. As the population ages, the incidence of CVD will increase (Heart and Stroke Foundation of Canada, 2003). Advances in pharmacotherapeutics, technology, and physician expertise have improved the opportunities for revascularization of the myocardium. Coronary artery bypass graft (CABG) surgery remains a common method of revascularization with about 24,000 cases performed across Canada in 2000 (Heart and Stroke Foundation of Canada, 2003).

During cardiac surgery, surgical insertion of temporary epicardial pacing wires (EPWs) is standard practice. EPWs can be used post-operatively to assess, diagnose, and treat certain dysrhythmias (Johnson, Brown, & Allgood, 1993; Lynn-McHale, Riggs, & Thurman, 1991; Manion, 1993; Schultz & Woodall, 1989; Wollan, 1995). Potential complications from EPW removal cited in the literature include cardiac tamponade, dysrhythmias, migration of EPW fragments, infection, and bleeding at the exit site of the EPWs (Johnson et al., 1993; Wollan, 1995). However, complications are rare, with a reported risk of 0.4% in the adult cardiac surgical population (Del Nido & Goldman, 1989). Cardiac surgical programs subsequently have developed policies that enable nurses to remove EPWs (Carroll et al., 1998; Wollan, 1995).

Nursing practice not only encompasses procedural competency, but also ensures that patients are educated and prepared for procedures. It had been reported that patients prepared for procedures are more likely to have

favourable outcomes (Gift, Spearing Bolgiano, & Cunningham, 1991). However, little is known about patients' experiences during EPW removal. Specifically, procedural pain and sensations during EPW removal have not been well-studied. Only one study (Carroll et al., 1998) was located to date, which suggested that patients did perceive pain during EPW removal. By having a better understanding of the dimensions of pain, we can gain better insight on pain and sensations experienced by CABG patients during EPW removal, and the factors that contribute to this experience.

## Background

### *Epicardial Pacing Wires*

Epicardial pacing wires have been used in cardiac surgery since their introduction in the 1960s. Today, EPWs are commonplace in the post-operative management of cardiac surgical patients. The wires consist of thin Teflon insulated stainless steel with each end being uninsulated. The distal uninsulated ends of the EPWs are attached to the epicardial surface of the heart, while the proximal uninsulated ends are tunnelled through the chest wall and secured with a stitch to the skin surface. Usually, one or two EPWs are secured onto the right atrial epicardium and one or two EPWs are secured to the right ventricular epicardium. Both are then tunnelled through to exit the chest (Baas & Schneider, 1986; Harjula, Jarvinen, Mattila, & Hartel, 1985; Johnson et al., 1993; Lynn-McHale et al., 1991; Manion, 1993; Schultz & Woodall, 1989; Vitello-Cicciu et al., 1987; Wollan, 1995).

### *Use of Epicardial Pacing Wires*

Cardiac dysrhythmias are not uncommon in the first three post-operative days. The incidence of dysrhythmias can range from 48% to 74% (Lynn-McHale et al., 1991). Generally, patients who have had valvular surgery have higher incidences of dysrhythmias than CABG patients (Lynn-McHale et al., 1991; Schultz & Woodall, 1989). Dysrhythmias can be potentially dangerous and may compromise post-operative recovery. Treatment of dysrhythmias can occur with temporary pacing, either by suppressing the dysrhythmia or by improving hemodynamic function (Lynn-McHale et al., 1991; Manion, 1993).

### *Complications from Removal of Epicardial Pacing Wires*

Complications from removing EPWs are very rare compared to the number of EPWs that are removed each year (Wollan, 1995). Del Nido and Goldman (1989) reported that in the adult cardiac surgical population, the risk of complications from removing EPWs is 0.4%. Potential complications include cardiac tamponade, dysrhythmias secondary to mechanical irritation of the myocardium, migration of EPW fragment, infection secondary to a retained wire fragment, and bleeding from the exit site of the EPWs (Johnson et al., 1993; Wollan, 1995).

### *Removal of Epicardial Pacing Wires*

Routinely, EPWs are removed on the fourth or fifth post-operative day following cardiac surgery. The wires are removed by applying gentle traction in a continuous motion until release of the distal end of the EPWs is felt in the epicardium. The wires are then pulled completely out through the skin (Johnson et al., 1993; Lynn-McHale et al., 1991; Manion, 1993; Wollan, 1995). Historically, physicians have been responsible for removing the EPWs because of the potential complications that may occur from EPW removal. However, the removal of EPWs is becoming an expanded role for nurses. As this procedure becomes a nursing function, nurses will be expected to prepare patients and provide patient teaching about the procedure of EPW removal (Wollan, 1995).

### *Patient Procedural Preparation*

Patients who are educated about their disease and/or surgical experiences are less likely to be anxious and are more willing to be compliant with the medical regimens necessary in their care (Fortner, 1998). By providing sensory information, patients will know what to expect from a procedure and not be confronted with unexpected sensations. In studies that looked at preparing patients for cardiac catheterization, patients who were given various types of preparatory information regarding their procedure were less anxious than those patients who did not receive any information

(Anderson & Masur, 1989; Cason, Russell, & Fincher, 1992; Mott, 1999; Peterson, 1991). Therefore, in order to decrease anxiety and facilitate a more positive outcome, patients should be informed of the sensations that they may experience during removal of EPWs.

Other factors contributing to an increase in the pain intensity and response during post-operative procedures were being female, being younger, and limited use of analgesic (Gift et al., 1991; Meehan, McRae, Rourke, Eisenring, & Imperial, 1995).

## ***Purpose of the Study***

The purpose of this study was to determine the intensity and quality of pain and other sensations experienced during the procedure of EPW removal. The anxiety level experienced during this procedure was also documented, along with other factors relevant to the pain experience such as age, gender, post-operative day, previous cardiac surgery, and length of time since last analgesic. The specific research questions that were investigated included the following: (1) What are CABG patients' perceptions of the quality and intensity of pain experienced during EPW removal? (2) What are the CABG patients' reported quality and intensity of sensations experienced during EPW removal? (3) What are the factors that influence CABG patients' pain and sensations experienced during EPW removal?

## **Method**

### *Design*

A descriptive design was used to assess the intensity and quality of pain and sensations experienced by CABG patients who underwent EPW removal. The study was conducted at the University of Alberta Hospital in the Division of Cardiothoracic Surgery with a convenience sample of 100 post-operative CABG patients. The inclusion criteria included patients who had undergone CABG surgery (no combined cardiac surgery was included such as valvular surgery and CABG); had intact atrial and ventricular EPWs; met standard requirements for EPW removal; were 18 years of age or older; were alert and orientated; and were able to write, read, and speak English. An assessment was completed with each patient immediately following the removal of the EPWs. Data on factors previously identified as influencing the experience (age, gender, post-operative day, previous cardiac surgery and/or EPW removal, and analgesia) were also collected for each patient.

### *Data Collection Protocol*

Ethical clearance was obtained from the Health Research Ethics Board and an informed consent was obtained. Demographic and other relevant data were recorded and the McGill Pain Questionnaire - Short Form (MPQ-SF), pain visual analogue scale (VAS-P),

and anxiety visual analogue scale (VAS-A) were then explained to the subject. Just prior to the EPW removal, the subject was asked to rate their anxiety level on the VAS-A. The nurse practitioner then removed the EPWs. Following the EPW removal, the subject was given the VAS-P to rate the level of pain experienced during the procedure. Next, the subject identified and rated the applicable MPQ-SF pain descriptors. Finally, the subject was asked to describe the intensity and quality of the sensations experienced during the EPWs' removal.

### Instruments

The VAS-P consisted of a continuous vertical 100 millimetre (mm) line with anchors at each end signifying extremes of pain. The continuous line represented the pain intensity. The bottom end represented "no pain" while the top end was "worst pain". The subject was asked to indicate the level of pain experienced at the time of assessment using the vertical VAS-P tool. The researcher then measured the mark from the 0-mm point up to the mark indicated by the subject (Carr, 1990; Carr & Thomas, 1997; Flaherty, 1996; Hancock, 1996; Jensen, Karoly, & Braver, 1986; Kitson, 1994; Klinger & Spaulding, 1998; Melzack, 1987; Melzack & Katz, 1992).

In addition to using the VAS-P, the VAS-A was used to assess the subject's anxiety level. The bottom of the vertical 100-mm line was labelled "no anxiety", while the top was labelled "worst anxiety". The subject used the VAS-A tool to indicate the level of fear, anxiety or worry associated with the procedure. The researcher then measured the distance from the bottom of the scale in millimetres. The VAS-A scores have been positively correlated  $r = .84$  with scores obtained from the State-Trait Anxiety Inventory (Volgelsang, 1988).

The MPQ is a comprehensive pain assessment tool that had been widely used to measure multiple dimensions of pain (Flaherty, 1996; Melzack, 1975; Melzack, 1987; Melzack & Katz, 1992; Puntillo & Weiss, 1994; Valdix & Puntillo, 1995). It provides data on sensory, affective,

and evaluative dimensions of the pain experience (Melzack, 1987). The criticism of the MPQ was that, because it was so comprehensive, it could take up to 30 minutes to complete (Flaherty, 1996; Kitson, 1994; Melzack, 1987; Melzack & Katz, 1992). To assist in more effective collection of multidimensional pain data, Melzack (1987) developed the MPQ-SF. The sensory and affective dimensions of the MPQ and MPQ-SF had a strong correlation of  $r = .65$  to  $.93$  (Melzack, 1987). The MPQ-SF took approximately five to 10 minutes to complete (Flaherty, 1996; Melzack, 1987; Puntillo & Weiss, 1994; Valdix & Puntillo, 1995). The researcher marked the appropriate rank for each descriptor identified by the subject and also recorded the present pain intensity (PPI) score at the time of assessment. If the descriptor was not applicable, a score of zero was given (Melzack, 1975, Melzack & Katz, 1992). The PPI pain intensity, sensory, and affective dimensions of the MPQ-SF had correlations of  $r = .29$  and  $r = .40$  to  $.42$  respectively (Graham, Bond, Gerkovich, & Cook, 1980; Melzack, 1975). The MPQ-SF total scores and the VAS-P have a reported correlation of  $r = .55$  to  $.86$  (Melzack, 1987).

**Table 1**  
**Sample Characteristics (N=100)**

Characteristics	Median	M	SD	Range
Age (years)	63.50	63.61	9.95	41 - 89
Post-operative Day of EPWs Removal	4.00	5.28	2.69	3 - 16
VAS-A (mm)	40.00	40.02	27.02	0 - 100
	<i>Frequency</i>		<i>Percent</i>	
Male	85		85	
Female	15		15	
Previous Cardiac Surgery	5		5	
Previous EPWs Removal	5		5	
Analgesia Given $\leq$ 4 hours Before EPW Removal	53		53	

**Table 2**  
**Reported Pain Intensity**

Measures	Mode	Mdn	M	SD	Range
MPQ - SF Sensory score (max score = 33)	2	3	3.88	2.72	0 - 13
MPQ - SF Affective score (max score = 12)	0	0	.70	1.34	0 - 9
MPQ - SF Combined score (max score = 45)	2	4	4.56	3.62	0 - 21
VAS - P (mm) (max = 100 mm)	35	35	35.08	24.22	0 - 100
PPI (scoring 0-5)	1	1	1.64	.96	0 - 5

### Data Analysis

Descriptive statistics involving frequency distributions and central tendency were used to describe the subjects' demographic characteristics, MPQ-SF scores (sensory, affective, combined scores, and PPI), sensations reported, VAS-P scores, and VAS-A scores. To determine the relationship between various factors relevant to the pain experience such as age, gender, post-operative day, previous cardiac surgery, and length of time since last analgesic, Chi square analysis was used for categorical data. Also, Pearson's *r* was used for analysis of relationships between continuous data, while Spearman's rho or *t* test was used for analysis of relationships between continuous and categorical variables. Statistical significance was set at  $p \leq .05$ .

### Results

A total of 100 patients participated in the study. There were 85 males and 15 females ranging in age from 41 to 89 years ( $M = 63.61$ ,  $SD = 9.95$ ) (Table 1). Five subjects

(5%) had previous cardiac surgery and were also the same subjects who had previously experienced removal of EPWs. The EPWs were removed from post-operative days three to 16 ( $Mdn = 4.00$ ,  $M = 5.28$ ,  $SD = 2.69$ ). Fifty-three subjects (53%) received analgesic within four hours of EPW removal (Table 1). The standard analgesic used in this patient population was acetaminophen with codeine (Tylenol #3). Using the VAS-A, subjects reported moderate levels of anxiety about the upcoming EPW removal procedure. The VAS-A mean was  $40.02 \pm 27.02$  with a mode of 50 mm for 11% of subjects (Table 1).

### Intensity of Pain

Subjects reported low MPQ-SF sensory, affective, total scores, and PPI scores for EPW removal ( $Mdn = 3.00$ ,  $M = 3.88$ ,  $SD = 2.72$ ;  $Mdn = 0$ ,  $M = .70$ ,  $SD = 1.34$ ;  $Mdn = 4$ ,  $M = 4.56$ ,  $SD = 3.62$ ,  $Mdn = 1$ ,  $M = 1.64$ ,  $SD = .96$ , respectively) (Table 2). Also, reported VAS-P scores during the EPW removal procedure were mild to moderate ( $35.08 \pm 24.22$ ), with a mode of 35 mm for 11% of subjects (Table 2). The sensory descriptor most

**Table 3**

**MPQ – SF Descriptor Frequencies**

Sensory Descriptor	None	Mild	Moderate	Severe	Percent of Subjects Reporting Some Degree of the Descriptor
Throbbing	97	3	0	0	3
Shooting	77	15	4	4	23
Stabbing	82	13	4	1	18
Sharp	53	35	9	3	47
Cramping	87	12	1	0	13
Gnawing	71	24	4	1	29
Hot-Burning	67	25	8	0	33
Aching	73	20	5	2	27
Heavy	81	14	3	2	19
Tender	29	42	25	4	71
Splitting	91	9	0	0	9
Affective Descriptor	None	Mild	Moderate	Severe	Percent of Subjects Reporting Some Degree of the Descriptor
Tiring-Exhausting	87	10	1	2	13
Sickening	91	5	3	1	9
Fearful	66	28	5	1	34
Punishing-Cruel	98	2	0	0	2

frequently reported on the MPQ-SF, by 71% of the subjects, was tenderness, and the most frequently reported affective descriptor on the MPQ-SF was the term fearful ( $n = 34$ ) (Table 3).

#### **Sensations Experienced During EPW Removal**

The subjects were asked to describe sensations experienced during the EPW removal using their own words. Each sensation described by the subjects was then qualified as being mild, moderate, or severe in intensity. The most common sensation reported was pulling ( $n = 70$ ) with 37 subjects reporting mild pulling (Table 4).

#### **Factors Influencing Pain and Sensations Experienced**

Age, gender, number of post-operative days to removal of EPWs, previous cardiac surgery and EPW removal, analgesic use, and level of anxiety were analyzed to determine the relationship to pain and sensations reported during EPWs removal.

Age was not significantly related to MPQ-SF sensory, affective, combined scores, VAS-P scores or PPI scores ( $r = -.054, p = .592$ ;  $r = .015, p = .885$ ;  $r = -.044, p = .663$ ;  $r = -.016, p = .874$ ;  $r_s = -.026, p = .795$ , respectively). In addition, when grouping the age of subjects into under 65 years of age and those 65 years or older, no significant differences were found in MPQ-SF sensory, affective, combined scores, VAS-P scores or PPI scores ( $t = .310, p = .757$ ;  $t = -3.58, p = .721$ ;  $t = .158, p = .874$ ;  $t = .023, p = .981$ ;  $\chi^2 = 1.01, p = .313$ , respectively).

There was no significant difference between males and females on MPQ-SF sensory, affective, or combined scores ( $t = .430, p = .668$ ;  $t = .942, p = .349$ ,  $t = .648, p =$

$.518$ , respectively). VAS-P scores and reported PPI scores were also not significantly different for either gender ( $t = -.067, p = .947$ ;  $\chi^2 = 1.88, p = .233$ , respectively).

The number of post-operative days to removal of EPWs was not significantly related to MPQ-SF sensory, affective, combined scores, VAS-P scores or PPI scores ( $r = -.074, p = .465$ ;  $r = -.128, p = .205$ ;  $r = -.100, p = .321$ ;  $r = -.098, p = .333$ ;  $r_s = -.046, p = .650$ , respectively). When subjects were divided into two groups with one group having EPWs removed five post-operative days or less, and the other group with EPW removal greater than five post-operative days, no significant difference in MPQ-SF sensory or VAS-P scores was present ( $t = 1.76, p = .080$ ;  $t = 1.89, p = .061$ , respectively). However, the number of post-operative days to EPW removal was significantly different for MPQ-SF affective and combined scores. Subjects having EPWs removed five post-operative days or less had significantly higher MPQ-SF affective and combined scores ( $t = 2.29, p = .024$ ;  $t = 2.15, p = .034$ ). No significant difference was present between the two groups in relation to reported PPI scores ( $\chi^2 = .330, p = .753$ ).

The five subjects who had previous cardiac surgery were also the same subjects who had experience with EPW removal. Whether a subject had previous cardiac surgery and EPW removal or not had no significant relationship to MPQ-SF sensory, affective, or combined scores, and VAS-P scores ( $t = -1.07, p = .283$ ;  $t = -1.20, p = .232$ ;  $t = -1.24, p = .216$ ;  $t = -.821, p = .414$ , respectively).

Analgesic use within four hours prior to EPW removal did not have any relationship to MPQ-SF sensory, affective, combined scores, or VAS-P scores ( $t = .466, p = .642$ ;  $t = -1.06, p = .290$ ;  $t = .018, p = .986$ ;  $t = -1.15, p = .251$ ,

Sensation	None	Mild	Moderate	Severe	Percent of Subjects Reporting Some Degree of the Descriptor
Pulling	30	37	27	6	70
Burning	87	6	7	0	13
Pinching	87	9	3	1	13
Scratching	90	3	4	3	10
Rumbling	94	3	3	0	6
Sliding	94	3	3	0	6
Stinging	94	3	3	0	6
Tugging	94	5	1	0	6
Tightening	98	2	0	0	2

respectively). No significant relationship was noted between the subjects who received analgesic within four hours prior to EPW removal and those subjects who did not receive analgesic on PPI scores ( $\chi^2 = .284, p = .594$ ).

Level of anxiety prior to EPW removal was not significantly related to MPQ-SF sensory scores. However, VAS-A scores did correlate with MPQ-SF affective and combined scores ( $r = .384, p = .000; r = .255, p = .010$ , respectively). Thus, higher anxiety was associated with higher MPQ-SF affective and combined scores. Anxiety did not have a significant relationship to VAS-P or PPI scores (Table 5).

## Discussion

The demographic characteristics of this convenience sample were those typically found in the cardiac surgery population requiring CABG surgery. Routinely, EPWs are removed on the fourth or fifth post-operative day following cardiac surgery (Johnson et al., 1993; Lynn-McHale et al., 1991; Manion, 1993; Wollan, 1995); similarly, in this study, the mean number of post-operative days to EPWs removal was  $5.28 \pm 2.69$ . Of the 100 subjects, five had previous cardiac surgery and EPWs removal experience. Fifty-three per cent were given analgesic within four hours of EPW removal. No change in nursing practice occurred during this study as participants had their EPWs removed by a nurse practitioner who followed unit policy and procedure for EPW removal.

Prior to education about the EPW removal procedure, the anxiety level of subjects was moderate with 11% of subjects scoring a measurement of 50 mm on the VAS-A. Subjects reported low pain intensity as identified by low MPQ-SF sensory ( $M = 3.88$ ) and affective pain ( $M = .70$ ) scores. Overall, the combined MPQ-SF pain score ( $M = 4.56$ ) and PPI score ( $M = 1.64$ ) were low. The VAS-P scores were found to be only moderate ( $M = 35.08$ ),

which was a similar finding in the only study located to date that researched pain and sensations that may be experienced during EPW removal (Carroll et al., 1998). Therefore, those subjects who received a mild opioid (Tylenol #3) within four hours of EPW removal had effective pain control. The most frequently used MPQ-SF sensory descriptor was tender ( $n=71$ ), and the affective descriptor on the MPQ-SF most reported was the term fearful ( $n = 34$ ). Using their own words, subjects most commonly described a mild pulling sensation ( $n = 70$ ) during EPW removal. In educating patients about EPW removal, informing them that the procedure is typically described as a mild pulling sensation, may assist in reducing anxiety and hence procedural pain (Garvin, Huston, & Baker, 1992; Hartfield, Cason, & Cason, 1982). However, nurses must be cognizant that the pain experience is multidimensional, as well as an individual experience. Therefore, some patients may be able to tolerate mild pain, while others may not.

Age, gender, number of post-operative days to EPW removal, analgesic use, and anxiety level were analyzed to determine the relationship to pain and sensations reported during EPW removal. None of these factors was significantly related to the pain experienced during EPW removal, with the exception of the number of post-operative days to EPW removal. Subjects who had EPWs removed five post-operative days or less scored higher MPQ-SF affective and combined scores. It is difficult to conclude why this would be the case, but possibly the recentness of the surgery, and the number of procedures that are performed to the patient within the first four to five post-operative days may elicit more fear of upcoming procedures.

## Limitations of the Study

The convenience sample of CABG surgical patients limits the generalization of the findings to only this cardiac surgery patient population. Other limitations to the study were that some of the subjects were actually roommates. Therefore, when the first subject was studied, the second subject was able to hear all the responses provided by the first subject; this could have affected the responses. Also, five different surgeons performed the CABG procedures and placement, and securing of the EPWs may have varied. Occasionally, subjects found it very difficult to describe in their own words the sensations felt during EPW removal. Other variables not controlled that may have also influenced the findings were events occurring to the patient prior to EPW removal (i.e., having had another procedure performed), or the nurse practitioner technique.

## Conclusions

In this study, most CABG patients reported having a mild degree of pain and experienced the sensation of pulling during EPW removal. Only those patients

**Table 5**

**Correlation of Pain to Anxiety Level Prior to EPWs Removal**

Measures	<i>r</i>	<i>p</i>
MPQ-SF Sensory	.148	.142
MPQ-SF Affective	.384*	.000
MPQ-SF Combined	.255**	.010
VAS-P	.089	.378
	<i>r<sub>s</sub></i>	<i>p</i>
PPI	.182	.070

\*significance at  $p \leq .05$

\*\* significance at  $p \leq .01$

having EPW removal on post-operative day five, or earlier, reported higher affective and combined MPQ-SF scores. As more nurses are expected to remove EPWs following CABG surgery, it is important for the nurse to be able to inform the cardiac patient of the possible pain or sensations that may be experienced during EPW removal. CABG patients can be prepared for EPW removal by providing information that the procedure is a mildly painful pulling sensation. Having this information will enable the cardiac nurse to prepare the patient adequately and offer support and reassurance, as CABG post-operative patients were moderately anxious about the upcoming EPW removal procedure. ♥

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# Research

R O U N D S

## Fostering Research in Nursing Practice: Clinical Leadership in Action

Dianne Tapp, RN, PhD, Karen Foudy, RN, and Kathryn Sanford, RN, BN

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In attempting to bridge the research knowledge of academia and the practice concerns of everyday cardiovascular nursing, there are many important questions to consider. How can researchable and relevant clinical questions that address important practice issues be developed? How might clinical nurses be involved in formal nursing research projects? How can a culture of nursing inquiry be nurtured and sustained in practice? What kinds of supports are needed to foster research-mindedness in everyday practice?

Over the past year, I (DT) served as “Researcher-in-Residence” with the Heart Health Department in the Calgary Health Region through a collaborative initiative with the Faculty of Nursing at the University of Calgary. The purpose of this role was to support and foster the development of cardiovascular nursing research in clinical practice settings. Early in the tenure of this position, I noticed that something extraordinary was going on within one of the nine units within heart health services. I was approached regularly by nurses from this unit for ideas and assistance to gather and interpret data related to particular clinical issues. Staff on this unit was doing literature searches, reviewing clinical protocols, conducting chart reviews, and planning projects to submit for posters and presentations at upcoming CCCN conferences. This unit was an exemplar of nursing inquiry in action! This column describes what I discovered when I met with Karen Foudy (Assistant Patient Care Manager) and Kathryn Sanford (Instructor Staff Development) to learn more about how these activities were being initiated and sustained.

### A Forum for Practice Inquiry

This unit consists of 18 cardiac intensive care beds and eight post-angioplasty beds, and employs a staff of approximately 70 registered nurses. One year ago, a “Quality Council” was established as a forum for nurses to address practice issues and concerns. The council includes the unit manager, assistant manager, four nurse clinicians, and an instructor, and all of the nursing staff. Typically, 20 to 30 nurses meet once a month for two hours. Half of the meeting is an educational session where invited speakers address topics identified by nurses working in the unit. The remaining time is spent discussing practice concerns, questioning current nursing practices, identifying issues needing follow-up, and exploring the impact of policies and protocols. In the past, nurses would channel their concerns to the nurse managers and await their follow-up. At the council, nurses share responsibility for exploring and acting on solutions to practice issues. Small project teams volunteer to work on concerns that arise. They may be asked to gather more information or do a literature review, to conduct a review of information from worksheets or patient charts, to develop proposals for changes to practice protocols, and to generate and propose changes that address concerns. The council provides a forum for small working groups to report back to their colleagues, sharing information about their process of problem-solving and their findings. There is a measure of accountability for working groups to follow through on issues, and nurses have learned how raising and addressing issues can help them do their jobs better.

## Examples of Projects

These activities have led to small nursing projects that are different from quality assurance activities. The projects are local research initiatives that systematically analyze nursing practice questions. For example, one project explored a concern that acute MI patients who were started on a protocol for continuous insulin infusion seemed to be having hypoglycemic episodes overnight. Nurses questioned why this might be happening, and whether they might be able to recognize patients at risk for these events and intervene to prevent hypoglycemia. A retrospective chart review was done to examine data from 73 AMI patients who received insulin infusion therapy over a period of three years. Results showed that more than 30% of these patients experienced hypoglycemia at various times of the day. This was a higher occurrence than is typically reported in the literature. It was discovered through this review that the protocol for this therapy was not being followed. The project led to revised guidelines to increase the consistency of clinical practice related to the implementation of this therapy. Ongoing data collection will examine whether these changes to the protocol have an impact on the incidence of these untoward hypoglycemic events.

In another project, nurses were concerned about the incidence of vasovagal reactions for patients during removal of femoral sheaths post-angiogram and PTCA. They hypothesized that contributing factors could include anxiety, pain, low circulating volume, and groin compression variables. A literature review and informal telephone survey with other hospital units in Western Canada was done to examine current nursing practices for this population. Some data regarding vasovagal incidents post angiography were readily available from a worksheet that documented each occurrence. A chart review gathered additional information for each of 73 cases. The descriptive analysis of this data illustrated existing practices related to management of vasovagal reactions and challenged assumptions about factors that may influence the occurrence of these reactions.

In each of these examples, nurses examined puzzles and untoward patient events that were commonly encountered in their practice. Both inquiries generated better understanding of current trends of practice in their own unit, and sought comparison with other information sources in the literature and other practice settings. I was most interested in how staff in this unit had been so successful in engaging nurses in questioning their clinical practice, addressing dilemmas from their everyday work, and systematically inquiring into the impact and

effectiveness of their practice. These are essential attitudes and skills that enable nursing research questions, which are relevant to practice, to emerge.

## Shared Clinical Leadership

Karen Foudy and Kathryn Sanford insisted that “research-mindedness” is not at all the focus of the Quality Council. However, both identified a distinct turning point in staff attitudes toward questioning their practice. Almost a year ago, as Assistant Patient Care Manager, Karen attended a “Shared Leadership Conference” and a follow-up workshop that were turning moments in her own career as a middle manager. This conference infused her with a passion to engage her nursing colleagues in a culture shift in their unit. She gathered her colleagues on the unit for a staff meeting. What emerged from this meeting was the shared belief that “we own the unit, and if something’s not right, let’s change it!” The nurse leaders in the unit are committed to the idea that when there is a critical mass of people committed to making their workplace a great place to come to every day, quality is improved for nurses, patients, and other colleagues.

Thus the purpose of the Quality Council is not to foster nursing research, but to enhance the quality of care and the quality of work-life in the unit. The projects that have emerged from this initiative are an outcome of this process rather the primary objective. The impact on staff morale has been dramatic. Nurses are more open to different ways of doing things, and they are more positive and supportive of each other. When new nurses come from other units and hospitals, the staff is keen to learn from them about how protocols and procedures are done elsewhere, and more open to having their own practice questioned. The activities at the Quality Council have fostered many discussions about how nurses do what they do, and why. The council has a reputation for an action orientation that changes practice and addresses issues that are important to the nurses on this unit. By focusing on local concerns and nursing practice that they can change within the unit, the emphasis on making decisions and implementing change has produced tangible results that motivate nurses to keep the momentum rolling. Although there are plans to share the results of these projects with other units and at CCCN conferences, the main goal is to “make a difference to our practice and our unit ... we are not trying to prove something to the world, we are trying to do our best here”.

## Support for Nursing Inquiry

What makes this process work? The trigger in this instance was a nurse manager who was passionate about engaging all of her colleagues as clinical leaders:

“This is not my unit, it is our unit”. Collaboration with the unit’s nurse educator has been essential to support the education-related activities that offer nurses current information for ongoing professional development that nurses said was critical to sustaining excellent practice. Access to the researcher-in-residence has provided in-house consultation to assist nurses to systematically gather and analyze information. Management support has included providing resources to organize meetings, approving use of professional development hours for educational initiatives, and providing small grants for research consultation and support.

### Fostering Research in Practice

This initiative offers important clues for fostering clinical research development. Research questions that are relevant to clinical practice emerge from the everyday issues that nurses encounter in their work. The skills that are developed in these kinds of initiatives are relevant to the research process: identifying a topic or issue, focusing a question that is manageable, identifying existing data that are available to address the issue, conducting literature reviews, and systematically gathering and analyzing additional data. Some of these projects may develop into more formal research proposals. In the interim, these nurses are developing researchable questions, applying research findings from the literature, and solving practice issues. It becomes apparent in this exemplar that perhaps engagement of clinical nurses in research development hinges upon salient practice issues and questions encountered in everyday practice — this is not a new idea! What is conspicuous is the productivity of these local initiatives in addressing nursing concerns in a timely and participative manner. The focus is not on the product of nursing research output, but rather on implementing changes that both improve nursing care and enhance the quality of nurses’ work-lives.

There has been much discussion in the nursing literature regarding the barriers to the application of research evidence in nursing practice, the difficulties of involving clinical nurses in research endeavours, and the limited impact of research evidence on nursing practice (Edwards, Chapman, & Davis, 2002; Mulhall, 2002; Retsas, 2000). In contrast, the mode of inquiry in this unit is consistent with Waine and Scullion’s (2002) view of “research as a continuum of innovation and development” (p. 22). These authors advocated a model of nursing research that emphasizes small scale, locally based initiatives with rapid feedback between those identifying and solving problems. They argued for a commitment to developing practice through a variety of methods rather than primarily conforming to

traditional models of formal research. They suggested that this kind of inquiry and problem solving is possible when climates are fostered to allow workers to innovate. These three ingredients are amply evident in the Quality Council forum described in this paper. ♥

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