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Revue canadienne de soins infirmiers cardiovasculaires

CCCN Vision Statement

Advancing cardiovascular nursing through leadership, advocacy, research and knowledge translation.

Contribuer à l'avancement des soins infirmiers cardiovasculaires par le leadership, les activités de sensibilisation, la recherche et le transfert des connaissances.

Volume 21 ▪ No. 2 ▪ 2011

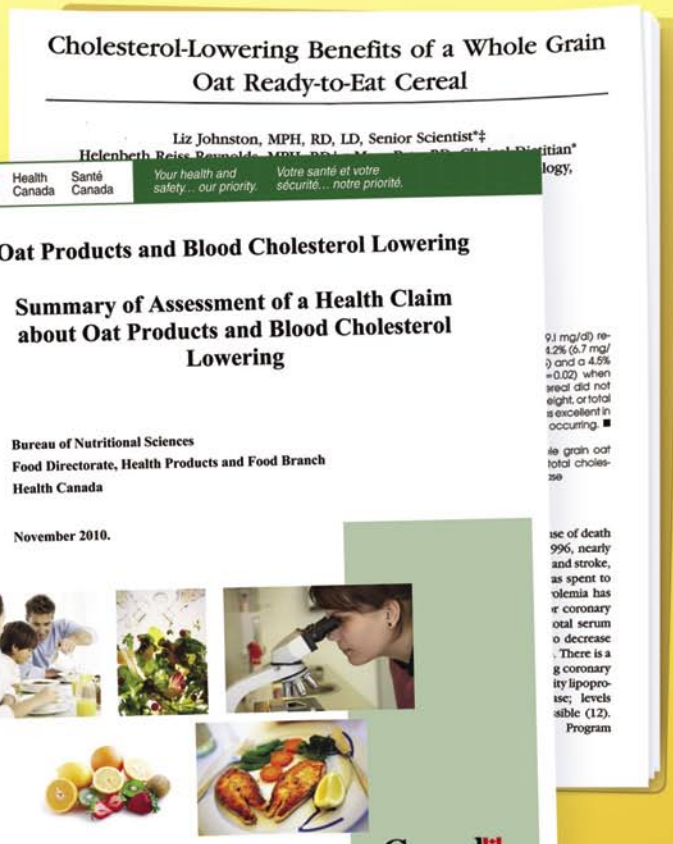
Oat fibre helps lower cholesterol

(But you already knew that...)

Did you know that Health Canada recently approved a packaging and advertising claim for eligible oat-based foods?[1] Cheerios* can now say:

1 cup (27g) of Cheerios* cereal made with oats provides 30% of the daily amount of fibres shown to help lower cholesterol.

One more reason to love Cheerios*


Cholesterol-Lowering Benefits of a Whole Grain Oat Ready-to-Eat Cereal

Liz Johnston, MPH, RD, LD, Senior Scientist*‡

Health Canada Santé Canada — Your health and safety... our priority. Votre santé et votre sécurité... notre priorité.

Oat Products and Blood Cholesterol Lowering

Summary of Assessment of a Health Claim about Oat Products and Blood Cholesterol Lowering

Bureau of Nutritional Sciences
Food Directorate, Health Products and Food Branch
Health Canada

November 2010.

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1. www.hc-sc.gc.ca/fn-an/label-etiquet/claims-reclam/assess-evalu/oat-avoine-eng.php
www.hc-sc.gc.ca/fn-an/label-etiquet/claims-reclam/assess-evalu/oat-avoine-fra.php

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Editorial / Éditorial

This is an exciting issue of *The Canadian Journal of Cardiovascular Nursing* for several reasons. First, this is the first time we are offering a continuing education (CE) article where you can earn credits toward your continuing competency portfolio with the CNA, if you are certified in cardiovascular nursing, or with your provincial association for your licence. We are working toward having more CE articles in future issues and also having them available online, so you will be able to take the quiz and receive immediate feedback and your certificate.

Another reason to be excited is that we were able to include three original articles in this issue. Again, this is a trend we hope to continue, and perhaps even expand, given the number of excellent manuscripts we have been receiving. As always, if you are interested in writing for publication, we encourage you to contact any of the editors or associate editors if you need some help or guidance.

Also, please find in this issue another "Did you know…" column, along with a Clinical Column. If you would like to contribute to either of these columns or the Research Column we would be delighted to receive your submission. The "Did you know…" column is meant to be a brief update on the latest research that can be used by clinical cardiovascular nurses. ♥

N. Parent, RN, PhD
P. Price, RN, PhD
Co-editors CJCN

Nous vous présentons un numéro particulièrement intéressant de la RCSIC pour plusieurs raisons. Tout d'abord, c'est la première fois que nous vous proposons un article de formation continue (FC) où vous pourrez recevoir des crédits s'inscrivant dans un continuum de compétences avec l'Association des infirmières et infirmiers du Canada (AIIC), et si vous êtes certifiés en soins infirmiers cardiovasculaires ou avec votre association provinciale. Nous souhaitons vous offrir d'autres articles de FC dans les prochains numéros de la revue et de les rendre disponible en ligne, afin de vous permettre de réaliser les jeux-questionnaires et ainsi recevoir une rétroaction immédiate accompagnée de votre certificat.

Nous sommes particulièrement emballés par ce présent numéro pour une autre raison : nous avons été en mesure d'inclure trois articles originaux dans ce numéro. Encore une fois, c'est une tendance que nous espérons maintenir et peut-être même prolonger, puisque nous avons reçu plusieurs excellents manuscrits. Comme toujours, si vous êtes intéressés à rédiger pour une publication, nous vous encourageons à communiquer avec les éditeurs ou les éditeurs associés, afin de recevoir toute l'aide et les conseils dont vous pouvez avoir besoins.

Vous trouverez également dans ce numéro une chronique « Saviez-vous que… », de même qu'une chronique clinique et de recherche. Si vous souhaitez contribuer à n'importe laquelle de ces chroniques, nous serions ravis de recevoir votre soumission. La chronique « Saviez-vous que… » se veut une brève mise à jour sur les plus récentes recherches, qui gagneraient à être utilisées par les infirmières cliniciennes en soins cardiovasculaires. ♥

N. Parent, inf., Ph.D.
P. Price, inf., Ph.D.
Co-éditeurs CJCN

Clinical Improvement Grant Program

This Clinical Improvement Grant Program offers CCCN members financial support for knowledge dissemination and knowledge utilization projects pertaining to cardiovascular or cerebrovascular nursing in Canada. The goal is to increase the use of evidence-based research in clinical practice and, thereby, improve the quality of nursing care to patients. A maximum amount of $5,000 is available for this competition. Financial support may vary from $500 to $5,000 according to the type, relevance and number of projects funded.

This grant is directed to:

1. nurses in clinical settings who use results from research to improve their practice (knowledge dissemination and uptake);
2. research nurses wishing to establish linkages with clinical nurses to facilitate the uptake of research evidence and advance clinical practice.

Eligibility criteria:

1. Applicants must be Canadian citizens or permanent residents, current members of CCCN, and currently licensed as a nurse in a provincial/territorial professional association.
2. Projects must include both clinical and research nurses.

1. Knowledge Dissemination Projects

To increase the dissemination of knowledge derived from research in collaboration with nurses working in clinical settings, funds may be used to:

1.1 support nurses to publish (e.g., to access professional consultation services), to prepare oral or poster presentations for the CCCN national conference, or to defray part of the costs associated with travelling to present at another conference;
1.2 support discussion activities, journal clubs or an invitation to an external speaker;
1.3 conduct a critical analysis of the scientific literature for specific clinical issues.

2. Knowledge Utilization Projects

To increase knowledge uptake from research evidence in order to either improve clinical practice or to develop innovation projects.

2.1 Clinical Improvement Projects. Funds may be used to update or refine policies or nursing programs for patients, care maps, and educational programs or materials for nurses or patients.
2.2 Clinical Innovation Projects. Funds may be used to develop new nursing programs for patients, to develop innovative educational materials to enhance patient and family learning or new clinical tools (e.g., care maps, documentation tools and assessment tools or innovative approaches to discharge planning).

Deadline: October 5, 2011

Programme de bourse pour l'avancement de la pratique clinique

Ce Programme de bourse pour l'avancement de la pratique clinique vise à offrir aux membres du CCIISC un soutien financier pour la réalisation de projets de diffusion et d'utilisation des connaissances issues de la recherche en soins cardiovasculaires ou cérébrovasculaires au Canada. Cette bourse vise à favoriser le transfert des données probantes dans la pratique clinique, en vue d'améliorer la qualité des soins aux patients. Un montant maximum de 5,000 $ est disponible pour ce concours. Le soutien qui sera octroyé peut varier de 500 $ à 5000 $ selon la nature, la pertinence et le nombre de projets acceptés.

Cette bourse est destinée aux :

1. Infirmières[1] œuvrant en milieux cliniques désirant s'impliquer en recherche (diffusion et utilisation des connaissances);
2. Infirmières responsables de projets de recherche désirant renforcer un partenariat avec des infirmières œuvrant en milieux cliniques, en vue d'améliorer la qualité des soins aux patients.

Critères d'éligibilité :

1. Citoyenne canadienne ou résidente permanente, membre active au CCIISC, et membre d'une association provinciale ou territoriale en soins infirmiers
2. Il est requis que l'équipe qui soumet une demande inclut des infirmières œuvrant en recherche et d'autres directement en pratique clinique.

1. Projet de diffusion des connaissances

Dans le but de favoriser la diffusion des connaissances issues de la recherche, en collaboration avec des infirmières qui exercent directement en pratique clinique, la bourse peut être utilisée pour:

1.1 Financer des activités telles que la rédaction d'articles (accès à un service de consultation professionnelle), la préparation d'une présentation orale ou par affiche pour la conférence scientifique du CCIISC, ou pour couvrir certains frais associés à un déplacement pour présenter à une autre conférence scientifique;
1.2 Financer des activités de discussion, des clubs de lecture ou la présence d'un conférencier externe;
1.3 Réaliser une revue critique de la littérature scientifique visant à résoudre des problèmes cliniques spécifiques.

2. Projet d'utilisation des connaissances

Dans le but de favoriser l'application des connaissances issues de la recherche par le biais de projets d'amélioration de la pratique clinique ou de projets cliniques innovateurs, la bourse peut être utilisée pour :

2.1 Projet d'amélioration de la pratique clinique : pour une mise à jour ou la modification de politiques ou programmes de soins aux patients (programmes d'enseignement), de cheminements cliniques et de matériel éducatif tant pour les infirmières que les patients.
2.2 Projet clinique innovateur : pour l'élaboration de nouvelles approches ou programmes de soins aux patients, de matériel éducatif tant pour les infirmières que les patients ainsi que des outils cliniques (algorithmes, outils de documentation et d'évaluation d'approches innovatrices de planification de congés).

Date limite : 5 octobre, 2011

1. Le féminin est utilisé uniquement pour alléger le texte et est inclusif des deux genres

Canadian Council of Cardiovascular Nurses

Conseil canadien des infirmières et infirmiers en soins cardiovasculaires

Research Awards presented at the 2010 CCCN Scientific Sessions

2010 National Research Grant Recipient:
Jennifer Price, RN, APN MSc, PhD student, Lawrence S. Bloomberg Faculty of Nursing, University of Toronto, Women's College Hospital, Toronto, ON

Abstract

A Pilot Trial of a Coaching Intervention Designed to Increase Women's Attendance at Cardiac Rehabilitation Intake

Despite significant advances in the detection and treatment of cardiovascular disease (CVD), heart disease and stroke continue to be the leading cause of death of Canadian women. A key intervention in the treatment of CVD, cardiac rehabilitation (CR) has been shown to be effective in both men and women, but remains largely underutilized, especially in women who comprise only 12% to 24% of contemporary CR programs, even though the prevalence of CAD in men and women is similar (American Heart Association, 2009). Several factors have been identified that increase CR program intake in women. These include strong physician referral, higher education and income, living in an urban community and strong social support. Barriers identified include transportation issues, co-morbidities, family commitments, timing of the program and anxiety (Arthur, 2001; Stone, 2004). Existing processes, including automatic referral, do not adequately address the issue of CR utilization by female cardiac patients (Grace et al., 2004b; Harkness et al., 2005).

Despite positive health outcomes in other populations, studies examining the impact of coaching to influence attendance at CR were not found. The objectives of this pilot trial are to test the feasibility of all procedures for a definitive trial and to inform the content of the coaching intervention, specifically to determine: a) an estimate of patient recruitment rate, (b) the acceptability of the coaching intervention, (c) describe common barriers to attendance at CR intake, and (d) describe common resources/solutions. It is anticipated that regular health coaching designed to support self-management, delivered by telephone, will increase the likelihood that women will attend their CR intake appointment. ♥

2010 Clinical Improvement Grant Recipient:
Susan Morris, RN, BN, MEd, CNCC(C), CCN(C), Saint John Regional Hospital, Horizon Health Network, Saint John, NB

Abstract

Reaching for 100 in New Brunswick

Canadian Nurses Association (CNA) certification in a chosen specialty demonstrates commitment to the nursing profession, confirms knowledge of a specialty, creates an individual challenge, prepares registered nurses for greater responsibility and increases credibility with the profession and also to the public. Currently, there are 854 nurses in Canada holding certification in the field of cardiovascular nursing; 59 of those registered nurses reside in New Brunswick (CNA, 2010). Could this number exceed 100 in New Brunswick by the year 2015? With leadership and financial support, I believe this number could be a reality.

Understanding the barriers to writing this exam were previously identified through a needs assessment and a short summary is provided below.

Registered nurses working in the field of cardiovascular nursing identified the following barriers to writing the CNA exam: lack of time to dedicate to studying, lack of educational resources, geography (many nurses living in rural areas), fear of failure and personal finances.

The Clinical Improvement Grant from the Canadian Council of Cardiovascular Nurses would assist in breaking down the barriers of geography and lack of education resources. This would be achieved with the purchase of Webinar technology, a small library of literature dedicated to this group of registered nurses and their educators, funds to provide honorariums for guest speakers at an annual conference, and provide an environmentally conscious alternative to printing PowerPoint slides and articles. The translation of knowledge using alternate media (i.e., Webinars) has the potential to reach a significant number of registered nurses in New Brunswick and may be the impetus required to achieve the goal of 100 nurses certified in cardiovascular nursing by the year 2015. ♥

Western Canada Best Practices—Knowledge Translation

On February 4–5, 2011, nursing and medical leaders from seven tertiary care cardiac centres in Alberta and British Columbia came together in Vancouver for a workshop with the following objectives:

- Introduce knowledge translation as a process to implement/spread best practices;
- Share best practices in caring for patients with acute coronary syndrome or myocardial infarction;
- Identify potential project(s) for collaboration related to implementation of best practices based on gaps, opportunities and principles of knowledge translation; and
- Provide an opportunity for networking between cardiac centres in British Columbia and Alberta.

After stimulating presentations about successful projects, common themes emerged:

- Champions—needed for successful implementation (from each discipline affected)
- Relationships—existing or new, they are important, especially if an initiative crosses units, institutions or municipalities
- Education—must be planned for all key audiences/players
- Communication—especially critical when people are being asked to change practices
- Opportunity—good timing and synergy with other projects may create unexpected opportunities
- Measurement—critical to demonstrate success
- System issues—must always evaluate the impact of a project on other parts of the system.

The participants identified projects for possible adaptation and collaboration, including early access to follow-up clinics and referral to cardiac rehabilitation for MI patients; radial access PCI; smoking cessation using the Ottawa Model; rapid access to primary PCI and immediate repatriation of low-risk STEMI patients afterwards. "Lean" methodology was seen as a useful method for some of these initiatives.

The groups will attempt to start collaborations and will explore potential sources of funding or other support to facilitate this. The next face-to-face meeting is scheduled for the fall of 2011.

Martha Mackay, PhD, RN, CCN(C), Clinical Nurse Specialist, Cardiology, Heart Centre, St. Paul's Hospital, Cardiovascular Outcomes Research Fellow, Cardiac Services, B.C. Clinical Assistant Professor, School of Nursing, University of British Columbia, Vancouver, B.C.

Understanding Sleep-Disordered Breathing as a Risk Factor for Hypertension and Metabolic Diseases: Implications for Clinical Assessment

Sanjy Lochan, RN, BSN, CCN(C)

Background

At CCCN's National Health Promotion Education Session held October 2010, in Montreal, Dr. Matthieu Gaudet presented a talk titled "*Is Sleep Apnea a Modifiable Risk Factor of Cardiovascular and Metabolic Diseases?"* He addressed the physiological impact of disrupted breathing and sleep patterns and how, over time, physical changes like hypertension and metabolic syndrome occur in the body that specifically affect the heart and either exacerbate existing heart disease or contribute to new onset heart disease. There were major implications in his message for clinicians, such as asking patients about their breathing and sleep patterns at night and assessing patients experiencing the cycle of metabolic syndrome. It is concerning that two common modifiable risk factors for cardiac disease (metabolic syndrome and sleep apnea) remain largely under-diagnosed and undertreated in clinical practice (Drager et al., 2010). In this article, the author will first describe two commonly known types of sleep-disordered breathing (SDB): central sleep apnea (CSA) and obstructive sleep apnea (OSA). To simplify, this author will primarily use the term OSA with the understanding that the effects of OSA and its treatment are applicable to most, if not all, SDB patterns. A focused overview of biochemical changes that link OSA to sustained hypertension and metabolic syndrome will be discussed. Clinical questions based on a valid OSA assessment tool will be provided for clinicians to incorporate, as part of a comprehensive assessment of modifiable risk factors for cardiac patients.

Definition of Sleep-Disordered Breathing

There are two primary types of sleep-disordered breathing. One is CSA, a central nervous system disorder, the other is OSA, which is an obstructive disorder. CSA involves a dysfunction of the central respiratory centre that causes a disruption in the respiratory movements of the chest and abdomen (Wolk, Kara, & Somers, 2003). CSA can be seen in people with lower brainstem lesions, heart failure and chronic obstructive pulmonary disease, and it can be medication-induced. CSA involves multiple episodes of respiratory cessation during sleep (Parati et al., 2002; Wolk et al., 2003).

OSA refers to repeated pauses or marked reduction of airflow in normal breaths during sleep caused by collapse of the soft upper airway structures. OSA and CSA may occur together, as a mixed disorder, and both will cause biochemical changes in the body when respirations pause or apnea lasts 10 seconds or longer (Chasens, Weaver, & Umlauf, 2003; Parati et al., 2002). In OSA, the repetitive collapse of the upper airway may be partial (hypopnea) or complete (apnea) and can last anywhere from 20 seconds up to one minute. This has led to a way of quantifying the severity of a person's OSA condition by using an apnea-hypopnea index or AHI (Parati et al., 2002). The AHI is "defined as the average number of apneas and hypopneas per hour of sleep" (Parati et al., 2002, p. 203), but SDB experts give a wide range from five to 15, as clinically significant depending on the patient's overall physical health state (Coughlin, Mawdsley, Mugarza, Calverley, & Wilding, 2004; Drager et al., 2010; Parati et al., 2002).

OSA is most common among men and women in their fourth to seventh decades of life and it is prevalent among obese individuals. In the supine position an obese abdomen can encroach on lung space, making it difficult for the individual to take deep breaths and, therefore, compromising his or her breathing during sleep. Obese people have a tendency to develop a thick neck circumference due to fat deposition around the upper airway, face and tongue. This can potentiate airway obstruction, as the airway narrows and can collapse more readily during sleep (Chasens et al., 2003; Lamm, Poeschel, & Smith, 2008; Wilcox, McNamara, Collins, Grunstein, & Sullivan, 1998). Obvious characteristics observed with most OSA sufferers in a sleep clinic are fragmented sleep, witnessed apnea, self-reported daytime somnolence, poor concentration, fatigue, a drop of 4% or more on overnight pulse oximetry readings, snoring, obesity, diabetes, resistant hypertension and metabolic syndrome. SDB patterns are determined using the gold standard technique of overnight polysomnography.

Habitual loud snoring is included in the SDB family of breathing disorders and can be accompanied by OSA in some individuals. There are reports of OSA in Asians because of their craniofacial structure, which, despite their slim build, predisposes them to cardiac and metabolic diseases as a result of the same biochemical changes that take place with obese OSA sufferers (Chasens et al., 2003; Drager et al., 2010; Li, Kushida, Powell, Riley, & Guilleminault, 2000; Parati et al., 2002).

Biochemical Changes of OSA

Before explaining the biochemical changes and constellation of physical effects that occur during OSA, it is important to appreciate how an organized, uninterrupted sleep-breathing pattern benefits our bodies from a physiological standpoint. Uninterrupted sleep of seven hours allows our bodies to perform necessary reparative and renewal functions without having to compete with additional active demands. Because our bodies are slowed down at night, metabolic requirements and blood pressures "dip" and are not as high as during daytime hours when we are more active. Ensuring a constant supply of blood glucose, however, is critical for cerebral function because glucose is the only substrate metabolized by our brain cells and, since we generally do not ingest nourishment during the night, our bodies have to counter-regulate this period of sustained hypoglycemia. Under normal sleep-breathing conditions, sugar production is controlled through gluconeogenesis and glycogenolysis in the liver and by inducing peripheral insulin resistance, which reduces glucose uptake by our skeletal muscles. These protective mechanisms help to ensure that our brain cells are nourished as we sleep (Hodgson, 1991; Trenell, Marshall, & Rogers, 2007).

Since OSA is the result of intermittent upper airway obstructions, it can cause partial rousals that interrupt sleep. An OSA sufferer experiences a chronic pattern of intermittent hypoxia and hypercapnia that interfere with the body's ability to rest, repair and restore itself. Studies have shown that in OSA intermittent hypoxia stresses the body causing surges of catecholamine release at the end of each apneic event and there is a "marked increase in blood pressure, heart rate, metabolic rate, levels of blood glucose, and glycogenolysis by the liver and skeletal muscles as a result" (Chasens et al., 2003, p. 90). The body responds to high glucose with a rapid release of insulin, which alters the normal, resting metabolic processes. Animal studies in rats and dogs have shown that chronic stimulation of the sympathetic pathway during OSA after each apneic period translates into a sustained stress response. Human data confirm increased sympathetic activity during sleep with OSA, which can spill over into daytime hours and eventually lead to sustained hypertensive (non-dipping) and hyperglycemic states.

Data also show that the cardiovascular and metabolic effects of intermittent hypoxia are "similar to those induced by persistent chronic hypoxia", such as "neurocognitive defects, neural degeneration, angiogenesis with vessel proliferation, changes in vascular permeability, brain injury from the generation of reactive free radicals, and impairment of mitochondrial function" (Parati et al., 2002, p. 209). It is hypothesized that sustained hyperglycemia in OSA interferes with glucose management by insulin. This phenomenon coupled with daytime lethargy and reduced activity level as a result of poor sleep can contribute to increasing obesity leading to insulin resistance, type 2 diabetes and metabolic syndrome.

Metabolic syndrome is a term used to identify the cluster of obesity-insulin resistance-hypertension-and-dyslipidemia characteristics that develop and begin to co-exist in men and women over time (Drager et al., 2010; Parati et al., 2002). Metabolic syndrome is a cluster of modifiable cardiac risk factors that often presents in cardiac patients and that clinicians must take the time to thoroughly assess for, educate patients about, and follow up on. Future studies are still needed to clearly delineate the relationship between OSA and metabolic syndrome, since both are known to be associated with sympathetic over-activity and, upon deeper more focused clinical questioning, both tend to present simultaneously in the cardiac patient population, hinting at some degree of correlation (Grassi et al., 2010).

Sustained hypertension during sleep in OSA can eventually lead to cardiac and vascular hypertrophies, as well as endothelial dysfunction, all of which can lead to an increase of cardiovascular events (Chasens et al., 2003). Drager et al. (2010) found that OSA patients "used a greater number of antihypertensive drugs" (p. 1138). Studies have shown that there is an increased risk of angina or acute coronary syndrome in the waking hours for OSA sufferers. Normally, there are vagal reflexes working alongside a rapid increase in sympathetic response to waking. However, in OSA, there may be a flood of catecholamine influence left over from the night at twice the normal levels, which may place stress "on vulnerable plaques by a sudden increase in heart rate and blood pressure" (Wilcox et al., 1998, p. S27). This phenomenon in OSA can trigger an acute coronary (or cerebrovascular) event in the middle of the night or the early hours of the day. A clinical correlation has been hypothesized between OSA and unexplained chronic distal pain symptoms. OSA results in prolonged "hypoxia that can lead to tissue ischemia potentially affecting all body systems" (Lamm et al., 2008, p. 226). Tissue ischemia might be compensated by transient peripheral vasoconstriction, which could explain why some OSA sufferers complain of waking up with "stiffness and soreness all over" (Lamm et al., 2008). It is crucial for clinicians to recognize that the chronic nature of repetitive sympathetic stimulation and prolonged hypoxemia associated with OSA can increase multisystem organ compromise and increase mortality and morbidity in cardiac patients (Chasens et al., 2003).

Clinical Assessment and Treatment Options for OSA

OSA can become a contributor or aggravator of heart disease, and it can lead to a constellation of physical features dubbed "syndrome Z" (Wilcox et al., 1998). Syndrome Z includes "hypertension, central obesity, insulin resistance, hyperlipidemia and OSA" (Wilcox et al., 1998, p. S25). Syndrome Z is basically metabolic syndrome plus OSA. OSA can be hidden and complicated with important clinical significance for cardiac patients. It is important for clinicians to have a heightened awareness about how ubiquitous OSA can be in the adult cardiac patient population. Clinicians must exercise a systematic assessment approach for OSA among cardiac patients and especially those with hypertension resistant to medical therapy.

Polysomnography is considered the gold standard for diagnosing OSA, but it is expensive, technically complex, and requires a full night recording. With the growing awareness of OSA and its implications there are now long waiting lists for this procedure, which means patients are delayed in receiving a diagnosis and receiving treatment (Chung & Elsaid, 2009). Screening tools have been developed to help "predict" OSA patients sooner based on clinical features. A reliable screening tool needs to be concise, easy-to-use, "validated in the target population against an accepted standard...have a high sensitivity and acceptable specificity" (Chung et al., 2008, p.819). The STOP–Bang model is advanced as a practical clinical tool used for identifying OSA sufferers with a reliable degree of accuracy. It differentiates patients with moderate and severe OSA, and it is a tool that can be used in the general and surgical patient populations (Chung & Elsaid, 2009). The STOP stands for yes/no questions related to **S**noring, **T**iredness, **O**bserved apnea, and blood **P**ressure. The specificity of this four-question tool is enhanced by incorporating the "Bang" component, which includes **B**MI, **a**ge, **n**eck size, and **g**ender (Chung & Elsaid, 2009).

Cardiovascular nurses must be able to complete comprehensive assessments of modifiable cardiac risk factors in their patients and include patient teaching about the risks of OSA and habitual loud snoring. Patients and their families should be educated on the classic signs and symptoms of OSA and be helped to understand that it is a modifiable risk factor. Patients need to know that even though OSA is an insidious condition that develops and worsens over time, there are ways to reverse its effects through self-discipline and lifestyle adjustments like weight loss, diet, exercise, diabetes control, smoking cessation, and control of alcohol consumption. "Conservative treatment might also involve sleeping on one's side rather than supine, elevating the head of the bed, practising consistent

bedtime and wake times, avoiding daytime naps, not drinking caffeine before bedtime and avoiding heavy meals before sleep" (Lamm et al., 2008, p. 228) and regular use of continuous positive airway pressure devices, if prescribed. A patient with resistant hypertension should clue the clinician into screening the person as a possible "non-dipper" who might benefit from OSA therapies, namely continuous positive air-way pressure (CPAP). "CPAP is a therapeutic mechanism that delivers steady air pressure through a mask that covers either the mouth and nose or just the nose, to maintain a patent airway" (Holman, 2005, p. 42).

Recent studies support a favourable effect of CPAP on blood pressure in OSA during the night with a correlating fall in ambulatory daytime blood pressure. Short-term effects of CPAP treatment have revealed a reduction in apnea severity, reduced systemic and pulmonary pressures, prevention of nocturnal cardiac ischemia, improved left ventricular function and decreased arrhythmias (Wolk et al., 2003). A carefully controlled study of type 2 diabetics with OSA showed "an improvement in insulin sensitivity" (Wilcox et al., 1998, p. S27). CPAP therapy may help to prevent or augment the sympathetic overdrive that occurs in OSA sufferers and may have a beneficial impact on insulin sensitivity, fasting, and nocturnal blood glucose levels in both diabetics and non-diabetics as preliminary evidence suggests (Tasali & Ip, 2008). A six-week course of CPAP therapy in another study showed a reduction in waking blood pressures in a sample of 34 obese subjects (Tasali & Ip, 2008). CPAP use in OSA sufferers with hypertension that is resistant to medication shows improvement in blood pressure. Therefore, if clinicians adequately screened hypertensive patients for OSA early and implemented CPAP as an adjunct to antihypertensives along with lifestyle coaching, then is it possible to reverse the effects of OSA and metabolic syndrome sooner, before the onset of new or worsening of existing heart disease? "There is clearly a need for future, large-scale, randomized, well-controlled CPAP studies" (Tasali & Ip, 2008, p. 211) with assurance of therapy-compliance and long-term follow-up to fully investigate the effects of CPAP treatment not only on metabolic syndrome, but also on underlying heart disease in cardiac patients who suffer from OSA.

Conclusion

Cardiac clinicians should use valid screening tools like the STOP-Bang model to assess cardiac patients for severity of OSA. We must educate cardiac patients about the implications of sleep-breathing disorders such as OSA and habitual loud snoring. It is imperative that we help patients understand about the insidiousness of this condition and how it can impact their bodies, affect organ function, especially the heart, and alter their quality of life and life-expectancy. Clinicians must assess for OSA early, especially in patients who demonstrate resistant hypertension and help them acquire early treatment. A patient-centred focus for reinforcing the regular use of CPAP therapy and lifestyle changes could be of benefit. There is still more to be learned about the potential impact of CPAP use on OSA as a modifiable cardiac risk factor and the future prospect of early reversal of hypertension and metabolic syndrome on cardiovascular (and cerebrovascular) event rates in OSA sufferers. ♥

About the Author

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References

Chasens, E., Weaver, T., & Umlauf, M. (2003). Insulin resistance and obstructive sleep apnea: Is increased sympathetic stimulation the link? *Biological Research for Nursing, 5*(2), 87–96.

Chung, F., & Elsaid, H. (2009). Screening for obstructive sleep apnea before surgery: Why is it important? *Current Opinion in Anesthesiology, 22,* 405–411.

Chung, F., Yegneswaran, B., Liao, P., Chung, S., Vairavanathan, S., Islam, S., Khajehdehi, A., & Shapiro, C. (2008). STOP questionnaire: A tool to screen patients for obstructive sleep apnea. *Anesthesiology, 108,* 812–820.

Coughlin, S., Mawdsley, L., Mugarza, J., Calverley, P., & Wilding, J. (2004). Obstructive sleep apnoea is independently associated with an increased prevalence of metabolic syndrome. *European Heart Journal, 25,* 734–741.

Drager, L., Genta, P., Pedrosa, R., Nerbass, F., Gonzaga, C., Krieger, E., & Lorenzi-Filho, G. (2010). Characteristics and predictors of obstructive sleep apnea in patients with systemic hypertension. *The American Journal of Cardiology, 105,* 1135–1139.

Grassi, G., Seravalle, G., Quarti-Trevano, F., Mineo, C., Lonati, L., Facchetti, R., & Mancia, G. (2010). Reinforcement of the adrenergic overdrive in the metabolic syndrome complicated by obstructive sleep apnea. *Journal of Hypertension, 28,* 1313–1320.

Hodgson, L. (1991). Why do we need sleep? Relating theory to nursing practice. *Journal of Advanced Nursing, 16,* 1503–1510.

Holman, M. (2005). Obstructive sleep apnea syndrome: Implications for primary care. *Nurse Practictioner, 30*(9), 38–45.

Lamm, J., Poeschel, J., & Smith, S. (2008). Obtaining a thorough sleep history and routinely screening for obstructive sleep apnea. *Journal of the American Academy of Nurse Practitioners, 20,* 225_229.

Li, K., Kushida, C., Powell, N., Riley, R., & Guilleminault, C. (2000). Obstructive sleep apnea syndrome: A comparison between far-east Asian and white men. *The Laryngoscope, 110,* 1689–1693.

Parati, G., Ongaro, G., Bonsignore, M., Glavina, F., Rienzo, M., & Giuseppe, M. (2002). Sleep apnoea and hypertension. *Current Opinion in Nephrology and Hypertension, 11,* 201–214.

Tasali, E., & Ip, M. (2008). Obstructive sleep apnea and metabolic syndrome: Alterations in glucose metabolism and inflammation. *Proceedings of the American Thoracic Society, 5,* 207–217.

Trenell, M., Marshall, N., & Rogers, N. (2007). Sleep and metabolic control: Waking to a problem? *Clinical and Experimental Pharmacology and Physiology, 34,* 1–9.

Wilcox, I., McNamara, S., Collins, F., Grunstein, R., & Sullivan, C. (1998). "Syndrome Z": The interaction of sleep apnoea, vascular risk factors and heart disease. *Thorax, 53*(Suppl. 3), S25–S28.

Wolk, R., Kara, T., & Somers, V. (2003). Sleep-disordered breathing and cardiovascular disease. *Circulation, 108,* 9–12.

Comprendre les troubles respiratoires du sommeil, comme facteur de risque pour l'hypertension et la maladie métabolique : les implications de l'évaluation clinique

Sanjy Lochan, inf., BSN

Introduction

Au cours des sessions éducatives sur la promotion de la santé dans le cadre du congrès du CCIISC tenu en octobre 2010 à Montréal, le Dr. Matthieu Gaudet a présenté un exposé intitulé « L'apnée du sommeil est-il un facteur de risque modifiable des maladies cardiovasculaires et métaboliques? » Il a présenté les répercussions physiologiques d'un flux respiratoire et d'un cycle de sommeil perturbés, et comment au fil du temps, des changements physiques tels que l'hypertension et le syndrome métabolique peuvent se développer et affecter particulièrement le cœur, soit pour aggraver une maladie cardiaque existante ou encore pour contribuer au développement d'une nouvelle pathologie cardiaque. Son message avait des retombées majeures pour les cliniciens, au niveau de l'importance de questionner les patients sur leur flux respiratoire et leur cycle de sommeil et d'évaluer les patients qui souffrent du syndrome métabolique. Il est préoccupant de constater que deux facteurs de risques modifiables et connus pour la maladie cardiaque (le syndrome métabolique et l'apnée du sommeil) demeurent majoritairement sous diagnostiqués et sous traités dans la pratique clinique (Drager et coll., 2010). Dans cet article, l'auteur décrira, dans un premier temps, les deux catégories les mieux connues des troubles respiratoires du sommeil (TRS) : l'apnée centrale du sommeil (ACS) et l'apnée obstructive du sommeil (AOS). Afin de condenser l'information de cette chronique, l'auteur utilisera le terme AOS, en reconnaissant que les répercussions de l'AOS et ses traitements sont applicables à la plupart sinon tous les TRS. Il présentera un coup d'œil ciblé des altérations biochimiques qui associent l'AOS à l'hypertension persistante et au syndrome métabolique. Des questions cliniques basées sur un outil d'évaluation valide pour l'AOS seront présentées afin de fournir aux cliniciens un cadre d'évaluation des facteurs de risque modifiables chez les patients cardiaques.

Définition des troubles respiratoires du sommeil

Les troubles respiratoires du sommeil peuvent être classés en deux principales catégories : l'ACS, un trouble du système nerveux central, et l'AOS, un trouble obstructif. L'ACS est caractérisé par une anomalie du contrôle de la respiration, ce qui provoque une perturbation dans les mouvements respiratoires de la poitrine et de l'abdomen (Wolk, Kara, & Somers, 2003). L'ACS survient chez les personnes atteintes de lésions du tronc cérébral inférieur, d'insuffisance cardiaque, de la maladie pulmonaire obstructive chronique et peut aussi être induit par la médication. L'ACS est défini par des épisodes fréquents d'interruption de la respiration durant le sommeil (Parati et al., 2002; Wolk et al., 2003).

L'AOS est caractérisé par la survenue durant le sommeil de pauses répétées ou d'une diminution significative du flux respiratoire lors des respirations normales, causé par un relâchement des tissus mous de la structure des voies aériennes supérieures. L'AOS et l'ACS peuvent aussi survenir conjointement sous la forme d'un trouble mixte, et ces deux formes d'apnées entraîneront des altérations biochimiques physiologiques, lorsque les interruptions de la respiration ou l'apnée sera d'une durée de 10 secondes ou plus (Chasens, Weaver, & Umlauf, 2003; Parati et al., 2002). Dans l'AOS, l'affaissement répétitif des voies aériennes supérieures peut être partiel (hypopnée) ou complet (apnée) et peut durer de 20 secondes jusqu'à 1 minute. Cette variation permet de quantifier la sévérité de l'atteinte de l'AOS grâce à l'index d'Apnées et Hypopnées ou l'IAH (Parati et al., 2002). L'IAH est « défini comme le nombre moyen d'apnées et d'hypopnées par heure durant le sommeil » (Parati et al., 2002, p. 203). Les experts des TRS utilisent l'indice pour quantifier la sévérité de la maladie de cinq à 15, comme étant cliniquement significatif, en fonction de l'état de santé physique global du patient (Coughlin, Mawdsley, Mugarza, Calverley, & Wilding, 2004; Drager et coll., 2010; Parati et al., 2002).

L'AOS est plus fréquente chez les hommes et les femmes de quarante à soixante-dix ans, et sa prévalence est plus élevée chez les personnes qui souffrent d'embonpoint. En position de décubitus dorsal, l'abdomen de la personne obèse crée un envahissement de l'espace pulmonaire, rendant ainsi la prise d'inspiration profondes plus difficile, ce qui compromet la respiration pendant le sommeil. Les personnes qui souffrent d'embonpoint ont tendance à avoir le périmètre du cou plus grand due à un dépôt de graisse au niveau des voies aériennes supérieures, du visage et de la langue. Ce dépôt de graisse bloque partiellement les voies aériennes, les rendant plus étroites et plus susceptible de se fermer durant le sommeil (Chasens et al., 2003; Lamm, Poeschel, & Smith, 2008; Wilcox, McNamara, Collins, Grunstein, & Sullivan, 1998). Les caractéristiques les plus souvent observées en clinique du sommeil chez les personnes qui souffrent de l'AOS sont un sommeil fragmenté, la constatation d'apnées par l'entourage, une somnolence diurne rapportée par l'individu lui-même, le manque de concentration, la fatigue, une baisse de 4% ou plus sur la lecture de l'oxymètre pulsatile nocturne, le ronflement, l'obésité, le diabète, l'hypertension persistante et le syndrome métabolique. Les TRS sont diagnostiqués en utilisant la technique de référence qu'est la polysomnographie au cours d'une nuit. Le ronflement bruyant habituel fait parti de la famille des TRS et peut être accompagnée d'AOS chez certains individus. On rapporte l'AOS chez les asiatiques en raison de leur structure cranio-faciale, malgré leur physionomie mince, les prédisposant ainsi aux maladies cardiaque et métabolique, par suite des altérations biochimiques similaires qui surviennent chez les personnes obèses souffrant d'AOS (Chasens et al., 2003; Drager et coll., 2010; Li, Kushida, Powell, Riley, & Guilleminault, 2000; Parati et al., 2002).

Altérations biochimiques de l'AOS

Tout d'abord, avant de décrire les altérations biochimiques et les répercussions physiques qui surviennent dans l'AOS, il est important de bien comprendre les bienfaits du sommeil, au cours duquel les phases de la respiration sont bien organisées et sans interruption, d'un point de vue physiologique. Un sommeil sans interruption de sept heures permet à notre corps de réaliser les activités de réparation et de renouvellement nécessaire**,** sans concurrencer les autres demandes additionnelles. Puisque notre corps est au ralenti pendant la nuit, les besoins métaboliques et les fluctuations de la pression sanguine sont réduits puisque nous sommes moins actifs. Le maintien d'un apport constant en glucose sanguin est essentiel pour la fonction cérébrale puisque le glucose est le seul substrat qui est métabolisé par les cellules nerveuses. Puisque nous ne prenons pas de repas pendant la nuit, notre corps doit contre-balancer cette période d'hypoglycémie soutenue. Au cours des respirations normales la nuit, la production du glucose est contrôlée dans le foie grâce à la gluconéogenèse et glycogénolyse, et créant ainsi une résistance périphérique à l'insuline, ce qui réduit l'absorption du glucose par nos muscles squelettiques. Ces mécanismes de protection existent afin de s'assurer que nos cellules nerveuses soient nourries pendant notre sommeil (Hodgson, 1991; Trenell, Marshall, & Rogers, 2007).

Puisque l'AOS est causé par une obstruction intermittente des voies aériennes supérieures, elle peut causer des épisodes d'éveils partiels ce qui interrompt le sommeil. Un individu qui souffre d'AOS aura des épisodes intermittents d'hypoxie et d'hypercapnie chroniques empêchant ainsi l'organisme de se reposer, se réparer et se restaurer. Des études ont démontré que chez les individus qui souffrent d'AOS, l'hypoxie intermittente agresse le corps puisqu'elle occasionne une libération importante de catécholamines à la fin de chaque épisode d'apnée, accompagnée d'une « augmentation marquée de la pression artérielle, de la fréquence cardiaque, du métabolisme, du glucose sanguin et de la glycogénolyse par le foie et les muscles squelettiques » (Chasens et al., 2002, p. 90). Le corps réagira à cette hausse de glucose par une libération rapide d'insuline, modifiant ainsi le processus normal du métabolisme de repos. Des études chez les rats et les chiens ont démontré qu'une stimulation chronique du système nerveux sympathique après chaque épisode d'apnée entraîne une réaction de stress soutenue. Les données des études réalisées chez les humains confirment l'augmentation de l'activité sympathique pendant le sommeil dans l'AOS, de même qu'un débordement de cette activité au cours de la période diurne, ce qui conduit éventuellement à des états hypertendus soutenus **(**sans somnolence**)** et hyperglycémiques.

Les données démontrent également que les répercussions cardiovasculaires et métaboliques de l'hypoxie intermittente sont « semblables à celles induites par l'hypoxie chronique persistante », tels que « les altérations neurocognitives, la dégénérescence neurale, l'angiogenèse avec croissance de nouveaux vaisseaux sanguins, les modifications de la perméabilité vasculaire, les lésions cérébrales causées par la génération des radicaux libres réactifs, et finalement la dysfonction mitochondriale » (Parati et al., 2002, p. 209). Une hypothèse a été énoncée à l'effet que l'hyperglycémie persistante dans l'AOS interfère avec le contrôle du glucose par l'insuline. Ce phénomène, additionné à une léthargie diurne et un niveau d'activité réduit en raison d'un sommeil difficile, peut contribuer à une augmentation de l'obésité menant à la résistance à l'insuline, le diabète de type II et le syndrome métabolique.

Le syndrome métabolique est caractérisé par un ensemble de facteurs de risques, soit l'obésité, la

résistance à l'insuline, l'hypertension et la dyslipidémie, qui surviennent de façon concomitante chez les hommes et les femmes au fil du temps (Drager et coll., 2010; Parati et al., 2002). Ces facteurs de risques cardiaques modifiables sont fréquent chez les patients cardiaques. Les cliniciens doivent prendre le temps de soigneusement les évaluer, d'éduquer les patients en regard de ces facteurs et d'en assurer le suivi. Il est essentiel de poursuivre les recherches pour mieux comprendre la relation entre l'AOS et le syndrome métabolique, puisque nous savons que ces deux maladies sont associées à une hyperactivité du système nerveux sympathique. En réalisant une évaluation clinique plus approfondie, nous constatons que ces deux maladies sont omniprésentes chez la population de patients cardiaques, suggérant ainsi un certain degré d'association (Grassi et coll., 2010).

L'hypertension persistante qui survient durant le sommeil dans l'AOS peut conduire à d'éventuelles hypertrophies cardiaques et vasculaires, et une dysfonction endothéliale, ce qui peut entraîner une augmentation des événements cardiovasculaires (Chasens et al., 2003). Drager et coll. (2010) rapportent que les patients qui souffrent d'AOS « consomment un nombre important de médicaments antihypertenseurs » (p. 1138). Des études ont démontré qu'il existe un risque plus élevé de souffrir d'angine ou d'avoir un syndrome coronarien aigu dans les heures qui précèdent le réveil chez les personnes qui souffrent d'AOS. Habituellement, certains réflexes de type vagal agissent en parallèle à l'augmentation rapide de la réponse du système sympathique lors du réveil. Dans l'AOS cependant, l'augmentation des catécholamines qui est observée au cours de la nuit, jusqu'à deux fois au-dessus du niveau normal, peut causer un stress « sur des plaques vulnérables due à une augmentation soudaine de la fréquence cardiaque et de la pression artérielle » (Wilcox et al., 1998, p. S27). Ce phénomène dans l'AOS peut provoquer un événement coronarien ou cérébro-vasculaire aiguë au milieu de la nuit ou au cours des premières heures du jour. Une corrélation clinique a été observée entre l'AOS et les symptômes de la douleur distale chronique inexpliquée. L'AOS cause une « hypoxie prolongée qui peut mener à une ischémie des tissus affectant tous les systèmes du corps » (Lamm et coll., 2008, p. 226). L'ischémie des tissus peut être compensée par une vasoconstriction périphérique transitoire, ce qui pourrait expliquer pourquoi certains individus qui souffrent d'AOS se plaignent de s'éveiller avec une « rigidité et une sensibilité générale » (Lamm et coll., 2008). Les cliniciens doivent comprendre que les stimulations répétées chroniques du système nerveux sympathique et l'hypoxie prolongée associés à l'AOS peuvent engendrer une défaillance fonctionnelle multi-organes et accroître la mortalité et la morbidité chez les patients cardiaques (Chasens et al., 2003).

Évaluation clinique et traitement de l'AOS

L'AOS peut soit favoriser le développement ou aggraver la maladie cardiaque, et peut mener à une constellation de symptômes physiologiques surnommée « le syndrome Z » (Wilcox et al., 1998). Le syndrome Z comprend « l'hypertension artérielle, l'obésité abdominale, la résistance à l'insuline, l'hyperlipidémie et l'AOS » (Wilcox et al., 1998, p. S25). En réalité, le syndrome Z est en fait le syndrome métabolique, en y ajoutant l'AOS. L'AOS peut être masquée et complexe et avoir une implication clinique importante chez les patients cardiaques. Les cliniciens doivent reconnaître le caractère omniprésent de l'AOS dans la population de patients cardiaques adultes. Les cliniciens doivent s'exercer à une approche évaluative systématique chez les individus qui souffrent d'AOS parmi les patients cardiaques, en particulier ceux qui ont une hypertension persistante malgré une thérapie médicamenteuse.

La polysomnographie représente la méthode de référence préconisée pour diagnostiquer l'AOS. Cette évaluation est dispendieuse et complexe d'un point de vue technologique et elle nécessite l'enregistrement d'une nuit complète. Néanmoins, la prise de conscience grandissante de l'AOS et de ses conséquences sur la santé a tôt fait d'allonger les listes d'attente pour cette procédure, ce qui retarde davantage le diagnostic et le traitement (Chung & Elsaid, 2009). Les outils de dépistage ont été développés pour identifier les patients à « risques » d'AOS plus tôt, basé sur les caractéristiques cliniques. Un outil de dépistage qui est fiable doit être concis, facile à utiliser, « validé dans la population cible et répondant à une norme acceptée..., avoir une sensibilité élevée et une spécificité acceptable » (Chung et al., 2008, p.819). Le modèle STOP-Bang est un outil clinique valide et fiable pour détecter l'AOS. Cet outil permet de différencier les patients qui souffrent d'AOS modérée, de ceux qui souffrent d'AOS sévère, et peut être utilisé dans la population générale et chirurgicale (Chung & Elsaid, 2009). L'appellation de STOP représente les réponses oui/non aux quatre questions associées au ronflement (***S****noring*), à la fatigue (***T****iredness*), l'apnée observée (***O****bserved apnea*) et la pression artérielle (*blood* ***P****ressure*). La spécificité de cet outil est augmentée en intégrant la composante « Bang » qui comprend l'indice de masse corporelle (***B****MI*), l'âge (***A****ge*), la circonférence du cou (***N****eck size*) et le sexe (***S****ex*) (Chung & Elsaid, 2009).

Les infirmières qui oeuvrent en soins cardiovasculaires doivent acquérir les compétences pour réaliser une évaluation complète des facteurs de risques cardiaques modifiables chez leurs patients et offrir un enseignement sur les risques de l'AOS et du ronflement bruyant habituel. Les patients et leur famille doivent être sensibilisés aux signes et aux symptômes classiques de

l'AOS et comprendre que l'AOS est un facteur de risque modifiable. Les patients doivent savoir que même si l'AOS est une condition insidieuse qui se développe et s'aggrave au fil du temps, il existe des moyens de renverser les effets grâce à une discipline rigoureuse et l'adoption d'un mode de vie sain. Ce mode de vie inclut la perte de poids, un régime alimentaire équilibré, l'exercice, le contrôle du diabète, la cessation tabagique et la modération dans la consommation d'alcool. « Le traitement conservateur pourrait aussi vouloir dire de dormir sur le côté plutôt que sur le dos, élever la tête du lit, établir une routine de sommeil pour l'heure du coucher et d'éveil, éviter les siestes diurnes, éviter de consommer de la caféine avant l'heure du coucher, éviter les repas lourds juste avant de dormir » (Lamm et al., 2008, p. 228), et finalement utiliser régulièrement les appareils de ventilation par PPC, tel que prescrit. L'hypertension persistante chez un patient devrait éveiller l'attention du clinicien pour dépister le phénomène de non-diminution de la tension artérielle la nuit (phénomène « non-dipper »**),** une affection qui pourrait bénéficier d'un traitement pour l'AOS, par une ventilation par pression positive continue, PPC (en anglais C.P.A.P., continuous positive air-way pressure). « La ventilation par PPC est un mécanisme thérapeutique qui pousse de l'air en continue à l'aide d'un masque appliqué sur la bouche et le nez, ou seulement le nez, afin de garder les voies aériennes ouvertes » (Holman, 2005, p. 42).

Des études récentes confirment les effets bénéfiques de la ventilation par PPC sur la pression sanguine chez les patients atteints d'AOS durant la nuit. La ventilation par PPC serait également associée à une baisse de la pression sanguine ambulatoire durant le jour. À court terme, les effets observés d'un traitement de ventilation par PPC sont une réduction de la gravité de l'apnée, une réduction des pressions systémiques et pulmonaires, une prophylaxie de l'ischémie cardiaque nocturne, une amélioration de la fonction ventriculaire gauche et une diminution des arythmies (Wolk et al., 2003). Une étude rigoureuse contrôlée chez les diabétiques de type II atteints d'AOS a démontré « une amélioration de la sensibilité à l'insuline » (Wilcox et al., 1998, p. S27). Les premières évidences scientifiques suggèrent que la thérapie de ventilation par PPC peut aider à prévenir ou à augmenter la réponse exagérée du système nerveux sympathique qui survient chez les individus atteints d'AOS et peut avoir un effet bénéfique sur la sensibilité à l'insuline, le jeûne, et le taux de glucose sanguin nocturne, autant chez les diabétiques que les non diabétiques (Tasali & Ip, 2008). Dans une autre étude, un traitement de 6 semaines de ventilation par PPC a démontré une réduction de la pression sanguine lors de l'éveil chez un groupe de 34 sujets obèses (Tasali & Ip, 2008). L'utilisation de la ventilation par PPC chez les individus atteints de AOS, qui souffrent aussi d'hypertension et qui sont réfractaires à la médication, s'est avérée bénéfique pour améliorer la pression sanguine. Par conséquent, si les cliniciens dépistaient précocement l'AOS chez les patients hypertendus, qu'ils initiaient une thérapie de ventilation par PPC en association avec un traitement antihypertenseur et un enseignement sur les saines habitudes de vie, serait-il possible de combattre les effets de l'AOS et du syndrome métabolique plus tôt, avant même l'apparition d'une nouvelle maladie cardiaque ou l'aggravation d'une maladie cardiaque existante ? « Il est nécessaire de réaliser des études randomisées contrôlées à grande échelle, portant sur le traitement de ventilation par PPC » (Tasali & Ip, 2008, p. 211), en offrant un soutien à l'adhérence au traitement et un suivi à long terme, afin d'évaluer avec plus de rigueur l'effet du traitement de ventilation par PPC, non seulement sur le syndrome métabolique mais aussi sur les maladies cardiaques sous-jacente chez les patients cardiaques qui souffrent d'AOS.

Conclusion

Les cliniciens oeuvrant dans le domaine de la cardiologie devraient utiliser des outils de dépistage valides tels que le STOP-Bang afin d'évaluer la gravité de l'AOS chez les patients cardiaques. Nous devons enseigner aux patients cardiaques les conséquences des troubles respiratoires du sommeil tels que l'AOS et le ronflement bruyant habituel. Il est important d'informer les patients sur l'aspect insidieux de cette maladie et sur la façon dont elle peut affecter leur corps, perturber le fonctionnement des organes, particulièrement le cœur, et modifier leur qualité de vie et leur espérance de vie. Les cliniciens doivent détecter de façon précoce l'AOS, surtout chez les patients qui démontrent une hypertension persistante afin de débuter un traitement plus tôt. Une approche centrée sur le patient qui favoriserait l'utilisation régulière de la thérapie de ventilation par PPC et l'adoption de saines habitudes de vie pourrait être bénéfique. Des études sont requises afin d'évaluer l'impact de la ventilation par PPC dans l'AOS comme facteur de risque cardiaque modifiable, et l'effet d'un contrôle précoce de l'hypertension et du syndrome métabolique sur l'incidence des événements cardiovasculaires et cérébro-vasculaires chez les personnes atteintes d'AOS. ♥

Aux sujet de l'auteure

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References

Les références se trouvent à la page 10.

Factors Affecting Program Completion in Phase II Cardiac Rehabilitation

Carrie J. Scotto, RN, PhD, Donna Waechter, PhD, and Jim Rosneck, RN, MS, FAACVPR

Background: Completion of a cardiac rehabilitation (CR) program post cardiac disease event promotes successful recovery and subsequent cardiovascular health. Attrition rates for CR programs have been reported as high as 65%. Little is known about the attrition population.

Purpose: The purpose of this study was to describe demographic and clinical variables associated with non-completion of CR and to identify factors that led to attrition.

Methods: A comparative retrospective survey design was used to identify differences in demographic and clinical variables between patients who completed CR and those who did not. Prospectively, CR participants who dropped out received follow-up calls to identify reasons for program cessation.

Results: Demographic variables were not significantly different between the attrition group and the control group. Having a normal ECG during a pre-program stress test and having higher levels of pre-program stress were significant for the attrition group. The most common reason for dropping out was physical health problems. Other influential factors included patients' perception that the exercise component of the program was too difficult and personal perceptions and reactions to the program.

Implications: Patients entering CR who present in better physical risk categories with higher home or occupational stress levels may be at risk for dropping out. CR staff should monitor patients early for personal reactions to the program along with their response to physical exercise in order to address issues that promote program attrition.

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Key words: cardiac rehabilitation, program attrition, program completion

Facteurs influençant l'achèvement d'un programme de phase II en réadaptation cardiaque

Introduction : Le fait de compléter un programme de réhabilitation cardiaque (RC) suite à un événement cardiaque garantit le succès du rétablissement et de la santé cardiovasculaire. Cependant, les études rapportent des taux d'abandon des programmes de RC particulièrement élevés, soit de 65 %. On connaît peu d'information sur la population qui se désiste de ces programmes.

But : Le but de cette étude était de décrire les variables démographiques et cliniques en lien avec l'abandon d'un programme de RC et d'identifier les facteurs qui mènent à l'abandon.

Méthode : Une étude comparative rétrospective a été utilisée afin d'identifier les différences démographiques et cliniques entre les patients qui complètent un programme de RC et ceux qui ne complètent pas. De façon prospective, les participants qui ont abandonné la RC ont reçu un appel téléphonique afin d'identifier les raisons de l'abandon du programme.

Résultats : Les variables démographiques n'étaient pas significativement différentes entre le groupe qui a abandonné et le groupe de contrôle. Le fait d'avoir eu un ECG normal lors d'un examen à l'effort réalisé avant le programme et le fait d'avoir un plus haut niveau de stress avant le programme, étaient tous deux significatifs chez le groupe qui a abandonné. La raison la plus couramment invoquée pour abandonner était les problèmes de santé physique. D'autres facteurs qui ont influencé l'abandon étaient : la perception des patients que la portion exercice du programme était trop difficile et les perceptions et réactions personnelles en regard du programme.

Implications : Les patients qui s'engagent dans une RC, qui présentent une meilleure santé physique et un plus haut niveau de stress à la maison comme au travail, sont plus à risque d'abandonner. Les entraîneurs en RC devraient évaluer les patients très précocement pour identifier les réactions personnelles face au programme de même que leur réaction face à l'exercice physique, afin de prendre en charge les éléments qui conduisent à l'abandon.

Background

Cardiac rehabilitation (CR) programs are designed to have a positive effect on recovery from acute cardiac events, as well as improving subsequent morbidity and mortality for those with cardiac disease (AACVPR, 2006; Balady et al., 2007). CR includes supervised physical training sessions that are combined with educational classes related to the lifestyle, diet, exercise and medication balance that is essential for recovery. CR has been shown to improve patients' health by promoting strength, weight control, mental health, quality of life, cognition and general knowledge of cardiac problems

(Ather et al., 2007; Gunstad et al., 2007; Haskell et al., 1994; Josephson, Casey, Waechter, Rosneck, & Hughes, 2006). Although poor adherence to positive diet, exercise, medication, and lifestyle changes promoted by CR has repeatedly been identified as limiting long-term affects (Dunbar-Jacobs et al., 2002; Spernak, Moore, & Hamm, 2007; WHO, 2003) more recent studies reported better long-term outcomes for those who complete the programs than for those who do not (Grace, Grewel, Arthur, Abramson, & Stewart, 2008; Mueller et al., 2007;). Attrition rates for CR programs have been reported as low as 22% (Yohannes, Yalfani, & Doherty, 2007) and as high as 60% (Mullinax, 1994).

Much work has been done to identify factors to increase enrolment in CR programs. Extensive reviews of the literature (Beswick et al., 2005; Daly et al., 2002) recognized barriers to participation including lack of referral, psychosocial factors, physical and mental health issues, and lack of resources. The Center for Disease Control in the United States reported only 34.7% of heart attack survivors participate in CR (CDC, 2005). Considering the low rates of enrolment, identifying factors that affect program completion becomes increasingly important.

One study has been published regarding factors associated with non-completion of CR for patients in the U.S. (Sanderson, Phillips, Gerald, DiLulo, & Bittner, 2003). Of 526 CR patients in a large southeastern hospital, only 58% completed the program. Of the 222 patients who dropped out, 139 (63%) did not complete the program for non-medical reasons, such as employment, obesity, male sex, diabetes and smoking. Those who dropped out for medical reasons were more likely to have high clinical risk scores and had shorter six-minute walking distance.

A few recent studies have begun to identify predictors of CR attrition in other countries. Yohannes, Yalfani and Doherty (2007) followed 189 cardiac patients enrolled in CR in the United Kingdom. Forty-two (22%) dropped out, all within the first two weeks. Factors associated with the non-completion included being female, younger age, psychological distress, lower perception of consequences, higher perception of personal control and lower perception of treatment effectiveness. A study of 101 British patients who dropped out of CR between 1994 and 2007 concluded that 65% of the patients maintained their readiness to participate in physical activity, but withdrew from the program because of financial, physical, or lifestyle reasons (Rivett et al., 2009). Another study of 1,115 Iranian CR patients reported an attrition rate of 615 (55.2%) (Sarrafzadegan et al., 2007). Being male, younger age, higher body mass index (BMI), lower waist to hip ratio, patients with higher risk of coronary heart disease and smoking were factors associated with dropping out of the program.

Identifying demographic and clinical factors associated with failure to complete CR is important in identifying patients at risk for dropping out. Examining information about individual reasons for non-completion can provide a foundation for interventions aimed at preventing attrition.

Purpose

This research study sought to describe demographic and clinical variables associated with non-completion of CR and to identify factors that led to attrition.

Methods

Design. This study used a comparative retrospective survey design to identify differences in demographic and clinical variables between patients who completed CR and those who did not. Prospectively, CR participants who dropped out received follow-up calls to identify reasons for program cessation.

Setting, sample, sampling method. Permission for the study was granted by the institutional review board of a large midwestern teaching hospital in the United States. The CR electronic patient records database was queried to identify patients who failed to complete the CR program from June 2002 until June 2009. Patients who had negotiated a shortened program were excluded along with patients who declined follow-up calls at discharge. A structured phone interview format including both specific and open-ended questions was used to gather information about the participants' current status and reasons for program cessation. The participants were contacted by phone and invited to participate in the study. The interviewer described the purpose and voluntary nature of the study. The participants gave verbal consent for the interview.

During the interviews, participants were asked the following questions: 1) What led you to enroll in CR? 2) Did you attend an orientation session? 3) If you attended an orientation session, what do you most recall about it? 4) What worked well for you in CR? 5) What was difficult about CR? 6) What caused you to stop going to CR?

After the interviews were completed the database was again queried to identify a group of CR participants who had completed the program during the same timeframe. These subjects were matched by age and sex to the attrition group. The program records were accessed for demographic variables including age, sex, race, marital status, employment status and years of education. Clinical variables recorded on admission were also extracted for analysis. These included SF-36 physical health summary (PHS), Functional Work Capacity (FWC), Stress Test Interpretation (STI), ejection fraction (EF), mean METs at first exercise session, Duke Activity Status Index (DASI), body mass index (BMI), disease

knowledge level, recent activity level, recent personal stress level, Beck Depression Inventory (BDI), SF-36 mental health summary (MHS), and use of psychiatric medications. These variables were chosen in order to focus on knowledge level and physical and mental health status of patients as they entered the program.

Variable measurement. SF-36 PHS, a measure of functional health and well-being from the patient's point of view, is a 50-point survey score indicating perception of general health (Ware, Kosinski, & Keller, 1994). FWC is operationalized as peak work output, as measured by highest METs (a standard measure of energy expenditure, 1MET = 3.5ml O_2/kg/min.) achieved on pre-program exercise stress test. STI is an assessment made of the patient's physical and electrocardiographic responses during the pre-program exercise stress test and reported by the supervising clinician as normal or abnormal. Abnormal results indicate both ECG and physical signs and symptoms of cardiac compromise occurred. EF is the percentage of blood ejected from the left ventricle during systole. Healthy individuals have an EF of 50–65%. DASI is a valid and reliable measure of exercise tolerance with an equitable correlation with maximum oxygen consumption (Spearman correlation = .81) at peak exercise and is a good estimate of functional capacity (Hlatky, Boineau, & Higginbotham, 1989).

Disease knowledge level was measured using a pre-program cardiac knowledge level test. Content validity for the test was established by cardiac disease experts. The instrument contains 31 items covering basic concepts in the following risk domains: cardiovascular anatomy and physiology, cardiac risk factors, exercise, lipid management, blood pressure, diet and medications. Cronbach's coefficient alpha was used to analyze the test scores of 2,558 phase II CR patients. All 31 items scored ≥0.9 indicating a high level of internal consistency (Rosneck, 2002).

Recent activity and personal stress levels are evaluated on admission. The patient and the staff member discuss the patient's usual activity, risk factors and life stresses. The staff member assigns a score of "sedentary" for those who have no exercise beyond activities of daily living, "active" for those who do not engage in specific aerobic exercise activity, but whose lifestyle, recreational and occupational levels of activity require physical exertion ≥3 times per week, and "aerobic" for those who engage in exercise ≥30 minutes at least three times per week. Stress levels are assigned as "low" for patients who indicate stress is not affecting their daily life, "medium" for those who indicate stress as a factor negatively affecting their daily life and "high" for patients whose stress level is disrupting events of daily life. BDI (Beck, Steer, Ball, & Ranieri, 1996) and SF-MHS (Ware et al., 1994) measure severity of depressive symptoms and perception of mental health respectively.

Data analysis. Demographic and clinical variables for the attrition group (AG) and the control group (CG) were entered into SPSS-16 to calculate descriptive statistics for the sample and examine statistical relationships among the variables. Continuous variables were calculated as means with standard deviations (SD) and comparisons were determined using t-test. Dichotomous variables were calculated as percentages with comparisons identified through Chi square. Statistical significance was set a 0.05.

Results

Demographics. Descriptive statistics for the groups are found in Table 1. Of the 400 calls made to the AG, 61 (16%) completed the phone interview, 17 (4%) were deceased or too ill to take the call, 146 (37%) refused the call or did not want to participate, 173 (43%) had changed phone numbers and could not be reached. The AG were predominantly married, Caucasian, middle-aged males with at least a high school education. The CG had similar demographic representation, and there were no statistically significant differences between the groups.

Clinical variables. Table 2 compares the clinical variables and indicates areas of significant differences between the groups. The AG scored higher on measures of self report for physical health and well-being (SF-PHS) and exercise tolerance (DASI). AG had slightly higher EF and FWC and reported higher levels of recent exercise routine. BMI, cardiac knowledge scores and mean METs generated in the first exercise session were nearly the same for both groups. The AG had significantly more normal stress test outcomes than the control group ($p < .004$).

Table 1. Comparison of Demographic Variables

	Control Group N = 58	Attrition Group N = 61	*p*
	Mean ± SD	*Mean ± SD*	
Age	64 ± 10.2	64 ± 11.2	0.622
	N (%)	*N (%)*	
Sex: Male	29 (47%)	30 (65%)	0.648
Race: Caucasian	48 (88%)	53 (90%)	0.817
Marital Status: married	37 (68%)	42 (72%)	0.821
Employment	35 (65%)	38 (64%)	0.964
Education: 12+ years	21 (95%)	47 (83%)	0.389

SD: standard deviation

Mental health variables. Variables associated with mental health are found in Table 3. The AG had higher BDI scores and slightly lower scores on the SF-36 mental health summary. This indicates that AG members viewed themselves as having fewer mental health problems, but reported the mental health issues they do have as being of higher severity. More AG members reported taking medication to treat depression. Scores for recent stress levels, self-reported as low, medium, and high were significantly higher for the AG ($p < .029$).

Interview responses. Data gathered during the structured phone interviews provided more information about the AG's experience in CR. When asked why they enrolled in CR, only nine (15%) said they sought CR because they believed it would be a benefit to their health. Two participants (3%) said they were referred by family or friends, and an additional two were referred by nurses. The majority (79%) stated their physician recommended CR, and two of those said they felt forced or frightened by the physician into attending.

When asked about program orientation, 19 (31%) stated they did not recall attending an orientation session. Of the 42 who did recall attending, 22 (52%) reported it as a positive event that gave them a general overview of the program. Fourteen (33%) had no comments about orientation, and six (15%) found the event to be upsetting or discouraging because there was so much to learn in a hectic environment. They reported being unnerved by the "*brain buster tests*" and "*large crowds of men and women*". They felt they "*didn't fit in*", and "*everything I eat is wrong*."

The participants were asked what worked well for them in CR; 26 (43%) responded that the exercise was the best benefit they received. The educational classes (n = 15, 25%) and staff support (n = 12, 20%) were also considered to be beneficial. Nine participants (15%) stated the social aspects of the program and the timing and location were important to them. Six (10%) participants stated they

Table 2. Descriptive and Comparative Statistics for Clinical Variables

	Control Group N = 58	Attrition Group N = 61	Statistical Value	*p*
	Mean ± SD	*Mean ± SD*	*t-value*	
SF-36-physical	40.2 ± 9.6	43.4 ± 8.4	1.875	0.732
Ejection Fraction	50.3 ± 11.7	53.8 ± 20.8	1.681	0.808
Mean Mets 1st Session	2.28 ± 723	2.34 ± .67	.173	0.678
Duke	5.8 ± 1.6	6 ± 1.6	.716	0.808
BMI	31.8 ± 6.3	32 ± 6.6	.435	0.732
Cardiac Knowledge Score	17.8 ± 5.8	17.3 ± 4.8	-.447	0.265
Functional Work Capacity	4.1 ± 2.7	5.8 ± 2.8	3.278	0.235
	N (%)	*N (%)*	*Chi square*	
Stress Test Interpretation			13.652	0.**004**
Normal	31 (56%)	41 (82%)		
Abnormal	24 (44%)	9 (18%)		
Recent Activity Level			3.585	0.167
Sedentary	39 (67%)	34 (56%)		
Active	16 (28%)	18 (29%)		
Aerobic	3 (5%)	9 (15%)		
SD = standard deviation				

Table 3: Descriptive and Comparative Statistics for Mental Health Clinical Variables

	Control Group N = 58	Attrition Group N = 61	Statistical Value	*p*
	Mean ± SD	*Mean ± SD*	*t-value*	
Beck Depression Inventory	9.2 ± 9.4	11.3 ± 8.6	1.121	0.664
SF-36-mental	48.1 ± 12.3	44.6 ± 11.2	1.553	0.465
	N (%)	*N (%)*	*Chi-Square*	
Recent Personal Stress			7.073	**0.029**
Low	22 (38%)	14 (23%)		
Medium	24 (41%)	20 (33%)		
High	12 (21%)	27 (44%)		
Meds for Depression	12 (20%)	18 (29%)	1.226	0.267
SD = standard deviation				

were fearful of their health status, therefore they felt safer exercising in a monitored environment.

When asked to identify what aspects of the program were more difficult, half the participants (n=31, 51%) responded that the exercise was too hard, requiring more work than they felt they could do. Eight (13%) participants stated that the timing for the program interfered with work or personal preferences. Six (10%) found the program unnerving because of fear produced by what they learned about their condition, the burden of having too much information to learn, and the intrusiveness of staff and cardiac monitoring.

The most common reason for dropping out of CR was because of health problems (n=19, 31%). This included five reporting cardiac problems, five orthopedic problems and nine other types of health problems. Lack of insurance (n=4, 6%), obligation to return to work (n=4, 6%), family issues (n=3, 5%), and travel or transportation issues (n=8, 13%) were reported as reasons for dropping out. Four (6%) participants dropped out because they did not like the environment or interaction with the staff. This was indicated by statements such as: "*The room is too small*." "*The place is too crowded.*" "*They should have the education first, and then the staff should be removed.*" Six (10%) participants left the program because they felt the exercise was too easy for them. Thirteen (21%) participants left the program because it was too hard for them. They felt they could not keep up with the expectations of the exercise component.

Implications for Nursing Practice

Demographic and clinical variables. The demographic variables offer little new information with regard to identifying CR participants at risk for dropping out. The clinical variables showed that the AG members perceived themselves as having good physical status and ability to perform daily activities (SF-36 PHS, DASI). Their cardiac disease knowledge level, BMI, and effort at the first exercise session were nearly the same as their control group counterparts, but they perceived themselves as more active. The AG had slightly better EF and FWC as measured by pre-program stress test. They had significantly more normal ECG results while exercising. Those who dropped out perceived themselves as healthier and more active; they had better clinical evidence of their ability to successfully participate in the program. This may make them more inclined to believe they do not need to complete the program. CR staff may unintentionally reinforce that perception, as they focus more time and attention on those who are less resilient. This could be avoided by helping each participant to focus on determining and achieving individual goals.

Significantly higher levels of personal stress were reported by the AG. In addition, they identified mental health concerns of a more severe nature than the control group counterparts. Coupled with more confidence in their physical status, the higher stress may also contribute to the attrition rate. CR staff should be aware of stress and personal concerns evaluated on admission and include stressors in developing personal goals and evaluating progress.

Interview responses. This study supported previous research that indicated physician referral as a strong promoter of CR enrolment (Jackson, Leclerc, Erskine, & Linden, 2005). Program orientation was a good motivator for many, but the process was chaotic and daunting for others. Considering that the AG reported higher levels of pre-program stress, awareness of individual response in the earliest stages of CR could lead to individual interventions and support to promote continuation of the program.

Orientation sessions should include some structured time to assess individual responses. Those who are feeling overwhelmed should be provided with some extra support to help them develop trust that the CR process will meet their needs. In addition, for individuals who do not seem to be engaging in CR with a positive attitude, staff should provide one-on-one feedback time to identify personal issues that might be resolved before the patient drops out. For example, those who may be feeling vulnerable in large groups could be directed to other sessions when fewer people attend. Those overwhelmed by the large volume of information can be reminded that the program is presented over 12 weeks with time for questions or individual help.

Although half the AG members identified exercise as the best benefit of CR, many identified the difficulty of exercise as being problematic and also as the primary reason for dropping out of CR. For individuals who perceive themselves as being active and ready for the challenge, the reality of exercise after a cardiac event may be frustrating. On the other hand, 10% reported they left the program because the exercise was too easy for them. Therefore, monitoring patients during exercise should include not only ability and progress, but also an assessment of how the individual perceives the progress and tolerates the effort being put forth.

Limitations

The results of this study are limited because of the small sample size and single site for data collection. Few statistically significant values were identified. However, phone interviews did provide support for the findings. A larger multisite study would provide better statistic support for issues related to CR attrition.

Conclusions

This study indicated that patients with more confidence in their health status, better physical risk indicators, and higher stress levels are less likely to complete CR.

In addition, many participants who dropped out found the exercise portion of the program difficult to perform. Addressing personal concerns early in the program may help to avoid attrition. Additionally, monitoring both physical and perceptive responses to exercise and supplying support and information about how to safely and effectively manage the exercise work load may increase program completion rates. ♥

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References

American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR). (2006). *Cardiac rehabilitation resource manual: Promoting health and preventing disease*. Chicago, Illinois: Human Kinetics.

Ather, M., Gunn, E., Thorp, K., Martin, K., Mataseje, L., McCartney, N., & McKelvin, S. (2007). Effect of aerobic vs. combined aerobic-strength training on 1-year post cardiac rehabilitation outcomes in women after a cardiac event. *Journal of Rehabilitation Medicine, 39*, 730–735.

Balady, G., Williams, M., Ades, P., Bittner, V., Comoss, P., Foody, J., … Southard, D. (2007). Core components of cardiac rehabilitation/secondary prevention programs: 2007 update. *Journal of Cardiopulmonary Rehabilitation, 27*, 121–129.

Beck, A., Steer, R., Ball, R., & Ranieri, W. (1996). Comparison of Beck Depression Inventories–I and II in psychiatric outpatients. *Journal of Personality Assessment, 67*, 588–597.

Beswick, A., Rees, K., West, R., Taylor, F., Burke, M., Griebsch, I., … Ebrahum S. (2005). Improving uptake and adherence in cardiac rehabilitation: Literature review. *Journal of Advanced Nursing, 49*, 538–555.

Center for Disease Control. (2005). Receipt of outpatient cardiac rehabilitation among heart attack survivors—United States. *Morbidity and Mortality Weekly Reports, 57*, 88–94.

Daly, J., Sindone, A., Thompson, D., Honcock, K., Chang, E., & Davidson, P. (2002). Barriers to participation and adherence in cardiac rehabilitation programs: A critical review of the literature. *Progress in Cardiovascular Nursing, 17*, 8–17.

Dunbar-Jacobs, J., Erlen, J., Schlenk, E., Ryan, C., Sereika, S., & Doswell, W. (2002). Adherence in chronic disease. *Annual Review of Nursing Research, 18*, 48–69.

Grace, S., Grewal, K., Arthur, H., Abramson, B., & Stewart, D. (2008). A prospective, controlled, multisite study of psychosocial and behavioral changes following women's cardiac rehabilitation participation. *Journal of Women's Health, 17*, 214–248.

Gunstad, J., MacGregor, K., Paul, R., Poppas, A., Jefferson, A., Todaro, J., & Cohen, R. (2007). Cardiac rehabilitation improves cognitive performance in older adults with cardiovascular disease. *Journal of Cardiopulmonary Rehabilitation, 25*, 173–176.

Haskell, W., Alderman, E., Fair, J., Maron, D., Mackey, S., Superko, H., … Krauss, R. (1994). Effects of intensive multiple risk factor reduction on coronary atherosclerosis and clinical cardiac events in men and women with coronary artery disease. The Stanford Coronary Risk Intervention Program (SCRIP). *Circulation, 89*, 975–990.

Hlatky, M., Boineau, R., & Higginbotham, M. (1989). A brief self-administered questionnaire to determine functional capacity (Duke Activity Status Index). *Journal of the American College of Cardiology, 14*, 651–554.

Jackson, L., Leclerc, J., Erskine, Y., & Linden, W. (2005). Getting the most out of cardiac rehabilitation: A review of referral and adherence predictors. *Heart, 91*, 11–14.

Josephson, E., Casey, E., Waechter, D., Rosneck, J., & Hughes, J. (2006). Gender and depression symptoms in cardiac rehabilitation: Women initially exhibit higher depression scores but experience more improvement. *Journal of Cardiopulmonary Rehabilitation, 26*, 160–163.

Mueller, L., Myers, J., Kottman, W., Oswald, U., Boesch, C., & Arbrol, N. (2007). Exercise capacity, physical activity patterns and outcomes six years after cardiac rehabilitation in patients with heart failure. *Clinical Rehabilitation, 21*, 923–931.

Mullinax, C. (1994). Cardiac rehabilitation programs and the problem of patient dropout. *Rehabilitation Nursing, 20*, 90–93.

Rivett, M., Tsakirides, C., Dudfield, M., Pringle, A., Carroll, S., & Ingle, L. (2009). Physical activity readiness in patients withdrawals from cardiac rehabilitation. *British Journal of Nursing, 18*, 188–191.

Rosneck, J. (2002). *The knowledge test: Educational components of cardiac rehabilitation*. Unpublished manuscript, Summa Health System Center for Cardiopulmonary Research, Akron, Ohio.

Sanderson, B., Phillips, M., Gerald, L., DiLulo, V., & Bittner, V. (2003). Factors associated with the failure of patients to complete cardiac rehabilitation for medical and on-medical reasons. *Journal of Cardiopulmonary Rehabilitation, 23*, 281–289.

Sarrafzadegan, N., Rabiei, K., Shirani, S., Kabir, A., Mohammadifard, N., & Roohafza, H. (2007). Drop-out predictors in cardiac rehabilitation programmes and the impact of sex differences among coronary heart disease patients in an Iranian sample: A cohort study. *Clinical Rehabilitation, 21*, 362–372.

Spernak, S., Moore, P., & Hamm, L. (2007). Depression, constructive thinking and patient satisfaction in cardiac treatment adherence. *Psychology, Health & Medicine, 12*, 172–189.

Ware, J., Jr., Kosinski, M., & Keller, S. (1994). *SF-36 physical and mental summary scales: A user's manual*. Boston, MA: The Health Institute, New England Medical Center.

World Health Organization. (2003). *Adherence to long-term therapies: Evidence for action.* Geneva, Switzerland: Author.

Yohannes, A., Yalfani, A., & Doherty, P. (2007). Predictors of drop-out from an outpatient cardiac rehabilitation programme. *Clinical Rehabilitation, 21*, 222–229.

Patient-Centred Assessment of Social Support, Health Status and Quality of Life in Patients with Acute Coronary Syndrome

Wynne de Jong-Watt, RN, MScN, and Ines Sherifi, MD

Background: Measurement of health status (HS) and social support are becoming increasingly accepted as tools to guide clinical decision-making and patient-centred practice.

Purpose: To assess self-reported HS, cardiac-health related quality of life and social support in subjects with a diagnosis of acute coronary syndrome (ACS).

Design: The study used a quantitative descriptive design.

Sample: 36 subjects with a diagnosis of ACS were selected from patients admitted to medical units at a teaching hospital in Toronto, Ontario.

Methods: One-time, semi-structured interviews were conducted using valid and reliable cardiac-specific HS and social support measures.

Results: Analysis indicated that subjects with higher perceived social support and patients with higher income reported greater treatment satisfaction and C-HRQL. Subjects with severe angina reported a higher perceived level of social support than those with more moderate physical limitation due to angina.

Conclusion: Patients' social environment and HS significantly impact their satisfaction with treatment. Patient-centred measures assist in clinical decision-making, patient-centeed care planning and patient involvement in their care.

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Key words: health status, social support, health related quality of life, patient-centred care, knowing the patient.

Évaluation du soutien social, de l'état de santé et de la qualité de vie des patients présentant un syndrome coronarien aigu : une approche centrée sur le patient

Introduction : Les mesures de l'état de santé et du soutien social sont de plus en plus acceptées comme outils pour guider la pratique clinique décisionnelle et la pratique centrée sur le patient.

But : Évaluer l'état de santé, la qualité de vie en lien avec la santé cardiaque et le soutien social des sujets présentant un diagnostic de syndrome coronarien aigu (SCA), à l'aide d'un questionnaire auto-administré.

Devis : L'étude a utilisé un devis quantitatif descriptif.

Échantillon : 36 sujets présentant un diagnostic de SCA ont été répertoriés parmi les patients hospitalisés sur des unités de médecine dans un hôpital universitaire de Toronto, au Canada.

Méthode : Des entrevues semi-structurées ont été réalisées pour mesurer l'état de santé cardiaque et le soutien social à l'aide d'outils valides et fiables.

Résultats : Les analyses indiquent que les sujets ayant une perception plus élevée de soutien social et ceux présentant un revenu plus élevé rapportent une plus grande satisfaction en regard des traitements et une meilleure qualité de vie en lien avec la santé cardiaque. Les sujets présentant une angine sévère ont rapporté une perception plus élevée de soutien social comparativement à ceux présentant des limitations physiques modérées en raison d'une angine de poitrine.

Conclusion : L'environnement social et l'état de santé des patients ont une incidence importante sur leur satisfaction en regard des traitements. L'utilisation d'outils centrés sur le patient favorise la pratique clinique décisionnelle, la planification des soins centrés sur le patient et l'implication des patients dans leurs soins.

Background

Historically, the response of the health care community to preventing and controlling coronary heart disease (CHD), including acute coronary syndrome (ACS), has focused on "fixing" the patient by monitoring clinical measures and addressing behavioural risk factors. There has been some success with patient-centred interventions in cardiac disease management, yet these

interventions continue to lack a focus on the social–contextual and psychosocial factors that underlie the prevalence and incidence in the population living with CHD (Liburd, Jack, Williams, & Tucker, 2005; Norris, Nichols, & Caspersen, 2002).

There is substantial and growing literature that indicates that social–contextual and psychosocial factors and their myriad inter-relationships impact the development, treatment and rehabilitation of individuals with CHD (Liburd et al., 2005). Concurrently, there is a shift towards research and research programs that focus on the social determinants of cardiovascular disease and, specifically, on the impact of social support and perceived health status (HS) on cardiovascular outcomes and quality of life (Ahern et al., 1990; Gorkin et al., 1993). There is an emerging and evolving role for social support and HS measures to be used in routine clinical care to enhance patient-centred decision-making and patient-partnered outcomes (Spertus, 2008).

Literature Review

Self-reported HS measures are increasingly being integrated into clinical practice, patient management and clinical decision-making processes (Buchner et al., 2000; Cella et al., 2007; Rumsfeld, 2002; Spertus, 2008). For many patients with cardiovascular disease, HS is as important as survival (Rumsfeld et al., 1999). Self-reported HS has been shown to independently predict adverse outcomes, including mortality, in several groups of patients with cardiac disease (Alla et al., 2002; Rumsfeld et al., 1999; Spertus, Jones, McDonell, Fan, & Fihn, 2002; Thombs et al., 2008). There is substantial literature on the relationship between social conditions and HS in CHD, including population and subgroup susceptibility, severity of the clinical manifestations, and survival rates (Liburd et al., 2005; O'Reilly & Thomas, 1989; Sorenson & Wang, 2008).

Measurement of health-related quality of life (HRQL) is gaining acceptance as a means of providing a more global, patient-oriented assessment of HS and the impact and outcomes of health care. Cardiac-specific health surveys focus on aspects of HS and cardiac-HRQL (C-HRQL) that are specific to angina and CHD (Spertus et al., 1995). As many people now live with CHD over extended periods of their lives, C-HRQL has become an important end-point in health interventions and further reflects an increasingly relevant bio-psychosocial perspective in considering medical care and research foci (Asadi-Lari, Tamburini, & Gray, 2004). Research has demonstrated the value of C-HRQL measurement in a variety of contexts including at the time of referral for and waiting for coronary artery arteriogram (Arthur, Smith, & Natarajan, 2008; de Jong-Watt & Arthur, 2004), pre- and post-percutaneous coronary intervention and coronary artery bypass graft surgery (Lukkarinen, 1998; Skagg & Yates, 1999) and to understand the impact of ACS and chronic CHD on patient well-being (Dias et al., 2005; Guyatt, Feeny, & Patrick, 1993).

The classic definition of social support consists of three components: feeling loved, feeling valued or esteemed and belonging to a social network (Cobb, 1976; Malecki & Demaray, 2002). O'Reilly and Thomas (1989) view social support as an interactional process in which particular actions or behaviours directed at an individual have an impact on that individual's social, psychological, or physical well-being.

There are a myriad of relationships among the social environment, networks of social support, and the development, treatment, prognosis, and rehabilitation of individuals with CHD (Boutin-Foster, 2005; Collijn, Appels, & Nijhuis, 1995; Ikeda et al., 2008; Ruberman, Weinblatt, Goldberg, & Chaudhary, 1984). Researchers conducting studies in Western countries have found a robust association between social support and cardiovascular outcomes, for example, prognosis after myocardial infarction, functional recovery after stroke, length of stay, and functional outcomes (Cronin, Logsdon, & Miracle, 1997; McCormick, Naimark, & Tate, 2006; Okkonen & VanHanen, 2006; Schwartz & Frohner, 2005; Vaglio et al., 2004).

Recent evidence has revealed that socioeconomic status, lifestyle risk factors and a person's social environment are important risk factors in the etiology and increased morbidity and mortality associated with heart disease (Gliksman, Lazarus, Wilson, & Leeder, 1995; Orth-Gomer, Rosengren, & Wilhelmsen, 1993). Luepker et al. (1993) found that socioeconomic status indicators including education, income and occupation were associated with increased cardiac risk factors and cardiac morbidity and mortality. Low perceived social support and depression were linked with increased cardiac morbidity and mortality (Arthur, 2006; Gliksman et al., 1995; Goble & LeGrande, 2008; Kaplan et al., 1988).

Purpose

The purpose if this study was to assess self-reported HS, C-HRQL and perceived social support of patients admitted to an acute care hospital setting with a diagnosis of ACS.

Conceptual framework. Patient-centred care (PCC) and the concept of "knowing the patient" were used as theoretical conceptual frameworks to guide and inform this research. A patient-centred model of care is a key characteristic of quality health care in the 21st century (Institute of Medicine, 2001). The philosophy

of PCC is based on a value for the wholeness of human beings and a respect and concern for their experience of health and quality of life (Bournes & DasGupta, 1997). PCC is an approach that consciously adopts the patient's perspective about what matters and is informed by scientific evidence and guided by values of respect, human dignity and person as leader (Gerteis, Edgman-Levitan, Daley, & Delbanco, 1993; NRC+Picker Institute, 2008; UHN, 2008). In the research setting, PCC concepts and values underpin core hospital systems, processes, practice areas, roles and innovation initiatives.

"Knowing the patient" (Finch, 2007; Radwin, 1995; Tanner, Benner, Chesla, & Gordon, 1996) is a concept that encompasses the complex process whereby the health professional acquires understanding of a specific patient as a unique person, which subsequently enhances patient participation in his or her care, clinical decision-making, selection of optimal interventions and patient outcomes (Benner & Wrubel, 1989; Radwin, 1995). Knowing the patient consists of knowing the experiences, perceptions, behaviours and patterns of physical and emotional responses of a particular patient. The "person in the situation" is understood and known in a context-specific knowledge structure that is central to clinical judgment and PCC (Tanner et al., 1996).

Methods

A quantitative descriptive design was used to gather information about participants' HS, C-HRQL and social support. Valid, responsive and reliable cardiac-specific measures were used to measure HS, C-HRQL, and perceived social support.

Setting, sample, sampling method. The setting for this study was two general medical wards in a large Canadian urban centre. The medical wards serve a culturally and socially diverse patient population by providing consultation, primary diagnosis, and management of patients suffering from a wide spectrum of diseases. An inter-professional (IP) team of nurses, physicians and health professionals care for patients with complex medical conditions using the latest therapies and treatments. In the research setting, a high proportion of the patient population present with primary or secondary CHD, including ACS (UHN, 2005).

Participants were selected from adult (18 years and older) male and female patients admitted to the medical wards consecutively with a primary diagnosis of ACS. Eligibility criteria for participation included an ability to understand spoken and written English. A convenience sample of 40 participants was proposed for this study. A number of factors contributed to the estimate of sample size including the planned analyses and the suggestion by Streiner & Norman (1995) that the minimum required sample for basic analysis in descriptive designs is 30 participants. A four-month data collection period was proposed for the study. At the time of submission to the Research Ethics Board (REB), an average of eight to 10 patients per month were admitted to general medicine with a diagnosis of ACS.

Following approval by the REB, potential participants were identified by admission diagnosis as per hospital chart on admission to the medical ward. Patients who met the inclusion criteria and agreed to participate in the study were asked to provide written informed consent by the primary investigator (PI). Prior to signing consent, participants were provided with an opportunity to ask questions, were given time to review the consent form, and were provided with a written copy of the study information and consent form.

Data collected from the participants' hospital records included demographic data, current and past cardiac and non-cardiac history, medications and diagnostic tests. The PI administered the Seattle Angina Questionnaire (SAQ) and ENRICHD Social Support Inventory (ESSI) in a one-time, face-to-face semi-structured interview at a mutually agreed on time. To ensure privacy, measures were taken to conduct interviews in a private setting in the participant's hospital room.

Variables and Measures

Cardiac health-related quality of life (SAQ). The SAQ is a valid, reliable, and responsive cardiac-specific health status measure for patients with ACS and coronary artery disease (CAD). The scale was developed to quantify the physical and emotional effects of CAD. The instrument consists of a 19-item questionnaire with five subscales: physical limitation (EX), angina frequency (AF), angina stability (AS), treatment satisfaction (TS), and disease perception (quality of life) (DP). The EX scale measures how daily activities are limited by symptoms of CAD. The AS scale assesses change over time in the frequency of angina while the AF scale quantifies the number of angina episodes. The TS scale quantifies satisfaction with current treatment of angina. The DP scale characterizes the patient's perception of the impact on CAD on his or her C-HRQL. Each scale monitors a unique dimension of ACS and CAD and no summary score is derived. The SAQ is scored by assigning each response an ordinal value and summing items within the five subscales. A subscale score for each of the dimensions is calculated rather than a global quality of life score. The possible range for each subscale is 0 to 100 with higher scores indicating better levels of functioning and C-HRQL (Spertus et al., 1995).

Social support measure (ESSI). Participants' social environment was characterized by the following predictor variables: social support, income, and education. Two questions were created to ask participants about their income and level of education. These questions were based on Statistics Canada income brackets and education survey methods (Statistics Canada, 2005). A social support score for each participant was quantified with the ESSI, a social support measure employed in the ENRICHD study, a multi-centre trial with the objective to enhance recovery in CAD. The design, validity and test re-test reliability of the ESSI as a measure of social support in patients with CAD have been reported (Barr Taylor, 2003; Mitchell et al., 2003). In the ENRICHD population, test-retest reliability showed no significant differences in mean scores among ESSI questionnaires administered one month apart (27.8±1.4 vs. 27.8±1.5, p=0.98). The intra-class correlation coefficient was 0.94 and Cronbach's alpha was 0.88 (Vaglio et al., 2004). The ESSI has been shown to have good convergence with standard emotional support measures such as the Perceived Social Support Scale (PSSS) (Blumenthal et al., 1987) and the large, diverse population enrolled in the ENRICHD trial provides reference values for the use of the ESSI with other populations in other settings (Barr Taylor, 2003). In addition, the five-item ESSI can be used to stratify study participants based on their level of social support. The criteria for low perceived social support in the ESSI is a score of ≤ 2 on at least two out of the five items or a total score ≤ 18 on all five items. The questions related to income and education were appended to the ESSI as questions numbered 8 and 9.

Table 1: Population Baseline Characteristics

Number of Patients Approached:		37
Number of Patients Recruited:		36
Age (mean ± SD):		62.6 ± 14.38
Gender:	Male	21 (58.3%)
	Female	15 (41.6%)
Marital Status:	Married	24 (66.6%)
	Single	12 (33.3%)
Employment Status:	Employed	15 (41.6%)
	Unemployed	6 (16.6%)
	Retired	13 (36.1%)
	Disability	2 (5.5%)
Ethnicity:	Caucasian	26 (72.2%)
	South Asian	7 (19.4%)
	African Canadian	3 (8.3%)
Education:	Less than Grade 12	9 (25%)
	High School Graduate	9 (25%)
	Post-Secondary Degree/Diploma	12 (33.3%)
	Post-Graduate Degree	6 (16.6%)
Income:	$0–$9,999	0 (0%)
	$10,000–$29,999	8 (22.2%)
	$30,000–$49,999	20 (55.5%)
	$50,000 and above	8 (22.2%)

Data Analysis

Descriptive statistics (frequencies, percents, means, standard deviation, range) were used to describe the sample in terms of demographics, education background, SAQ, and ESSI scores. Student's t-test analysis and Pearson correlation analysis were performed between participant predictor variables (ESSI scores, education, income) and SAQ scores.

Table 2: Mean Scores for Seattle Angina Questionnaire Cardiac Health Predictors

SAQ Category	Mean Score ± SD
Physical Limitation (EX)	56.74 ± 25.02
Angina Stability (AS)	32.14 ± 29.73
Angina Frequency (AF)	51.67 ± 34.76
Treatment Satisfaction (TS)	76.49 ± 24.12
Disease Perception (DP)	41.44 ± 14.69

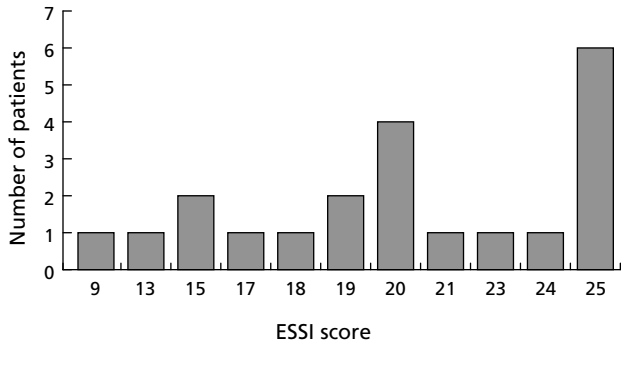

Figure 1. ENRICHD Social Support Inventory Score Distribution in the Population

Results

Demographics of participants. Thirty-six people consented to participate. 60% were male and 40% female with an average age of 62.6 years. Most of the subjects were married (66.6%), 41.6% were employed and 36% were retired. The majority of participants were Caucasian (72.2%) while 19% were South Asian and 8% were African Canadian. Income and education levels were used to depict the social environment of participants. Participants indicated a broad range of education levels with roughly equal proportions in the lower, middle and higher education brackets. No participants reported a gross yearly income in the lowest bracket, eight (22.2%) reported incomes below $29,999 and eight (22.2%) participants reported making more than $50,000 per year. Table 1 depicts baseline characteristics of the recruited population.

Admission histories from the hospital chart review indicated that the majority of participants had not experienced a previous myocardial infarction (66.6%), congestive heart failure (83.3%), atrial fibrillation (88.8%), diabetes mellitus (86.1%), or chronic renal failure (86.1%). Forty-four per cent of participants had a history of smoking. The majority of participants had a history of specific clinical risks for CVD: hypertension (91.6%) and hypercholesterolemia (80.5%). Notably, 94.4% of participants had been assessed by a cardiologist prior to or while an inpatient on the medical ward.

Health status. The HS of participants in this study was quantified by the SAQ dimensions, namely, EX, AS, AF, TS and DP. Mean SAQ scores in each of the 5 categories are summarized in Table 2.

Overall, SAQ scores indicated a broad range in perceived symptom burden, physical capacity (HS) and C-HRQL. Mean scores indicated a broad range in physical limitation, angina stability, angina frequency, treatment satisfaction, and disease perception in the participant group. Notably, EX and AF scores indicated a higher perceived C-HRQL in the participant group. Lower C-HRQL scores were indicated in the AS, TS and DP scales respectively.

A component of this study examined the effect of the patients' social environment, composed of perceived social support, education and income on their cardiac HS as determined by the SAQ. Figure 1 depicts the range of social support values that were reported in the population via the ESSI.

Scores on the ESSI range from 5 (lowest) to 25 (highest). As depicted in Figure 1, social support values cover a wide range of values. The average ESSI score for the study population was 20.14±4.53. In addition to a numerical range of social support scores, the five-item ESSI was used to determine the level of social support in study participants. Analysis indicated that 12 (33.3%) of participants reported low perceived social support, as measured by the ESSI.

Social support and SAQ results. Pearson correlation analysis was undertaken between the SAQ cardiac health predictors and the ESSI level of social support. The results of the analysis are depicted in Table 3. Although the Pearson correlation test did not show a significant relationship, the TS comparison was approaching statistical significance ($p = 0.07$). Angina intervals were more stable in participants with lower social support than in those with higher social support.

To quantify the impact of perceived social support on cardiac HS, income and education were analyzed with respect to SAQ predictors. Results of t-test analysis are depicted in Figures 2 and 3. Trends with income and education are shown in each of the SAQ categories. Participants with higher perceived social support and participants with a higher annual income reported greater satisfaction with TS ($p < 0.05$). Participants with severe angina limitation reported a higher perceived level of social support than those with moderate, mild or minimal physical limitation due to angina ($p < 0.05$). No significant relationship could be discerned between the patients' education and income levels and cardiac HS.

Discussion

Sample characteristics were similar to those of current ACS populations in acute care settings supporting the representativeness of the sample (Thombs et al., 2008). This particular sample had a somewhat higher proportion of women (41.6%) than similar studies that used ACS participants (Arthur et al., 2008).

Table 3: Pearson Correlation Analysis of Seattle Angina Questionnaire Cardiac Health Predictors and ENRICHD Social Support Inventory Level of Social Support

	Physical Limitation	Angina Stability	Angina Frequency	Treatment Satisfaction	Disease Perception
Pearson Correlation Coefficient	0.113	-0.339	0.142	0.382	0.030
P value	0.469	0.103	0.386	0.078	0.452

HS results, as indicated by SAQ predictor values, exhibited a wide range in most categories, especially in the AS category, where the value of the indicator was almost equal to the standard deviation (SD). As indicated by the average scores, none of the predictor variables were close to the maximal values of 100 (indicating higher C-HRQL). These results indicate that study participants were greatly impacted by angina symptoms and physical limitation, that unpredictable angina patterns were common, that angina frequency was reasonably high, and that overall, participant C-HRQL was impacted by angina. These findings are consistent with findings by Arthur et al. (2008) who reported physical and mental C-HRQL results in a cardiac population that were significantly lower than population norms for healthy individuals. Thombs et al. (2008) asserted that lower scores in validated HS measures for hospitalized ACS patients were associated with significantly higher risk of mortality and found that use of a HS measure in hospitalized ACS patients was helpful in risk stratification for mortality at one year.

Study findings are supported by literature reporting that self-reported HS scales provide important information beyond the traditional clinical variables that guide patient care today (Buchner et al., 2000; Spertus, 2008). It is important to note that HS scores derived by the SAQ scores were a "snapshot" of 36 individual subjects and that HS scores ideally are interpreted individually at the point of care either cross-sectionally (describing their association with other clinical metrics) and/or as changes over time (describing prognostic significance of scores or changes in scores over time) (Cella et al., 2007; Guyatt, Osoba, & Wu, 2002; Spertus, 2008). Use and interpretation of SAQ scores in routine clinical care speaks to the importance of clinicians developing a familiarity and intuitive "feel" for what scores mean to plan individualized and integrated approaches to caring for the needs of the ACS population (Spertus, 2008).

Mean ESSI scores in the study population (20.14±4.53) were more similar to ESSI scores among depressed patients (22.8±4.6) than non-depressed patients (26±4.3), as described by Vaglio et al. (2004). These findings appear to be consistent with the lower overall mean scores in subject HS and C-HRQL as stated earlier in this paper. Indeed, the lower mean SAQ scores in the AS (32.14±29.73) and DP (41.44±14.69) sub-scales speaks to the impact of angina symptoms and subject perception of the impact of CHD on overall C-HRQL.

The effect of social support on cardiac HS indicated that participants with higher perceived social support were more satisfied with treatment than patients with lower perceived social support. There was a parallel trend in income and education levels where participants in higher income brackets and those who had obtained a higher level of education were, in general, more satisfied with treatment in hospital. Boutin-Foster (2005) found similar trends between higher perceived social support and a greater awareness of satisfaction with treatment in an educated cohort of subjects with ACS.

Correlation analysis of SAQ and ESSI revealed that participants with severe physical limitation due to angina perceived a higher level of social support than those with moderate, mild and minimal angina ($p<0.05$). Research reported by Schmidt-Pederson, Middel, and Larsen (2002) in the context of social support and perceived HS in times of distress following a cardiac event revealed that higher perceived social support was shown to "buffer" the impact of cardiac symptoms and depression. It could be theorized that participants with severe angina had access to and rightfully received more social support and/or were more cognizant of the level of social support they received given the severity of symptoms and need for support.

Social support (ESSI) results in this research provide a conceptual insight into the nature of social support.

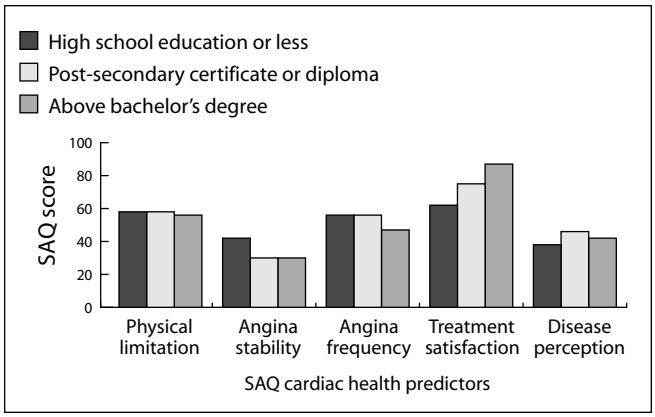

Figure 2. Analysis of Education level and Seattle Angina Questionnaire Cardiac Health Status

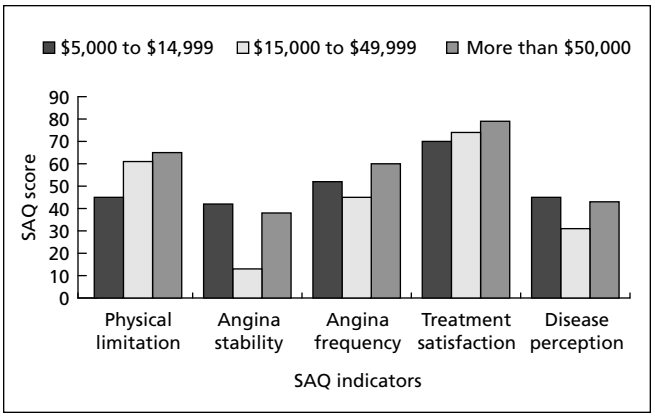

Figure 3. Analysis of Income level and Seattle Angina Questionnaire Cardiac Health Status

The majority of questions on the ESSI consider general feelings of being loved, valued and cared for rather than instrumental types of support (Vaglio et al., 2004). Overall, participants were very receptive to answering the questionnaires and a number expressed their appreciation that health professionals were "taking time to ask questions about their health status, social support and the impact of their symptoms on their daily activities and overall quality of life." Participants reported that being asked questions about their perception of their social support allowed them to think about "who cares for them" and allowed them to share with their health provider in a unique way. This finding is consistent with Langford, Bowsher, Maloney, and Lillis (1997) who found that social support theory is not about a tally of "services" rendered, but rather patients' belief that others care for them and are available if needed.

The literature supports the conceptual notion that the nature of social support is about a person's belief that others care about them and are available as needed (Langford et al., 1997; Vaglio et al., 2004). It can be hypothesized that in asking questions that seek the person's perspective about what matters in relation to their perceived social support, health status and quality of life, that caring and social support are conveyed by the health professional and that "knowing the patient" is enhanced in a patient-professional relationship.

Limitations

The sample was a convenience sample in a single setting and sample size was small, possibly reducing the variance and power of study results and the ability to detect important relationships. The prevalence of significant co-morbidities in the study population may have independently confounded results. To better represent the population with ACS, findings warrant further investigations in a larger sample and in multiple centres. A power analysis revealed that approximately 100 patients would have to be recruited in order to produce a significant relationship between social support, education and income on most of the SAQ categories.

Study results may have been stronger had a second valid and reliable social support measure been used to assess social support in this population. However, as stated earlier, the study population of the ENRICHD trial provides reference values for the ESSI's use in this study population (Barr Taylor, 2003).

The ESSI and SAQ questionnaire interviews were self-report measures, thus in the interaction between interviewer and participant, the perceptions of each individual and the social desirability of participant responses could bias results. This may be especially true with regard to the two questions regarding income and education. Further, patient responses were not substantiated with family members, as would have ideally been the case. Selection bias may have affected internal validity in this study. Participants' motivation to enter the study may have been related to their perception that the research would improve their overall care.

Implications

This research was unique in that it was guided by and informed by core values and concepts that underlie "knowing the patient" (Radwin, 1995) in the context of PCC. PCC principles advocate that patients and families partner in their care planning and become more involved in decisions regarding their health (NRC+Picker Institute, 2008). Stewart (2000) states that PCC is about "exploring the illness experience, understanding the whole person, finding common ground in care management and enhancing the professional-patient relationship" (p. 798). It is posited that PCC can be promoted with the use of patient-centred measures that assess perceived HS, C-HRQL and social support in patients with ACS and that the information obtained could be used in a variety of settings, including routine nursing care and disease management programs, to assess quality and efficiency, to assist in shared decision-making and care planning with the patient, family and the inter-professional (IP) team, and to promote and enhance relationship-centred care (Safran, Miller, & Beckman, 2006; Spertus, 2008). This study may prove useful in instituting continued steps towards undertaking patient-centred measures at the point of care and have implications for enhanced use of similar measures for patients living with other disease processes.

This research explored measurement of HS, C-HRQL and social support at the "point of care", that is, in the clinical milieu where nurses interface with individual patients. Self-report measures could be useful measurement tools in the ACS population to assist nurses and physicians in stratifying individual patient risk for angina, as well as allowing for nurse-patient interaction for enhanced understanding of patient perception of their cardiac health. In an era of advanced technological innovations and multiple diagnostic medical tests, HS and risk stratification questionnaires may prove very useful in better understanding patients and allowing them to take a more active role in their own care by filling out self-report questionnaires.

Valid and reliable social support measures could be used with ACS patients to promote patient-partnered approaches to care and care planning. For example, point of care identification of patients with lower perceived social support and lower self-reported

income could enhance the nurse's ability to explore and address individual concerns, questions and needs with respect to medical treatment and ongoing care planning.

Important recommendations could be made to the agency and health providers attending to patients diagnosed with ACS in acute care settings. For PCC to flourish, nurses must take into account patients' perceived HS, quality of life and social environment, including their perceived level of social support and education, when collaborating and making decisions regarding patients' health care. Nurses could take the lead in individualizing care planning for patients who are at risk based on their level of social support to tailor care for this population. Further, the results of this research have implications for nurses to incorporate quality of life and health status in the team's perceptions of individual patient progress and treatment, with a goal for more holistic PCC tailored to the person as a whole and not just to the disease or diagnosis.

This research could be expanded to multiple sites with a larger sample and include a qualitative research component that explored individual patient perceptions of social support received from nurses and health professionals, as well as family and friends. Focused health services research could explore the disparity in health care quality, psychosocial factors, social context, and the mediating role that they play in CHD with a view to developing conceptual models and community interventions that include race/ethnicity, social class, and gender in social and historical context.

Conclusion

When framed within the conceptual framework of "knowing the patient" in the context of PCC, timely and accurate assessment of HS, C-HRQL and perceived social support at the "point of care" support patient-centred decision-making and patient-partnered care by focusing on the patient holistically within the context of the clinical environment, facilitating patient perceptions and strengths, engaging caring relationships, and supporting healing processes and programs of care. Health providers can be guided to include addressing patients' social and emotional needs in their care (Mitchell et al., 2003). ♥

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References

Ahern, D.K., Gorkin, L., Anderson, J.L., Tierney, C., Hallstrom, A., Ewart, C., … Herd, J.A. (1990). Biobehavioral variables and mortality or cardiac arrest in the Cardiac Arrhythmia Pilot Study (CAPS). *American Journal of Cardiology, 66*, 59–62.

Alla, F., Briançon, S., Guillemin, F., Juillière, Y., Mertès, P.M., Villemot, J.P., … EPICAL Investigators. (2002). *Self-rating of quality of life provides additional prognostic information in heart failure.* Insights into the EPICAL study. *European Journal of Heart Failure, 4*, 337–343.

Arthur, H.M. (2006). Depression, isolation, social support and cardiovascular disease in older adults. *Journal of Cardiovascular Nursing, 21,* S2–S7.

Arthur, H.M., Smith, K.M., & Natarajan, M.K. (2008). Quality of life predicts outcome of elective coronary artery angiogram. *International Journal of Cardiology, 126*, 32–36.

Asadi-Lari, M., Tamburini, M., & Gray, D. (2004). Patients' needs, satisfaction, and health related quality of life. *Health and Quality of Life Outcomes, 2*, 32.

Barr Taylor, C. (2003). Social support for patients after myocardial infarction. *Journal of Cardiopulmonary Rehabilitation and Prevention, 23*, 413–414.

Benner, P., & Wrubel, J. (1989). *The primacy of caring: Stress and coping in health and illness*. Menlo Park, CA: Addison-Wesley.

Blumenthal, J.A., Burg, M.M., Barefoot, J., Williams, R.B., Haney, T., & Zimet, G. (1987). Social support, type A behavior, and coronary artery disease. *Psychosomatic Medicine, 49*, 331–340.

Bournes, D.A., & DasGupta, T.L. (1997). Professional practice leader: A transformational role that addresses human diversity. *Nursing Administration Quarterly, 61*, 1–10.

Boutin-Foster, C. (2005). Getting to the heart of social support: A qualitative analysis of the types of instrumental support that are most helpful in motivating cardiac risk factor modification. *Heart & Lung, 34*, 22–29.

Buchner, D.A., Graboys, T.B., Johnson, K., Mordin, M.M., Goodman, L., Partsch, D.S., & Goss, T.F. (2000). Development and validation of the ITG health-related quality of life short form measure for use in patients with coronary artery disease. *Clinical Cardiology, 24,* 556–563.

Cella, D., Yount, S., Rothrock, N., Gershon, R., Cook, K., Reeve, B., … PROMIS Cooperative Group. (2007). The patient reported outcomes measurement information system (PROMIS): Progress of an NIH Roadmap cooperative group during the first two years. *Medical Care, 45*, S3–S11.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38,* 300–314.

Collijn, D.H., Appels, A., & Nijhuis, F. (1995). Psychosocial risk factors for cardiovascular disease in women: The role of social support. *International Journal of Behavioral Medicine, 2*, 219–232.

Cronin, S.N., Logsdon, C., & Miracle, V. (1997). Psychosocial and functional outcomes in women after coronary artery bypass surgery. *Critical Care Nurse, 17*, 19–24.

de Jong-Watt, W., & Arthur, H.M. (2004). Anxiety and health-related quality of life in patients awaiting elective coronary angiography. *Heart & Lung, 33*, 237–248.

Dias, C.C., Mateus, P., Santos, L., Mateus, C., Sampaio, F., Adao, L., … Ribeiro, V.G. (2005). Acute coronary syndrome and predictors of quality of life. *Review Portuguese Cardiology, 24*, 819–831.

Finch, L.P. (2007). Knowing the patient: A substantive theory of nurse caring in chronically ill elderly patients. *The 18th International Nursing Research Congress Focusing on Evidence-Based Practice*, 1–2.

Gerteis, M., Edgman-Levitan, S., Daley, J., & Delbanco, T.L. (1993). *Medicine and health from the patient's perspective: Through the patient's eyes-Understanding and promoting patient centered care*. San Francisco, CA: Jossey-Bass.

Gliksman, M.D., Lazarus, R., Wilson, A., & Leeder, S. (1995). Social support, marital status and living arrangement correlates of cardiovascular disease risk factors in the elderly. *Social Science & Medicine, 40,* 811–814.

Goble, A., & Le Grande, M. (2008). Do chronic psychological stressors accelerate the progress of cardiovascular disease? *Stress and Health, 24*, 203–212. Retrieved from http://www.interscience.wiley.com

Gorkin, L., Schron, E.B., Brooks, M.M., Wiklune, I., Kellen, J., Verter, J., … Shumaker, S. (1993). Psychosocial predictors of mortality in the Cardiac Arrhythmia Suppression Trial (CAST-1). *American Journal of Cardiology, 71*, 263–267.

Guyatt, G., Feeny, D., & Patrick, D. (1993). Measuring health-related quality of life. *Annals of Internal Medicine, 118*, 622–629.

Guyatt, G.H., Osoba, D., & Wu, A.W. (2002). Methods to explain the clinical significance of health status measures. *Mayo Clinic Proceedings, 77,* 371–383.

Ikeda, A., Iso, H., Kawachi, I., Yamagishi, K., Inoue, M., & Tsugane, S. (2008). Social supports and stroke and coronary heart disease. *Stroke, 39,* 768–775.

Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century*. Washington, D.C.: National Academy Press.

Kaplan, G.A., Salonen, J.T., Cohen, R.D., Brand, R.J., Syme, S.L., & Puska, P. (1988). Social connections and mortality from all causes and from cardiovascular disease: Prospective evidence from eastern Finland. *American Journal of Epidemiology,* 128, 370–380.

Langford, C.P.H., Bowsher, J., Maloney, J.P., & Lillis P.P. (1997) Social support: A conceptual analysis. *Journal of Advances in Nursing, 25*, 95–100.

Liburd, L.C., Jack, L., Williams, S., & Tucker, P. (2005). Intervening on the social determinants of cardiovascular disease and diabetes. *American Journal of Preventative Medicine, 29*, 18–24.

Luepker, R.V., Rosamond, W.D., Murphy, R., Sprafka, J.M., Folsom, A.R., McGovern, P.G., & Blackburn, H. (1993). Socioeconomic status and coronary heart disease risk factor trends. The Minnesota Heart Survey. *Circulation, 88*, 2172–2179.

Lukkarinen, H. (1998). Quality of life in coronary artery disease. *Nursing Research, 47*, 337–343.

Malecki, C.K., & Demaray, M.K. (2002). Social support: Definition, theory, and measurement: Measuring perceived social support. *Psychology in the Schools, 39*, 1–18.

McCormick, K.M., Naimark, B.J., & Tate, R.B. (2006). Uncertainty, symptom distress, anxiety, and functional status in patients awaiting coronary artery bypass surgery. *Heart & Lung, 35*, 34–45.

Mitchell, P.H., Powell, L., Blumenthal, J., Norten, J., Ironson, G., Pitula, C.R., Berkman, L.F. (2003). A short social support measure for patients recovering from myocardial infarction: The ENRICHD social support inventory. *Journal of Cardiopulmonary Rehabilitation, 23*, 398–403.

Norris, S.L., Nichols, P.J., & Caspersen, C.J. (2002). Increasing diabetes self-management education in community settings. *American Journal of Preventative Medicine, 22*(Suppl. 4), 39–66.

NRC+Picker Institute (2008). *Picker institute for patient centered care*. Oxford, United Kingdom: Author.

Okkonen, E., & VanHanen, H. (2006). Family support, living alone, and subjective health of a patient in connection with a coronary artery bypass surgery. *Heart & Lung, 35*, 234–244.

O'Reilly, P., & Thomas, H.E. (1989). Role of support networks in maintenance of improved cardiovascular health status. *Social Science Medicine, 28*, 249–260.

Orth-Gomér, K., Rosengren, A., & Wilhelmsen, L. (1993). Lack of social support and incidence of coronary heart disease in middle-aged Swedish men. *Psychosomatic Medicine, 55*, 37–43.

Radwin, L.E. (1995). Knowing the patient: A process for individualized interventions. *Nursing Research, 44*, 364–370.

Ruberman, W., Weinblatt, E., Goldberg, J.D., & Chaudhary, B.S. (1984). Psychosocial influences on mortality after myocardial infarction. *New England Journal of Medicine, 311,* 552–559.

Rumsfeld, J.S., MaWhinney, S.M., McCarthy, M., & Shroyer., A.L.W., VillaNueva, C.B., O'Brien, M., … Hammermeister, K.E. (1999). Health-related quality of life as a predictor of mortality following coronary artery bypass graft surgery. *Journal of the American College of Cardiology, 281*, 1298–1303.

Rumsfeld, J.S. (2002). Health status and clinical practice: When will they meet? *Circulation, 106*, 8.

Safran, D.G., Miller, W., & Beckman, H. (2006). Organizational dimensions of relationship-centered care: Theory, evidence, and practice. *Journal General Internal Medicine, 21*, 9–15.

Schmidt-Pederson, S., Middel, B., & Larsen, M.L. (2002). The role of personality variables and social support in distress and perceived health in patients following myocardial infarction. *Journal of Psychosomatic Research, 53*, 1171–1175.

Schwartz, C., & Frohner R. (2005). The contribution of demographic, medical, and social support variables in predicting the mental health dimension of quality of life among persons with multiple sclerosis. *Health & Social Work, 30*, 203–213.

Skagg, B.G., & Yates, B.C. (1999). Quality of life after coronary angioplasty and coronary artery bypass graft surgery. *Heart & Lung, 28*, 409–417.

Sorenson, E.A., & Wang, F. (2008). Social support, depression, functional status and gender differences in older adults undergoing first-time coronary artery bypass graft surgery. *Heart & Lung, 37*, 1–12.

Spertus, J.A., Winder, J.A., Dewhurst, T.A., Deyo, R.A., Prodzinski, J., McDonnell, M., & Fihn, S.D. (1995). Development and evaluation of the Seattle Angina Questionnaire: A new functional status measure for coronary artery disease. *Journal of the American College of Cardiology, 25*, 333–341.

Spertus, J.A., Jones, P., McDonell, M., Fan, V., & Fihn, S.D. (2002). Health status predicts long-term outcome in patients with coronary disease. *Circulation, 106*, 43–49.

Spertus, J.A. (2008). Evolving applications for patient-centered health measures. *Circulation, 118*, 2103–2110.

Statistics Canada. (2005). *Statistics Canada surveys*. Retrieved from http://www.statcan.ca

Stewart, M.A. (2000). The impact of patient centered care on outcomes. *Journal of Family Practice, 49*, 796–804.

Streiner, D.L., & Norman, G.R. (1995). *Health measurement scales: A practical guide to their development and use*. Oxford, UK: Oxford University Press.

Tanner, C.A., Benner, P., Chesla, C., & Gordon, D. (1996). The phenomenology of knowing the patient. In C. Gordon, P. Benner, & N. Noddings (Eds.), *Caregiving: Readings in knowledge, practice, ethics and politics* (pp. 203–218). Philadelphia: University of Pennsylvania Press.

Thombs, B.D., Ziegelstein, R.C., Stewart, D.E., Abbey, S.E., Parakh, K., & Grace, S.L. (2008). Physical health status assessed during hospitalization for acute coronary syndrome predicts mortality 12 months later. *Journal Psychosomatic Research, 65*, 587–593.

Vaglio, J., Conard, M., Poston, W.S., O'Keefe, J., Haddock, C.K., House, J., & Spertus, J.A. (2004). Testing the performance of the ENRICHD social support instrument in cardiac patients. *Health Quality of Life Outcomes, 2*, 1–8.

University Health Network (UHN). (2005). *General internal medicine intranet*. University Health Network Intranet, Toronto, ON.

University Health Network (UHN) (2008). *PCC Intranet: Introduction to patient centered care*. University Health Network Intranet, Toronto, ON.

Continuing Education Article: Earn Continuing Competency Credits

When Blood Runs Cold: Cold Agglutinins and Cardiac Surgery

Rhonda R. Findlater, RN, BN, CCN(C), and Karen N. Schnell-Hoehn, RN, MN, CCN(C)

Cold agglutinins are particular cold-reactive antibodies that react with red blood cells when the blood temperature drops below normal body temperature causing increased blood viscosity and red blood cell clumping. Most individuals with cold agglutinins are not aware of their presence, as these antibodies have little effect on daily living, often necessitating no treatment. However, when those with cold agglutinins are exposed to hypothermic situations or undergo procedures such as cardiopulmonary bypass with hypothermia during cardiac surgery, lethal complications of hemolysis, microvascular occlusion and organ failure can occur. By identifying those suspected of possessing cold agglutinins through a comprehensive nursing assessment and patient history, cold agglutinin screening can be performed prior to surgery to determine a diagnosis of cold agglutinin disease. With a confirmed diagnosis of cold agglutinin disease, the plan of care can be focused on measures to maintain the patient's blood temperature above the thermal amplitude throughout their hospitalization including the use of normothermic cardiopulmonary bypass with warm myocardial preservation techniques to prevent these fatal complications. Using a case report approach, the authors review the mechanism, clinical manifestations, detection and nursing management of a patient with cold agglutinins undergoing scheduled cardiac surgery. Cold agglutinin disease is rare. However, the risk to patients warrants an increased awareness of cold agglutinins and screening for those who are suspected of carrying these antibodies.

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Key words: *cold agglutinins, cardiac surgery, anemia*

Article de formation continue: Recevez des crédits de formation continue

Quand le sang se refroidi : les agglutinines froides et la chirurgie cardiaque

Les agglutinines froides sont des anticorps froids réactifs spécifiques qui réagissent avec les globules rouges quand la température du sang tombe sous la température normale du corps, causant une viscosité sanguine accrue et des globules rouges agglutinés. La plupart des individus porteurs d'agglutinines froides ne connaissent pas leur état, puisque ces anticorps ont peu d'effet sur la vie quotidienne et ne nécessitent souvent aucun traitement. Par contre, lorsque ces individus porteurs d'agglutinines froides sont exposés à des situations hypothermiques ou encore subissent une circulation extracorporelle sous hypothermie au cours d'une chirurgie cardiaque, des complications mortelles telles que d'hémolyse, l'occlusion micro vasculaire et la défaillance d'un organe peuvent survenir. En identifiant les individus soupçonnés d'être porteurs d'agglutinines froides à l'aide d'une évaluation complète en soins infirmiers et de l'histoire médicale, le dépistage des agglutinines froides peut être réalisé avant la chirurgie afin de poser le diagnostic de maladie des agglutinines froides. Grâce au diagnostic confirmé de la maladie des agglutinines froides, le plan de soins infirmier pourra inclure des mesures spécifiques pour maintenir la température du sang au-dessus de l'amplitude thermique tout au long de l'hospitalisation, et l'utilisation de la normothermie en circulation extracorporelle et les techniques de préservation du myocarde chaud, afin d'empêcher ces complications mortelles. En utilisant une approche d'étude de cas, les auteurs feront la description du mécanisme, des manifestations cliniques, de la détection et de la gestion des soins infirmiers d'un patient porteur d'agglutinines froides qui doit subir une chirurgie cardiaque standard. La maladie des agglutinines froides est rare, cependant, le risque que courent ces patients justifie une sensibilisation accrue aux agglutinines froides et un dépistage chez tous ceux qui sont soupçonnés d'être porteurs de ces anticorps.

Cold agglutinins refer to specific cold-reactive antibodies present in the blood of certain individuals that react with red blood cells when the blood temperature drops below normal body temperature (Atkinson, Soeding, Horne, & Tatoulis, 2008). Typically, these individuals are not aware of this antibody presence, as it tends to have little effect on daily living. However, when a person with cold agglutinins undergoes a procedure such as cardiopulmonary bypass with hypothermia during cardiac surgery, a potentially fatal reaction of increased

blood viscosity and red blood cell clumping occurs. If the presence of cold agglutinins is not identified and treated, the patient may experience hemolysis, microvascular occlusion and, ultimately, organ failure and death (Agarwal, Ghosh, & Gupta, 1995; Atkinson et al., 2008).

The aging Canadian population along with the increasing prevalence of cardiac risk factors such as diabetes, obesity, hypertension and dyslipidemia contributing to heart disease have led to an increasing number of individuals undergoing cardiac surgery. More than 21,000 Canadians required cardiac surgery in the last year alone (Canadian Institute for Health Information, 2008/2009). Although the incidence of cold agglutinins in patients undergoing cardiac surgery is relatively low, with an estimated rate of 0.8% (Agarwal et al., 1995), the lethal nature of cold agglutinins warrants early identification and testing of those who are suspect. With a thorough understanding of cold agglutinins, nurses can assess and identify patients suspected of having cold agglutinins and screen those individuals using laboratory tests. Once cold agglutinin disease is diagnosed, nurses are key to implementing necessary strategies to prevent potentially fatal complications. Using a case report approach, the authors will review the mechanism, clinical manifestations, and detection of cold agglutinins in the cardiac surgery population and highlight strategies to prevent the complications associated with cold agglutinin disease, ultimately improving patient outcomes.

Case Report

A 74-year-old woman with a history of coronary artery disease, hypertension, dyslipidemia and anemia of unknown etiology presented with increasing angina over the past year, which had progressed from CCS Class III to IV. She underwent a coronary angiogram revealing 60% ostial left main stenosis, critical lesions including a 80% right coronary artery stenosis, two diagonal branches with 80% to 90% stenosis and mild disease of the left anterior descending and circumflex arteries with 40% to 50% stenosis. She was scheduled for an elective triple vessel coronary artery bypass surgery. The patient was assessed in the pre-operative assessment clinic. Her blood work had been drawn recently in preparation for her angiogram and the reports were faxed to the facility where the surgery was to be performed. The complete blood count reported the following abnormal results: red blood cell count (RBC) of 3.13 × 10E12/L (normal 3.8–5.2), hemoglobin (Hgb) of 101 g/L (normal 120–160), hematocrit (Hct) of 0.296 l/L (normal 0.35–0.47), mean cell volume (MCV) of 94.6 fL (normal 80–98), mean cell hemoglobin concentration (MCHC) of 341 g/L and red cell distribution width (RDW) 14.8% (normal 11.4–14.4) (See Table 1). The hematology report indicated that the specimen had to be warmed to 37 degrees Celsius to be processed. Prior to hospital admission, the patient had been referred to a hematologist due to the medical history of anemia of unknown etiology and was being treated with folic acid. The Canadian Blood Services report from the request for cross match and blood type indicated a positive antibody screen that required a

Table 1: Complete blood count report for case study

Normal Values	Pre-operative	Operating Room blood at room temperature	Operating Room blood warmed to 37 C°
WBC (4.5–11 × 10E9/L)	7.4		6.9
RBC (3.8–5.2 × 10E12/L)	3.13	1.54	1.82
HGB (120–160 g/L)	101		58
HCT (0.35–0.47 l/L)	.296		0.168
MCV (80–98 fL)	94.6	96.8	92.3
MCH (26–34 pg)	32.3	37.0	31.9
MCHC (320–365 g/L)	341	383	345
RDW (11.4–14.4%)	14.8		14.7
PLT (140–440 × 10E9/L)	283		152
	Comments: Specimen warmed to 37 degrees	Comments: Red blood cells appear to agglutinate at room temperature	Comments: Specimen has been warmed to 37 C° to report results

Direct Antiglobulin Test (DAT) be performed, which identified the antibody, IgG and complement coating the patient's red blood cells (See Table 2).

The patient was admitted to hospital on the day of surgery. At the onset of surgery, her core temperature dropped to 35 degrees Celsius in the operating room due to inadvertent cooling from the cool operating room temperature, intravenous fluids and open chest cavity. During the initial infusion of cold blood cardioplegia solution (3 to 4 degrees Celsius), the cardiac perfusionist noticed red blood cell clumping in the cardioplegia chamber. Cold agglutinins were suspected and the hypothermic cardioplegia was immediately stopped. To ensure the hypothermic solution was completely removed, the cardioplegia lines were flushed and a warm blood cardioplegia solution (37 degrees Celsius) was administered. The patient was rewarmed to a normothermic level, with no further red blood cell clumping. The surgery continued without further incident and the patient experienced no residual complications. A complete blood count, drawn in the operating room at the time that cold agglutinins were suspected, revealed markedly low red blood cells and hemoglobin with a greatly increased mean cell volume and mean cell hemoglobin concentration. The un-warmed (room temperature) results showed even greater disparity from normal (See Table 1). The abnormal results improved when the blood sample was warmed to 37 degrees Celsius.

Subsequent post-operative follow-up with Canadian Blood Services and the hematologist confirmed the presence of cold agglutinins in the patient's blood, with a cold agglutinin titre of 1:1280 (site specific normal <1:64) and the thermal amplitude (highest critical temperature where antibodies are reactive and bind to the red blood cells causing agglutination) was identified to be 37 degrees Celsius. Despite being diagnosed with cold agglutinin hemolytic anemia, the patient's post-operative course was relatively uneventful.

Table 2. Canadian Blood Services report for case study

Tests Performed	**Results**
ABO/Rh	A Rh Positive
Antibody Screen	Positive
Antibody Identification	No antibodies detected
Direct Antiglobulin Test (DAT)	Positive
Differential DAT	IgG and complement coating patient's red cells

Cold Agglutinins

Cold agglutinins are one of four categories of cold-reactive proteins; the other three categories include cryoglobulins, Donath-Landsteiner antibodies and cryofibrinogen (Agarwal et al., 1995; Petz, 2008). Cold agglutinins are antibodies that bind to the 'I' antigen of the red blood cell. These immunoglobulins primarily belong to the IgM class. However, on occasion, they can also be from the IgG or IgA classes (Agarwal et al., 1995; Hoffman, Gilbert, & Hyder, 2002; Robinson, Marasco, & Street, 2002). These antibodies are cold reactive and bind to the red blood cells when the temperature of the blood drops below 37 degrees Celsius, causing increased blood viscosity and red blood cell clumping (Agarwal et al., 1995; Atkinson et al., 2008; Fisher, Claypoole, & Collard, 1997; Hoffman et al., 2002). On the hematology report, the clump of red blood cells is falsely identified as one large red blood cell with a high mean cell volume. This is manifested as anemia and reported as a lowered blood cell count with a high mean cell volume and a high mean cell hemoglobin concentration on the hematology report. When cold agglutinins are suspected, it is important to consult hematology and request Canadian Blood Services to perform a test to determine the highest temperature at which the antibodies are reactive and will bind to red blood cells. This is referred to as the thermal amplitude (Petz, 2008; Zarandona & Yazer, 2006). The thermal amplitude is the single most important piece of information required by the health care team. It provides the team with the critical temperature at which red blood cell agglutination will occur affecting physiological functioning. A high thermal amplitude, (i.e., one that approaches body temperature) will result in a more severe disease process with an increased risk of complications. The antibody concentration in the blood, referred to as the cold agglutinin titre (site specific lab normal <1:64), is important in making the definitive diagnosis of cold agglutinin disease. The literature indicates a cold agglutinin diagnosis can be made when the cold agglutinin titre is 1:70 or higher (Madershahian et al., 2004; Pecsi, Almassi, & Langenstroer, 2009). The antibody titre identifies the exponential increase in antibody activity when the blood is exposed to temperatures below the thermal amplitude and rapid reversal with rewarming. The higher the antibody titre with cooling, the more severe the disease. With knowledge of the thermal amplitude, strategies such as maintaining a warm temperature in the operating theatre and using warmed intravenous solutions, blood products and anesthetic gases can be implemented to avoid hypothermic situations. Living with cold agglutinin disease in the community involves avoidance of cold temperatures by staying indoors, wearing warm clothing, mittens, boots or relocating to a warmer climate (Hamblin, 2000; Petz, 2008).

Pre-operative Diagnosis and Management

Patients with cold agglutinins often present pre-operatively with little or no clinical signs or symptoms. It is when the entire body has prolonged exposure to hypothermic temperatures, as is the case for hypothermic cardiac surgery, that clinical signs can become apparent. Clinical manifestations such as a low red blood cell count and anemia seen prior to a hypothermic procedure are dependent on the thermal amplitude and the cold agglutinins titre for that particular individual.

Cold agglutinins can be an idiopathic disease, which is more prevalent in the elderly female population (Agarwal et al., 1995; Hoffman et al., 2002). However, it can also occur secondary to a viral, bacterial or parasitic infection (e.g., syphilis, cytomegalovirus, infectious mononucleosis, HIV), an autoimmune disorder, or an underlying lymphoproliferative disease with serum immunoglobin synthesis disturbances (e.g., lymphoma, Waldenstrom's macroglobinemia, Raynaud's type phenomenon) (Bratkovic & Fahy, 2008; Fischer et al., 1997; Hoffman et al., 2002; Pecsi et al., 2009; Petz, 2008). A history of acrocyanosis (blue discoloration of the fingers or toes when exposed to the cold) or hemoglobinuria are symptoms also suggestive of cold agglutinins (Bratkovic & Fahy, 2008; Hamblin, 2000; Hoffman et al., 2002). Patients with any of these associated conditions need to be assessed for cold agglutinin disease. A history of anemia with unknown etiology can also be suggestive of cold agglutinin hemolytic anemia and requires further pre-operative investigation by a hematologist to confirm the underlying cause of anemia. Patients with a diagnosis of cold agglutinin hemolytic anemia have cold agglutinins that are clinically significant, affecting physiological function. The thermal amplitude tends to be close to body temperature and the antibody is reactive at or near their body temperature binding to the red blood cells, causing red blood cell clumping, which is reported as a high mean red blood cell volume and mean cell hemoglobin concentration with low hemoglobin resulting in a diagnosis of anemia. Patients with cold agglutinin hemolytic anemia are at risk for widespread coagulation and death if their core body temperature drops below normal causing widespread coagulation and death.

Routine laboratory testing of all cardiac surgery patients for cold agglutinins is controversial, typically not recommended by experts due to the relatively low incidence of this condition and to avoid the unnecessary cost of approximately $1.15 for each screening test (Cserti, Yau, Cabrerizo-Sanchez, Pendergrast, & Karkouti, 2007; Fisher et al., 1997). However, a cost-effective alternative is a thorough review of the standard pre-operative blood work, where those suspected of cold agglutinin disease can be identified and targeted for further testing. Hematologic laboratory results consistent with cold agglutinins disease include decreased hemoglobin, decreased red blood cell count, increased mean cell volume and increased mean cell hemoglobin concentration. When the hematology blood work report indicates that the red blood cells appear to agglutinate at room temperature and the specimen required warming to 37 degrees Celsius to be processed, this is highly indicative of cold agglutinins.

In addition to the hematology report, the standard blood type screen provided in the Canadian Blood Services report also offers insight into the possible presence of cold agglutinins. If Canadian Blood Services identifies and reports a positive antibody screen, a direct antiglobulin test (DAT) and differential DAT will be performed to identify the presence of a specific antibody class (IgM, IgG or IgA). The presence of these specific antibodies is highly suggestive of cold agglutinin disease.

All patients suspected of having cold agglutinin disease should have a consult with the hematology service in the pre-operative phase to facilitate patient specific requirements during the surgical procedure. Testing for cold agglutinins needs to be performed on these individuals and the thermal amplitude and antibody titre identified. To confirm the diagnosis of cold agglutinin disease and identify the patient's specific thermal amplitude and antibody titre, a specialized clinical test, such as a Coombs test or Ehrlich Finger test, can be performed (Agarwal et al., 1995; Zarandona & Yazer, 2006). It is imperative that the diagnosis of cold agglutinins and the supporting rationale be communicated to the surgical team for any procedure requiring cooling of the body temperature. With the diagnosis of cold agglutinins and the knowledge of the patient's thermal amplitude and antibody titre, the surgical team can implement appropriate interventions. Pre-operatively, if cardiac surgery with normothermic cardiopulmonary bypass is contraindicated, plasmaphoresis or exchange transfusions can be performed to reduce the cold agglutinins titre prior to surgery by temporarily removing up to 50% of the antibody from the plasma, thus limiting the effects of cold agglutinins (Bratkovic & Fahy, 2008; Robinson et al., 2002).

Intra-operative Management

For patients with cold agglutinin disease, knowing the patient's unique thermal amplitude and antibody titre levels will be the best guide to reducing possible red blood cell agglutination. The systemic temperature

of the patient must be continuously monitored and maintained above their thermal amplitude throughout the surgery. This requires implementation of cardiopulmonary bypass with normothermia or mild hypothermia. Throughout the surgery, the operative team must continuously assess for blood clumping in the coronary arteries, cardiopulmonary bypass circuit and cardioplegia circuit (Fischer et al., 1997; Robinson et al., 2002). In addition, caution should be used to ensure the environment and all potential sources of cold be kept to a minimum: warm operating room temperature, warming blanket, warm priming solutions, anesthetic gases, intravenous fluids and blood products and avoid topical cooling techniques or use of a cooling blankets during the procedure (Atkinson et al., 2008; Baltalarli, Keskin, & Hayrettin, 2000; Fischer et al., 1997).

Post-Operative Management

If a patient with cold agglutinins is cooled below his or her thermal amplitude, signs of blood agglutination (physical separation of red blood cells and plasma) will occur rapidly. This effect may be visible as blood clumping in the cardiopulmonary bypass circuit or the cardioplegia syringe resulting in hemolysis, hemoglobinuria, renal and hepatic insufficiency, cerebral insult or even myocardial infarction (Agarwal et al., 1995; Madershahian et al., 2004; Robinson et al., 2002). Post-operatively, it is important to ensure the health care team is aware that the patient has cold agglutinin disease and they know the patient's thermal amplitude. The patient must be assessed for possible complications of cold agglutinins throughout his or her hospital stay. In addition, special considerations should be made during the in-hospital post-operative period to prevent exposure of the patient to cold temperatures and take measures to ensure his or her body temperature is maintained above his or her thermal amplitude (continue to warm intravenous fluids and blood products, maintain an adequate room temperature, use warm blankets, and use warm clothing).

Conclusion

Hypothermic surgical procedures, such as cardiac surgery, can pose an increased risk for life-threatening complications for patients with cold agglutinins. A comprehensive nursing assessment, patient history and standard laboratory tests are the key for identifying patients at potential risk for cold agglutinins to facilitate further screening and diagnosis in this select patient group. With knowledge of the thermal amplitude and antibody titer, the entire surgical team can implement basic strategies to limit the effects of cold agglutinins and maintain the patient's systemic temperature above the thermal amplitude throughout the hospital stay. ♥

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References

Agarwal, S.K., Ghosh, P.K., & Gupta, D. (1995). Cardiac surgery and cold-reactive proteins. *Annals of Thoracic Surgery, 60*, 1143–1150.

Atkinson, V.P., Soeding, P., Horne, G., & Tatoulis, J. (2008). Cold agglutinins in cardiac surgery: Management of myocardial protection and cardiopulmonary bypass. *Annals of Thoracic Surgery, 85,* 311–313. doi:10.1016/jathoracsur.2007.02.002

Baltalarli, A., Keskin, A., & Hayrettin, B. (2000). Warm heart surgery for the patient with cold agglutinins. Internet Journal of *Thoracic and Cardiovascular Surgery, 3*(2). Retrieved from http://www.ispub.com/ostia/index.php?xmlFilePath=journals/ijtcvs/vol3n2/warm.wml

Bratkovic, K., & Fahy, C. (2008). Anesthesia for off-pump coronary artery surgery in a patient with cold agglutinin disease. *Journal of Cardiothoracic and Vascular Anesthesia, 22*, 449–452. doi:10.1053/j.jvca.2007.03.015

Canadian Institute for Health Information. (2008/2009). *eChap Report*. Retrieved from http://secure.cihi.ca (restricted access).

Cserti, C.M., Yau, T.M., Cabrerizo-Sanchez, R., Pendergrast, J.M., & Karkouti, K. (2007). Impact of screening for cold-active antibodies before cardiopulmonary bypass. *Transfusion, 47,* 182A.

Fischer, G.D., Claypoole, V., & Collard, C.D. (1997). Increased pressure in the retrograde cardioplegia line: An unusual presentation of cold agglutinins during cardiopulmonary bypass. *Anesthesia and Analgesia, 84*, 454–456.

Hamblin, T. (2000). Management of cold agglutination syndrome. *Transfusion Sciences, 22*, 121–124.

Hoffman, J.W., Gilbert, T.B., & Hyder, M.L. (2002). Cold agglutinins complicating repair of aortic dissection using cardiopulmonary bypass and hypothermia circulatory arrest: Case report and review. *Perfusion, 17*, 391–394.

Madershahian, N., Franke, U.F. W., Jutte, H., Wippermann, J., Berz, D., & Wahlers, T. (2004). Cold agglutinins in on-pump cardiac surgery: A rare but potentially lethal problem. *The Internet Journal of Perfusionists, 2*(1).

Pecsi, S.A., Almassi, G.H., & Langerstroer, P. (2009). Deep hypothermia circulatory arrest for a patient with known cold agglutinins. *Annals of Thoracic Surgery, 88*, 1326–1327. doi:10.1016/j.auoracsur.2009.02.005

Petz, L.D. (2008). Cold antibody autoimmune hemolytic anemias. *Blood Review, 22*, 1–15. doi:10.1016/j.blre.2007.08.002

Robinson, K.L., Marasco, S.F., & Street, A.M. (2002). Practical management of anticoagulation, bleeding and blood product support for cardiac surgery: Transfusion issues. *Heart, Lung and Circulation, 11*, 42–51.

Zarandona, J.M., & Yazer, M.H. (2006). The role of the Coombs test in evaluating hemolysis in adults. *Canadian Medical Association Journal, 174*, 305–307. doi:1503/cmaj.051489

When Blood Runs Cold: Cold Agglutinins and Cardiac Surgery

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1. Thermal amplitude is:
A. the highest critical temperature at which cold agglutinin antibodies are reactive
B. the lowest critical temperature at which cold agglutinin antibodies are reactive
C. the ideal body temperature for a patient with cold agglutinin disease
D. not clinically significant

2. The plan of care for a patient diagnosed with cold agglutinin disease should focus on:
A. measures to maintain the patient's blood temperature above the thermal amplitude
B. measures to maintain the patient's blood temperature below the thermal amplitude
C. administering blood transfusions to maintain a normal hemoglobin
D. testing for other hematological diseases

3. Cold agglutinins refer to:
A. antibodies in the blood that react with red blood cells when the blood temperature is below normal body temperature
B. antibodies in the blood that bind to white blood cells when the blood temperature is below normal body temperature
C. an enzyme on the red blood cell that causes destruction of hemoglobin and anemia
D. proteins in the blood that cause a lower than normal body temperature

4. Hematological laboratory results indicative of cold agglutinin disease include:
A. ↓ RBC, ↓ Hgb, ↓ MCV, ↓ MCHC
B. ↑ RBC, ↓ Hgb, ↑ MCV, ↑ MCHC
C. ↓ RBC, ↑ Hbg, ↑ MCV, ↑ MCHC
D. ↓ RBC, ↓ Hbg, ↑ MCV, ↑ MCHC

5. Individuals with cold agglutinin disease who are exposed to hypothermic situations may experience:
A. polycythemia
B. hemolysis
C. seizures
D. bleeding

6. The single most important piece of information required by the health care team in caring for a patient with cold agglutinin disease is the:
A. complete blood cell count
B. thermal amplitude
C. antibody titre
D. hemoglobin

7. Patients with cold agglutinin hemolytic anemia have all of the following EXCEPT:
A. clinically significant cold agglutinins
B. a thermal amplitude close to body temperature
C. the antibody is reactive only in cold temperatures
D. a hematology report with ↓ Hgb, ↑ MCV, ↑ MCHC, ↑ RDW

8. Information on the Canadian Blood Services blood type and screen report that is suspicious of cold agglutinin disease includes:
A. a RhO positive blood type
B. a RhO negative blood type
C. a positive antibody screen and differential Direct Antiglobulin Test
D. a negative antibody screen and differential Direct Antiglobulin Test

9. Which of the following is a specialized clinical test used to confirm the diagnosis of cold agglutinin disease?
A. Direct Antiglobulin Test
B. Cold Reactive Time
C. Cold Caloric Test
D. Coombs Test

10. Patients diagnosed with cold agglutinin disease undergoing cardiac surgery may require all of the following EXCEPT:
A. a warm operating room temperature
B. warm intravenous solution
C. cold cardioplegia solution
D. warm anesthetic gases

11. Cold agglutinins are antibodies that
A. bind to the 'I' antigen of the red blood cell
B. cause platelet activation and aggregation
C. destroy clotting factors in the blood
D. cause blood transfusion reactions

12. Cold agglutinin titre refers to:
A. the temperature at which the cold agglutinin antibody binds to the red cells
B. a treatment that decreases the cold agglutinin antibody levels in the blood
C. a test that identifies the presence of antibodies in the blood
D. the cold agglutinin antibody concentration in the blood

13. In patients with cold agglutinin disease, the Mean Cell Hemoglobin Concentration (MCHC) value on the hematology report is increased due to the clumping of the red cells, which is interpreted as one large red cell.
A. True
B. False

14. The MCV on the hematology report is the abbreviation for Mass Cell Volume.
A. True
B. False

15. In patients with cold agglutinin disease, a high thermal amplitude results in a less-severe disease process and fewer risks of complications.
A. True
B. False

16. Which of the following information in a history and physical could be indicative of cold agglutinin disease?
A. History of acrocyanosis
B. Autoimmune disorder
C. Hemoglobinuria
D. Anemia
E. All of the above

17. Cold agglutinins are antibodies that belong primarily to:
A. the IgG class of immunoglobulins
B. the IgM class of immunoglobulins
C. the IgA class of immunoglobulins
D. the IgB class of immunoglobulins

18. In cold agglutinin disease, the antibody titre goes higher with cooling, which indicates more severe disease.
A. True
B. False

CE Hours = 2.0

When Blood Runs Cold: Cold Agglutinins and Cardiac Surgery

Rhonda R. Findlater, RN, BN, CCN(C), and Karen N. Schnell-Hoehn, RN, MN, CCN(C)

Continuing Education (CE) hours from this article will be granted by CCCN. The CE hours can be applied to recertification in Cardiovascular Nursing [CCN(C)] as designated by the Canadian Nurses Association certification program or your provincial continuing competency program.

Quiz topic: When Blood Runs Cold: Cold Agglutinins in Cardiac Surgery

Educational objectives
Based on the content of the article, you should be able to:
1. Define cold agglutinins.
2. Describe the pathophysiology of cold agglutinin disease.
3. Describe the plan of care for a patient diagnosed with cold agglutinin disease.
4. Describe how cold agglutinin disease is diagnosed.

Instructions
To receive CE hours for this quiz, mark your answers on the enrolment form. Complete the form and submit it to CCCN, 202 – 300 March Road, Ottawa, ON K2K 2E2, or fax: 613-595-1155, or email: david@cccn.ca. (Non-members are charged a $20.00 processing fee. Why not join CCCN and have all of your CE quizzes marked for free: one of the many benefits of being a member.) This enrolment form must be postmarked by July 1, 2012. After the enrolment form and payment are received by CCCN, a corrected answer form will be sent to you. If you receive a passing score, a CE hour certificate will be enclosed.

Quiz writer: Rhonda R. Findlater, RN, BN, CCN(C)

Credit: You can earn 2.0 CE hours with a passing mark of 16/18 (89 percent) correct answers on this quiz (ID #CCCN 11-1).

Photocopy this form and mark your answers in the appropriate spaces. This form expires on July 1, 2012.

Quiz topic: When Blood Runs Cold: Cold Agglutinins in Cardiac Surgery

1.	A	B	C	D	**7.**	A	B	C	D	**13.**	A	B			
2.	A	B	C	D	**8.**	A	B	C	D	**14.**	A	B			
3.	A	B	C	D	**9.**	A	B	C	D	**15.**	A	B			
4.	A	B	C	D	**10.**	A	B	C	D	**16.**	A	B	C	D	E
5.	A	B	C	D	**11.**	A	B	C	D	**17.**	A	B	C	D	
6.	A	B	C	D	**12.**	A	B	C	D	**18.**	A	B			

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Research ROUNDS

My Abstract was Accepted—Now What? A Guide to Effective Conference Presentations

Jo-Ann V. Sawatzky, RN, PhD

Although conference presentations are central to the dissemination of new nursing knowledge, public speaking can be a daunting prospect. The purpose of this article is to provide nurses with the essential tools to deliver a successful conference presentation. Accordingly, the all-too-familiar steps of assessment, planning, implementation, and evaluation provide an organizational framework for a practical guide to developing and executing a relatively stress-free, effective presentation.

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According to most studies, people's number one fear is public speaking. Number two is death... This means, to the average person, if you go to a funeral, you're better off in the casket than doing the eulogy.

– Jerry Seinfeld

Excellent news! Your abstract has been accepted for an oral presentation at a national nursing conference. But now what? Your initial response of excitement and pride in this tremendous accomplishment is quickly overshadowed by the sense of fear, anxiety, and perhaps even dread. The fear of public speaking is not unique to nurses. Public speaking is often cited as the number one fear in life, well ahead of death.

Most nurses would undoubtedly agree that speaking in front of an audience is a daunting prospect. However, public speaking is central to the dissemination of new knowledge. Clinicians, educators and researchers alike are constantly discovering and developing novel and innovative ideas that will benefit our patients, the profession and the health care system. Conferences provide an optimal venue for sharing these new insights with our peers. The purpose of this article is to provide nurses with the necessary tools to deliver a relatively stress-free, effective presentation, so that the choice of the eulogy versus the casket is an easy one!

While a review of the nursing literature revealed a substantial amount of information related to the submission of abstracts, few publications have addressed the need for practical guidance in the assessment, planning, implementation and evaluation phases of conference presentations. Therefore, the all-too-familiar steps of the nursing process provide an appropriate organizational framework to guide us on the path to presentation success.

Assessment: Doing Your Homework

By failing to prepare, you are preparing to fail.

– Benjamin Franklin

The assessment phase begins by gathering essential information about the conference and the presentation topic. Failing to address this key initial step will most certainly result in failure.

The Conference

Each conference has its own unique guidelines; never assume that the conference you last attended or presented at will be the same as the one you plan to present at next! Length of time allocated to presentations varies from conference to conference, generally ranging from 15 to 45 minutes, including time for questions. The established timelines are strictly adhered to. Therefore, this information is critical to developing a presentation that complies with all conference guidelines.

The type of conference and the type of participants are also important considerations. The way a presentation is structured and presented depends on the audience. Does the particular conference primarily attract clinical nurses or nurse researchers? Is it a multidisciplinary conference, or perhaps a non-health-care-related venue? It is important for you to tailor the information provided to meet the needs, interests and knowledge level of the audience. For example, a presentation on the implementation and evaluation of a novel heart failure clinic would have a very different focus and direction for conference participants who were clinical nurses versus administrators. Similarly, each area of nursing specialization has its own culture—including language. Consideration of the unique aspects of your anticipated audience will enhance their engagement in your presentation.

Finally, it is important to confirm information about the conference venue and the presentation itself, including the specific date, time and location of your presentation. There would be no greater error than to show up at the wrong place at the wrong time!

The Topic

Whether you are planning a clinical- or research-based presentation, it goes without saying that it is important to ensure that you have a sound working knowledge of the topic at hand. This may seem intuitive, because we usually choose to speak on topics that are familiar to us. However, our self-confidence should not be overshadowed by the need to do our homework! This includes an up-to-date and comprehensive review of the related literature. Knowledge is power. Therefore, addressing this crucial preliminary step in the development of a presentation will boost your sense of confidence when you step up to the podium to speak.

Planning: Preparing the Presentation

It usually takes more than three weeks to prepare a good impromptu speech.

– Mark Twain

Central to the preparation of the actual presentation is the development of the content. However, in today's techno-savvy world, no presentation is complete without effective visual aids. As well, without practice, even the most phenomenal presentation can turn into disaster. Finally, the preparation would not be complete without a list of the essentials for the travelling presenter.

Developing the Content

If you can't write your message in a sentence, you can't say it in an hour.

– Dianna Booher

Selecting the presentation topic is easy; the bigger challenge, however, is often how to condense your work into a predetermined, very brief timeframe (Hardicre, Coad, & Devitt, 2007). This is especially difficult if you have done your homework well, and you have accrued mountains of information on the topic. Perhaps the most important revelation is realizing that "the delegates listening to the presentation are unlikely to be empty vessels with no knowledge of the topic" (Happell, 2009, p. 49).

A simple, but tried and trusted rule in developing the presentation content is 'the rule of thirds.' Think of your presentation as a meaty sandwich; although the filling tastes great, the perfect panini is not complete without the Italian bread on either side! Begin by organizing your content into three parts: the introduction, the body and the conclusion. Plan for each of these three components to be allotted approximately equal time during the presentation. The *introduction* should highlight your fundamental message or purpose, as well as key literature and theoretical points. Experts in communication say that you make your first impression within the first four minutes of the presentation; so to grab the attention of your audience, you must make those first four minutes count (Hadfield-Law, 2001)! The content of the *body* will depend on the nature of the presentation. If you are presenting research evidence, the body should include the essence of the research methodology: the study design, the sample and setting, instrumentation and procedures, as well as the results. The body of a clinical presentation should highlight the 'meat' of the case study, clinical issue, or development/change initiative. The *conclusion* is your opportunity to shine! The discussion and implications of the study findings, or lessons learned from a clinical scenario provide the audience with the 'so what' take home message of your presentation. Therefore, it is important to plan the timing of your presentation well so that you do not run out of time before you deliver this key information! Lastly, end with a bang—rather than a whimper! Your final statement should be a memorable one! "A grand finale does double duty—it

cues the audience that time is almost up, and it makes a longer-lasting, more exciting emotional connection" (Bergells, 2008).

Finally, in developing the content, it is important to reflect on your personal style. For example, if the use of humour comes naturally to you, this can be a very useful tool to capture and maintain the attention of your audience. However, humour that is awkward or inappropriate can spell disaster! Therefore, it is critical that the jokes, cartoons, or humorous asides are well planned, appropriate to the venue and certain not to offend anyone in the audience.

Creating Visual Aids

One picture is worth ten thousand words.

– Fred Barnyard

The visual aids should do just that—*aid* in your presentation. Accordingly, the slides should not include your entire presentation (Hardicre et al., 2007). Text slides should contain the key points that you want to address—no more and no less! Novice presenters, in particular, tend to use the slides as their script. However, the use of long sentences and paragraphs of information is certain to distract your audience's attention, if for no other reason than that the font is too small to read. According to Paradi (2010), the choice of fonts and font effects can have a significant effect on your presentation. For example, while the use of bold or italics for emphasis is encouraged, it is advisable to avoid underlining because of the association with Internet hyperlinks. Also, avoid the use of all capital letters because it may be perceived as shouting at the audience. A general rule is to use a sans serif font, between 24 and 32 points, with larger fonts for titles (Paradi, 2010). Similarly, tables and graphs should be large enough for the audience to read—or do not include them! Among his 12 design commandments for professional-looking presentations, De Rossi (2001) suggests following the 'rule of seven' to minimize slide content: no more than seven words to a line, no more than seven bullet points to a slide, and no more than seven rows or columns in a table. In the process of refining your slides, consider several other design commandments proposed by De Rossi, such as using muted colours for the body content; being consistent throughout regarding titles, fonts, and backgrounds; leaving ample margins; using animation sparingly; and selecting only quality images.

Most people are visual learners. Therefore, the key to a successful presentation is in the visual aids. While on the one hand, audiences today have come to expect to be entertained by visual imagery, on the other hand, the use of too much technology can detract from the presentation itself. This fine balance also depends on the nature of the topic and the type of conference. For example, although images may be central to a presentation about a new technology to a group of novice clinicians, it may be more appropriate to focus on the written word in a presentation of novel research evidence to an audience of researchers. Regardless, few would argue that diagrams and images break the monotony of text slides; the key is to use them wisely!

Practice, Practice, Practice

Practice makes perfect.

– Author Unknown

Practice is crucial to a successful presentation. Most presenters prepare a script that contains more information than the slides. This script can be printed on cards, with one card for each slide, or on regular paper. Keep in mind that the less paper you have to shuffle during the presentation, the better! Regardless of what type of paper you choose for your script, use a large enough font (i.e., 14 or 16 point) so that you do not have to squint in what is often a dimly lit conference room environment (Kerber, 2008). As well, it is important to number the pages. There is nothing worse than dropping your script just before or during the presentation; without page numbering you will inevitably be too panic-stricken to put the pages back in the right order!

To read or not to read, that is the question. If you are preparing your first conference presentation, it is generally recommended that you read your script. Ad libbing or improvising is great for those who can do it effectively, but can result in disaster when you are nervous. Ad libbing also tends to result in going over the allotted time. Thus, for the novice presenter, in particular, practising with, and following a script will build your confidence during the actual presentation. However, even if you are reading your script, it is important to develop a strategy during your practice that enables you to make eye contact with your audience during the presentation. For example—let your fingers do the walking! If possible, use your fingers to maintain your place in the script so that if you are distracted, or simply look out at your audience periodically, you will not lose your place. Also, consciously vary your eye contact; practise gazing at different parts of the room each time you look up from your script.

Practising on your own, using the slides and your script, will help to build your confidence. Speak out loud when you practise; focus on varying your volume and inflection as you speak. Remember—a monotone voice is the best way to lose the audience's attention! Speaking out loud also simulates the actual presentation,

especially with regard to timing. Keep in mind that it is better to finish early than to go over the allotted time! Most conference moderators use a two- or five-minute warning system, which means that they will signal you when your time is running out. If you have prepared well, you should not be thrown off by this warning; carry on with the confidence in knowing that you will finish on time.

Finally, once you have practised on your own, ask a trusted colleague to be a critiquing audience. Although this may be anxiety provoking, it is the closest you can come to a dress rehearsal! Request honest feedback and make adjustments accordingly. Videotaping your presentation is another option. This can be a very humbling experience because we tend to notice our own bad habits, such as the use of non-words—e.g., 'um,' 'ah,' and 'you know.' The use of these filler words is often the result of being nervous, but can be very distracting to the listener. To avoid this pitfall, train yourself to pause in silence as you come to the end of a sentence or thought (Bonanno, 2009).

Travelling to Present:
Don't Leave Home Without It

Most conference presentations provide us with the opportunity to travel. Just as you would not want to forget your sunscreen and bathing suit if you were going on a vacation in a warmer clime, you certainly do not want to forget the essentials for your conference presentation. First and foremost, a word from the wise is to download your presentation onto more than one flashdrive, and don't carry them both in the same bag or suitcase! In addition, consider handouts for your audience. Although not required, handouts are generally well received by the audience because they provide a reference to the presentation content, as well as your contact information. Carry business cards; they are an effective networking tool at conferences and, after all, networking is why most of us attend conferences. Finally, pack your wardrobe wisely; keep in mind that what you wear will create a first and lasting impression.

Implementation: Delivering the Presentation

The human brain starts working the moment you are born and never stops until you stand up to speak in public.

— George Jessel

D-Day has arrived! It's okay to be nervous. Arriving early is central to settling your nerves. As well, there are a number of strategies that you can use to reduce your anxiety during the presentation. Preparing for the question period is also important. Finally, perhaps the most rewarding part of presenting at a conference is seizing the opportunity to network with learned colleagues.

Be a Keener—Arrive Early

If possible, arrive at the conference early. Optimally, you will not be presenting on the morning of the first day, which then provides you with the opportunity to attend other sessions. Attending the keynote address, as well as other sessions, may provide you with insights to refer to, if relevant to your topic. If possible, check out the actual room that you will be presenting in. As a novice presenter, this will help to settle your nerves. Microphones are standard at most conferences, but if you are soft spoken, seeing this piece of equipment in the room should give you peace of mind. Check out the set-up at the podium; mentally visualize where you will stand so that you can face the audience, while still being able to view your slides.

Know the routine. As a presenter, you will generally receive a package of conference information in advance. Make sure that you review this information carefully, and bring it with you to the conference. For example, many larger conferences now mandate that all presentations must be downloaded in advance, often in an area other than the room where your presentation will be delivered. These 'speaker rooms' also provide you with a final opportunity to review your presentation slides to ensure that they are good to go!

Delivering the Presentation

Be prepared—to be nervous. Generally, as presenters, we are most nervous in the final minutes leading up to the presentation. Some would suggest that, rather than trying to get rid of the anxiety and tension, you channel that energy into concentration and expressiveness (http://www.nwlink.com/~donclark/leader/leadpres.html). However, it never hurts to use the tried and true stress-reducing strategy of taking several slow deep breaths before you begin. If there is a podium, use it! Podiums camouflage a multitude of nervous tendencies, such as shaky hands and knees! Remind yourself that you probably know more about the topic than most others in the room! If you make a mistake during the presentation, refer back to the slow deep breathing strategy, and carry on. No one is perfect! Keep in mind that your audience has come to hear what you have to say, not to criticize! Above all—keep your head up and smile! A smile will help you to relax and establish a rapport with your audience.

Know yourself. Does your mouth tend to get dry when you are nervous? If so, keep a glass of water close by. Hadfield-Law (2001) recommends applying lip-gloss or petroleum jelly on your front teeth to stop your lips from sticking to them. Does caffeine cause your hands to

tremble? If so, avoid coffee or tea in the hours leading up to your presentation. Does your neck turn blotchy when you are nervous? If so, plan your wardrobe accordingly, with a high collar or turtleneck.

Question Period—Please Don't Ask!

For the novice presenter, the thought of responding to questions may be even more anxiety-provoking than the presentation itself! However, a few simple strategies will facilitate this final phase of the presentation process. Firstly, be prepared! Having an in-depth knowledge of your topic and the related literature, and perhaps even anticipating potential questions, will reduce your anxiety level and enhance your confidence in responding to questions (Hardicre et al., 2007). Secondly, rather than blurting out an inappropriate response, either pause or ask for the question to be repeated. This gives you a moment to reflect on the best response (Happell, 2009). Thirdly, do not be afraid to admit what you do not know! Responding with "thank-you for raising that question; it is something I had not thought of, and will certainly look into" is generally acceptable to the person asking the question, as well as the audience (Happell, 2009).

Networking

If possible, linger in or near the room following your presentation. Your audience knows who you are and may seize this opportunity to speak to you more informally about your presentation. This is a much more relaxed venue for discussion and you have much to gain by speaking to others with a common interest. Networking should also extend beyond your presentation to include approaching other presenters. Although this may at first be somewhat intimidating for you, remember, "networking is about making contacts, forging links, and developing groups of like-minded people" (Hardicre et al., 2007, p. 404).

Evaluation—How Did I Do?

Without continual growth and progress, such words as improvement, achievement, and success have no meaning.

– Benjamin Franklin

Although your first instinct may be to want to forget about it, an important part of the presentation process is to reflect on the experience. If you are fortunate enough to receive formal written audience evaluations, use this feedback as a learning tool for future presentations. However, more often than not, no formal feedback is provided to conference presenters. Ideally, trusted friends or colleagues can serve two very valuable roles by attending your presentation. First and foremost, they can provide moral support. Second, they can provide you with constructive feedback. Make the request to evaluate your presentation in advance and provide specific guidelines to follow, to include how you looked (i.e., body language), how you sounded (i.e., voice projection and clarity), and how you engaged the audience (i.e., eye contact, audience response). This feedback will be invaluable to you as you plan your next presentation!

Unfortunately, our inaugural presentations do not always turn out as well as we would have liked. But, like riding a horse, it is important to get right back on and ride again! Therefore, regardless of the outcome, treat the experience as a learning opportunity and set forth with commitment and determination to accept the challenge of presenting again soon!

Conclusion

Although conference presentations can be a daunting prospect, the familiar steps of the nursing process: assessment, planning, implementation, and evaluation provide a simple framework for developing and executing an effective and relatively stress-free presentation. As nurses, by our very nature, we have the desire to learn and share new insights that will ultimately benefit our patients. Developing and refining our presentation skills is central to accomplishing this goal. Good luck and have fun! ♥

About the Author

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References

Bergells, L. (2008). *The presentation grand finale: 3 ways to close with a bang! In MANIACTIVE: All About Presentations.* Retrieved from http://www.maniactive.com/

Bonanno, G. (2009). *Cut out your filler words*. Retrieved from http://ezinearticles.com/?Cut-Out-Your-Filler-Words&id=1176265

De Rossi, L.C. (2001). Which rules should I follow to make my presentation look professional? Retrieved from http://masterview.ikonosnewmedia.com/2001/08/13/which_rules_should_i_follow.htm

Hadfield-Law, L. (2001). Presentation skills for nurses: How to prepare more effectively. *British Journal of Nursing, 10*, 1208–1211.

Happell, B. (2009). Presenting with precision: Preparing and delivering a polished conference presentation. *Nurse Researcher, 16*(3), 45-56.

Hardicre, J., Coad, J., & Devitt, P. (2007). Ten steps to successful presentations. *British Journal of Nursing, 16*, 402–404.

Kerber, L.K. (2008). *Conference rules: Everything you need to know about presenting a scholarly paper in public. Perspectives in History*. Retrieved from http://www.hisotrians.org/perspectives/issues/2008/0805/0805prol.cfm

Paradi, D. (2010). *How to select and use fonts on presentation slides.* Retrieved from http://www.thinkoutsidetheslide.com/articles/select_and_use_fonts.htm

Mon résumé a été accepté : que faire maintenant? Un guide pour la préparation d'une présentation orale—Quelques conseils pratique

Jo-Ann V. Sawatzky, inf., Ph.D.

Les présentations scientifiques sont essentielles pour la dissémination des nouvelles connaissances en soins infirmiers; cependant, le fait de parler en publique peut être une expérience intimidante. Le but de cette chronique de recherche est d'offrir aux infirmières les outils nécessaires à la réalisation d'une présentation orale réussie. Les étapes familières de l'analyse, la planification, la réalisation et l'évaluation fournissent un cadre conceptuel pour guider le développement et la réalisation d'une présentation orale qui soit sans stress et efficace.

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Introduction

Selon la plupart des études, la peur numéro un des gens est de parler en publique. La deuxième peur est la mort… Ceci signifie pour la personne moyenne, que si vous assistez à des funérailles, vous êtes mieux dans le cercueil que de faire l'urologie.

– Jerry Seinfeld

Excellentes nouvelles! Votre résumé a été accepté pour une présentation orale à un congrès national en sciences infirmières. Que faire maintenant? Votre réaction initiale d'excitation et de grande fierté pour cet accomplissement est rapidement assombrie par le sentiment de peur, d'anxiété, et peut-être même d'appréhension. La peur de parler en publique n'est pas un phénomène isolé chez les infirmières. Parler en publique est souvent cité comme étant la peur numéro un dans notre vie, devançant de beaucoup celle de mourir.

La plupart des infirmières seront unanimes pour dire que le fait de parler en publique est une expérience intimidante. Cependant, cette activité est essentielle à la dissémination des nouvelles connaissances. Les cliniciennes, les éducatrices et les chercheurs découvrent et développent continuellement des idées novatrices qui feront bénéficier les patients, la profession et le système de soins de santé. Les conférences scientifiques représentent l'occasion de choix pour partager les nouvelles idées avec nos collègues. Le but de cette chronique de recherche est de fournir aux infirmières les outils nécessaires à la réalisation d'une présentation orale qui soit sans stress et efficace, afin que le choix de l'urologie versus le cercueil soit une décision facile!

Bien qu'une revue de la littérature en sciences infirmières ait rapporté un nombre important d'écrits portant sur la soumission de résumés, peu d'écris ont adressé le besoin du soutien nécessaire aux étapes de l'analyse, la planification, la réalisation et l'évaluation d'une présentation orale à un congrès. Ainsi, la démarche très familière du processus infirmier offre un cadre conceptuel approprié pour nous guider sur la trajectoire vers une présentation qui sera un succès.

L'analyse : faites vos devoirs

En échouant votre préparation, vous vous préparez à échouer.

– Benjamin Franklin

L'étape initiale de l'analyse consiste à recueillir les informations pertinentes sur le congrès et le thème de la présentation orale. Si vous n'adressez pas cette étape initiale, votre démarche résultera certainement en un échec.

Le congrès

Chaque congrès possède ses lignes directrices spécifiques. Ne prenez pas pour acquis que le congrès auquel vous avez assisté ou présenté par le passé sera la même que celui que vous vous apprêtez à présenter.

Le temps qui est alloué aux présentations orales est différent d'un congrès à l'autre. De façon générale, ce temps varie de 15 à 45 minutes, et inclus le temps réservé aux questions. La gestion du temps est rigoureusement respecté, ainsi, cette information est déterminante pour le développement d'une présentation orale qui saura respecter toutes les lignes directrices.

Le thème du congrès et le type de participants sont aussi des éléments à prendre en considération. La façon dont la présentation est structurée et présentée dépend en quelque sorte de l'auditoire. Est-ce que le congrès attire principalement des infirmières cliniciennes ou des infirmières en recherche? S'agit-il d'un congrès multidisciplinaire ou plutôt d'un événement non spécifique aux soins de santé? Il est important d'identifier l'information pertinente afin de rencontrer les attentes, les intérêts et le niveau de connaissance de l'auditoire. Par exemple, une présentation orale sur la mise en place et l'évaluation d'une pratique clinique novatrice sur le suivi des patients atteints d'insuffisance cardiaque aura une cible et une direction bien différentes pour des participants qui sont des infirmières cliniciennes en comparaison d'infirmières gestionnaires. Ainsi, chaque domaine de spécialité en sciences infirmières possède sa propre culture ainsi que son langage spécifique. En tenant compte des particularités de votre auditoire, vous augmenterez leur engagement dans votre présentation.

Finalement, il est important de connaître et de valider l'information pertinente qui vous concerne sur le congrès et sur votre présentation, telle que la date exacte, l'heure et l'endroit de votre présentation. Il n'existe pas d'erreur plus grande que celle de se présenter au mauvais endroit et à la mauvaise heure!

Le thème

Quel que soit le type de présentation que vous planifiez, que ce soit une présentation clinique ou de recherche, il est clair que vous devez posséder une solide connaissance du thème qui sera abordé. Ceci peut paraître intuitif, puisque nous choisissons habituellement de parler de thèmes qui nous sont familiers. Notre confiance en nous ne devrait pas ralentir notre enthousiasme à faire nos devoirs!

Il est donc important de faire une revue récente et approfondie de la littérature sur le thème choisi. La connaissance est puissante; ainsi, en réalisant cette étape préliminaire essentielle dans le développement de la présentation orale, vous augmenterez votre sentiment de confiance en vous, et cela vous sera fort utile au moment où vous monterez sur le podium pour parler.

La planification : préparer la présentation

La préparation d'un bon discours improvisé requiert habituellement plus de trois semaines.

– Mark Twain

Le développement du contenu de la présentation orale constitue un élément déterminant de la préparation. Cependant, dans notre monde actuel hautement technologique, une présentation orale ne peut être complète sans l'apport d'un soutien visuel. De la même façon, sans la pratique requise, la présentation la plus prometteuse peut tourner au désastre. Finalement, la préparation ne serait complète sans une liste des éléments essentiels pour le conférencier voyageur.

Développer le contenu

Si vous ne pouvez rédiger votre message en une phrase, vous ne pourrez le dire en une heure.

– Dianna Booher

Il est facile de choisir le thème de la présentation. Souvent, le plus gros défi est de condenser le travail dans un intervalle de temps prédéterminé et relativement court (Hardicre, Coad, & Devitt, 2007). Si vous avez bien fait vos devoirs et que vous avez accumulé des montagnes d'informations sur le thème, cette tâche sera plus difficile. Peut-être la plus grande révélation est de prendre conscience que les « congressistes qui assistent à votre présentation sont loin d'être des vessies vides sans connaissances sur le sujet » (Happel, 2009, p. 49).

Lors du développement d'une présentation orale, il existe une règle toute simple qui a fait ses preuves et qui s'avère gagnante : « la règle des trois ». Imaginez votre présentation comme un sandwich. Bien que son contenu goûte bon, le parfait panini est incomplet sans le pain italien des deux côtés! Commencez par vous représenter le contenu en trois parties : l'introduction, le corps de la présentation et la conclusion. Le temps qui sera alloué à chacune de ces parties devra être le même. L'*introduction* doit faire ressortir votre message principal ou l'objectif, ainsi que la littérature pertinente et les aspects théoriques. Les experts en communication soutiennent que vous faites votre première impression au cours des quatre premières minutes de votre présentation. Afin de capter l'attention de votre auditoire, vous devez rendre ces quatre premières minutes importantes (Hadfield-Law, 2001)! Le *corps* de votre présentation dépendra du type de présentation. Si vous présentez les résultats d'une recherche, le corps de la présentation doit inclure l'essentiel de la méthodologie de la recherche: le devis de recherche, l'échantillon et le milieu, les instruments, les procédures et les résultats. Si vous présentez une étude de cas, un thème clinique, une innovation ou un changement, le corps de la présentation devra faire ressortir l'essentiel de l'étude de cas ou de l'innovation. La *conclusion* constitue votre opportunité de vous faire valoir! La discussion et les implications des résultats de l'étude, ou des leçons qui auront été apprises par le cas clinique fourniront à l'auditoire le message « et puis après» de votre présentation. Ainsi, il est important de bien chronométrer la présentation afin que vous ne manquiez pas de temps avant de livrer votre message clé! Finalement, terminez avec un scoop et non un

sanglot! Votre dernier énoncé doit être mémorable! « Une grande finale atteint un double but : celui de signifier que le temps est presque écoulé, et celui d'établir une connexion émotionnelle excitante et de longue durée » (Bergells, 2008).

Finalement, en planifiant le contenu, il est important d'y mettre votre touche personnelle. Par exemple, si vous êtes confortable avec l'utilisation de l'humour, cela peut être un outil utile pour capter et maintenir l'attention de l'auditoire. Cependant, un humour inapproprié peut semer le désastre! Ainsi, il est essentiel de bien planifier les blagues, les croquis ou les autres éléments d'humour, qu'ils soient appropriés aux circonstances et assurez-vous qu'ils n'offensent personne de l'auditoire.

Développer des supports visuels
Une image vaut mille mots.

– Fred Barnyard

Le soutien visuel doit uniquement *soutenir* votre présentation. Ainsi, les diapositives ne doivent pas représenter l'entièreté de votre présentation (Hardicre et al., 2007). Le texte de vos diapositives doit contenir les éléments essentiels que vous prévoyez aborder, pas plus et pas moins! Les conférenciers, en particulier les novices, ont tendance à utiliser les diapositives comme texte. L'utilisation de longues phrases et de paragraphes d'informations aura pour effet de distraire l'auditoire, simplement parce que la police des caractères est trop petite pour être lue. Selon Paradi (2010), le choix de la taille de la police d'écriture et son apparence peuvent avoir un effet significatif sur votre présentation. À titre d'exemple, il est recommandé d'utiliser le caractère gras ou italique pour accentuer certains mots, par contre, il n'est pas recommandé d'utiliser le soulignement à cause de sa trop grande similitude avec les hyperliens de l'Internet. Aussi, il est préférable d'éviter l'utilisation de mots en lettres majuscules puisque cela peut être perçu comme si vous voudriez crier à l'auditoire. Règle générale, il est recommandé d'utiliser une police d'écriture sans empattement (*sans serif*), variant entre 24 et 32 points, et un caractère plus gros pour les titres (Paradi, 2010). Les tables et les graphiques doivent être suffisamment gros pour que l'auditoire puisse les lire, sinon, il vaut mieux les exclure! Parmi les 12 suggestions de graphisme pour des présentations professionnelles, Luigi Canali De Rossi (2001) recommande de suivre la règle des sept afin de réduire le contenu des diapositives : pas plus de sept mots par ligne, pas plus de sept points par diapositive, et pas plus de sept colonnes ou lignes dans une table. Lorsque vous compléterez vos diapositives, essayer plusieurs modèles de conception, de couleurs et de designs tels que proposés par De Rossi, et assurez-vous d'être uniforme au niveau des titres, des caractères et des fonds d'écran. Assurez-vous d'avoir suffisamment de marges aux contours, utilisez l'animation avec modération et choisissez des images de qualité supérieure seulement.

Puisque nous sommes majoritairement visuels, la clé d'une présentation réussie est le soutien visuel. De nos jours, l'auditoire s'attend à retrouver une forme d'animation divertissante dans le soutien visuel, cependant, son utilisation exagérée risque de distraire le participant de la présentation elle-même. Cet équilibre fragile dépend aussi de la nature du sujet que sera traité et du type de conférence. Par exemple, bien que les images puissent être cruciales pour présenter une nouvelle technologie à un groupe de cliniciens novices, il peut être préférable de mettre l'accent sur les mots écrits dans une présentation de recherche qui s'adresse à un auditoire de chercheurs. Quoi qu'il en soit, peu de gens diront que les diagrammes et les images coupent la monotonie des diapositives de texte. La clé est de les utiliser avec parcimonie.

Pratiquez, pratiquez, pratiquez
Les répétitions assurent la perfection.

– Auteur inconnu

Répétez plusieurs fois votre présentation, ceci vous conduira à la réussite. La plupart des conférenciers préparent un texte qui contiendra plus d'informations que le contenu des diapositives. Le texte peut être imprimé sur des cartes mémoire, en limitant un carton par diapositive, ou encore sur du papier régulier. Gardez en tête que moins vous aurez de papier à manipuler, mieux vous vous trouverez! Peu importe le type de papier que vous choisirez, utilisez un caractère dont la taille est suffisamment grande (i.e. 14 ou 16 points) afin que vous n'ayez pas à vous arracher les yeux dans une pièce qui serait trop sombre (Kerber, 2008). Aussi, il est important de numéroter les pages. Il n'y a pas de décourageant plus grand que d'échapper son texte juste avant ou pendant la présentation : sans une numérotation des pages, vous serez inévitablement trop paniqué pour réussir à remettre les pages dans le bon ordre!

Lire ou ne pas lire, telle est la question. Si vous préparez votre première présentation, il est préférable de lire votre texte. L'improvisation est parfaite pour ceux qui peuvent le faire de façon efficace, mais peu devenir désastreux si vous êtes nerveux. L'improvisation peut aussi faire en sorte que vous dépassiez votre temps. Pour le conférencier novice, nous vous suggérons de pratiquer à l'aide de votre texte et de le suivre. Ceci devrait vous aider à bâtir votre confiance en vous pour la présentation orale. Sachez que même si vous lisez votre texte, il est important de développer une stratégie pendant votre pratique qui vous permettra de faire des contacts visuels réguliers avec votre auditoire pendant la présentation. Par exemple, laissez vos doigts faire la marche! Utilisez vos doigts pour marquer l'endroit où vous êtes rendu dans votre texte. De cette façon, s'il vous arrivait d'être distrait ou de regardez votre auditoire fréquemment, vous ne perdrez pas votre marque. Finalement, variez vos contacts visuels et

pratiquez-vous à jeter des regards à différents endroits dans la pièce chaque fois que vous levez les yeux de votre texte.

Pratiquez seuls en utilisant les diapositives et votre texte afin de vous aider à bâtir une confiance en vous. Quand vous pratiquez, parler haut et fort, demeurez concentré sur le volume et les variations de votre voix. Souvenez-vous qu'une voix monotone est la meilleure façon de perdre l'attention de votre auditoire! Lorsque vous pratiquez, parler haut et fort afin de mieux simuler la présentation et d'estimer le temps qui vous est alloué. Souvenez-vous qu'il est préférable de terminer avant le temps plutôt que de le dépasser! La plupart des modérateurs utilisent un système d'avertissement à 2 ou 5 minutes avant la fin. Ainsi, ils vous avertiront lorsque votre temps sera presque écoulé. Si vous êtes suffisamment préparé, vous ne serez pas déstabilisé par ces avertissements. Continuez votre présentation avec confiance en sachant que vous finirez à temps.

Une fois votre pratique terminée, demandez à un collègue de confiance de vous évaluer. Cette évaluation sera certainement anxiogène, mais elle est très proche du contexte d'une répétition! Demandez des commentaires honnêtes et faites les ajustements en conséquence. Le fait de filmer votre présentation représente aussi une opportunité intéressante d'apprentissage. Cette expérience peut cependant s'avérer humiliante puisque nous avons tous tendance à remarquer nos mauvaises habitudes, telles que les expressions 'hum', 'euh', 'vous savez'. L'utilisation de ces mots filtres est souvent le résultat d'une nervosité, et peut être très distrayant pour l'auditoire. Afin d'éviter cette erreur, pratiquez-vous à faire des pauses en silence lorsque vous approchez la fin d'une phrase ou d'une idée (Bonanno, 2009)

Voyager pour présenter :
Ne quittez pas la maison sans elle!
La plupart des conférences représentent une belle opportunité pour voyager. Puisque vous ne voudriez pas oublier votre lotion solaire et votre maillot de bain si vous partiez en vacances dans un pays tropical, vous ne voudriez pas oublier l'indispensable de votre présentation. En premier lieu, un conseil d'expert est de sauvegarder votre présentation sur au moins deux clés USB et d'éviter de les transporter toutes les deux dans le même bagage! Envisagez aussi d'apporter un document résumé de votre présentation pour l'auditoire. Ces documents résumés ne sont pas obligatoires, mais ils sont très appréciés car ils offrent une référence au contenu de la présentation et vos coordonnés. Apportez des cartes d'affaire, elles sont des outils efficaces à une conférence. Le réseautage est une motivation première pour la plupart, nous incitant à assister à une conférence. Finalement, transportez vos vêtements de façon sécuritaire, gardez en tête que, ce que vous porterez, influencera la première et dernière impression.

La réalisation: livrez votre présentation

Le cerveau humain commence à travailler au moment où vous êtes né et ne cesse jusqu'à ce que vous vous levez pour parler en publique.

– George Jessel

Le jour J est arrivé! C'est normal d'être nerveux. Il est primordial d'arrivez tôt afin de maîtriser votre anxiété. Aussi, il existe bon nombre de stratégies que vous pourrez utiliser pour de réduire votre stress pendant votre présentation. Il est tout aussi important de se préparer pour la période de question. Un des éléments les plus valorisants de l'expérience de présenter à une conférence est l'opportunité de faire du réseautage avec des collègues instruits.

Soyez avertis, arrivez tôt
Si possible, arrivez tôt au congrès. Avec un peu de chance, vous ne devriez pas présenter le matin de la première journée. Vous aurez ainsi l'opportunité d'assister aux autres présentations. Le fait d'assister à la séance plénière d'ouverture et à d'autres sessions, vous donnera certainement des pistes de réflexions qui pourraient être relatées, si elles sont pertinentes à votre sujet. Si c'est possible, visitez la salle de conférence où vous donnerez votre présentation. Vous serez en mesure de mieux maîtriser votre anxiété, particulièrement si vous êtes novice. Les microphones sont des équipements de routine pour la plupart des conférenciers. Si vous avez une voix qui porte peu, cet équipement devrait vous donner la paix d'esprit. Vérifiez l'installation du podium, visualisez mentalement l'endroit où vous vous tiendrai afin de vous assurer que vous ferai face à l'auditoire, tout en étant capable de voir vos diapositives.

Assurez-vous de bien connaître la routine. Vous recevrez à l'avance une trousse d'informations destinée à tous les conférenciers. Assurez-vous de vérifier cette information avec minutie et apportez-là au congrès. De nombreux congrès de grande envergure exigent que toutes les présentations soient transmises et sauvegardées à l'avance dans une salle réservée à cet effet. Cette salle est différente de celle où vous donnerez votre présentation. Cette « salle des conférenciers » offre aussi une dernière occasion de réviser vos diapositives pour s'assurer qu'elles sont enfin prêtes!

Livrez votre présentation
Anticipez votre nervosité. De façon générale, comme conférencier, nous sommes plus nerveux lors des dernières minutes avant notre présentation. Certains suggèrent d'ailleurs qu'au lieu de tenter d'éliminer cette anxiété et cette tension, mieux vaut canaliser cette énergie dans la concentration et l'expression (http://www.nwlink.com/~donclark/leader/leadpress.html). Vous aurez certainement avantage à utiliser une stratégie qui a fait ses preuves, celle de prendre plusieurs inspirations profondes avant de commencer. S'il y a une estrade, utilisez-la! Les estrades permettent de camoufler

une multitude de tiques nerveux, tels que le tremblement des jambes et des genoux! N'oubliez jamais que vous en savez probablement plus que quiconque dans la salle sur le sujet! Si vous faites une erreur pendant la présentation, référez-vous à la technique des inspirations profondes et continuez. Personne n'est parfait! Souvenez-vous que l'auditoire est venu vous entendre et non vous critiquer! En dépit de tout ce qui pourrait arriver, gardez votre tête bien droite et souriez! Un sourire vous aidera à relaxer et à établir un rapport de confiance avec l'auditoire.

Sachez bien vous connaître. Est-ce que votre bouche à tendance à devenir sèche quand vous êtes nerveux? Si c'est le cas, gardez un verre d'eau près de vous. Hadfield-Law (2001) recommande d'appliquer du brillant à lèvres ou de la gelée de pétrole sur vos dent en avant afin d'empêcher vos lèvres de coller à vos dents. Est-ce que la caféine fait trembler vos mains? Si c'est le cas, évitez le café ou le thé dans les heures précédant votre présentation. Est-ce que votre cou se raidi quand vous êtes nerveux? Si oui, planifiez votre garde-robe en conséquence, avec un chandail à col haut.

La période de questions.
S'il-vous-plait, ne posez pas de questions!
Pour le conférencier novice, le seul fait de devoir répondre aux questions peut être plus stressant que la présentation elle-même! Cependant, quelques stratégies fort simple devraient faciliter cette étape finale du processus de présentations. Premièrement, soyez préparé! Le fait d'avoir une connaissance approfondie de votre sujet et de la littérature correspondante, et aussi d'anticiper les questions potentielles, devrait réduire le niveau d'anxiété et accroître votre confiance à répondre aux questions (Hardicre et al., 2007). Deuxièmement, au lieu de lancer une réponse inappropriée, faites une pause et demandez à ce que la question soit répétée. Ceci vous donnera un moment pour réfléchir sur la meilleure réponse (Happel, 2009). Troisièmement, ne soyez pas craintif d'admettre ce que vous ne savez pas! Répondez « Merci d'avoir posé cette question, il s'agit d'un aspect que je n'ai pas pensé mais je vais y regarder », est habituellement acceptable pour la personne qui pose la question, et pour l'auditoire (Happel, 2009).

Le réseautage
Autant que possible, demeurez dans la salle ou tout près, après votre présentation. Votre auditoire vous connait maintenant et peut saisir cette opportunité pour parler d'une façon plus informelle sur votre présentation. Ceci constitue une occasion beaucoup plus détendue pour discuter et vous gagnerez beaucoup à parler avec d'autres qui partagent un intérêt commun. Le réseautage devrait aussi s'étendre au-delà des implications de votre présentation, en initiant le partage d'information avec les autres conférenciers. Malgré le fait que cette expérience peut paraître intimidante à première vue, souvenez-vous que le réseautage consiste à faire des nouveaux contacts, de créer des liens et de développer des groupes de discussion avec des personnes animées par les mêmes intérêts (Hardicre et al., 2007, p. 404).

Évaluation—Comment ai-je été?

En l'absence de développement continuel et de progrès, les mots tels que l'amélioration, l'accomplissement et le succès n'ont aucune valeur.

– Benjamin Franklin

Alors que votre première réaction serait de tout oublier, une partie importante du processus de la présentation est de faire vote propre auto-évaluation. Si vous avez la chance de recevoir une évaluation écrite formelle de la part de l'auditoire, utilisez cette rétroaction comme outil d'apprentissage pour de futures présentations. Malheureusement, plus souvent qu'autrement, aucune évaluation formelle n'est offerte aux conférenciers. Idéalement, vos collègues et vos amis de confiance pourraient occuper deux rôles de grande valeur en assistant à votre présentation. Premièrement, ils peuvent apporter un soutien moral. Deuxièmement, ils peuvent vous apporter une rétroaction constructive. Demandez-leur à l'avance d'évaluer votre présentation et donnez-leur des directives à suivre, par exemple sur votre apparence générale (langage corporel), le ton de votre voix (la projection de votre voix et sa clarté), et comment vous avez réussi à engager votre auditoire (le contact visuel, la réponse des participants). Cette rétroaction sera de grande valeur pour vous aider à préparer votre prochaine présentation!

Malheureusement, notre première expérience de présentation orale est rarement à la hauteur de nos attentes. Cette expérience est similaire à celle de monter à cheval : l'important c'est d'y retourner! Ainsi, en dépit du résultat, voyez cette expérience comme une opportunité d'apprentissage et planifiez un prochain engagement et ayez la détermination de présenter à nouveau!

Conclusion

Présenter à un congrès peut être une expérience intimidante. Les étapes familières du processus infirmiers (l'analyse, la planification, la réalisation et l'évaluation) fournissent un cadre conceptuel pour guider le développement et la réalisation d'une présentation orale qui soit efficace et relativement sans stress. En tant qu'infirmières, nous sommes animées par le désir d'apprendre et de partager de nouvelles idées qui serviront à améliorer le soin aux patients. Ainsi, il est essentiel de développer des compétences dans la présentation orale afin d'accomplir ce but. Bonne chance et amusez-vous! ♥

Références

Les références se trouvent à la page 41.

Did you know . . . ?

...that exercise training is safe, useful and effective therapy and does not worsen cardiac function in heart failure?

Estrellita Estrella-Holder, RN, MScA, CCN(C)

In the distant past, patients diagnosed with heart failure (HF) were excluded from formal exercise programs and discouraged from participating in any type of physical activity because of concerns about detrimental effects on an already weakened heart. In fact, older textbooks of cardiology cite symptoms of heart failure as a contraindication to exercise testing. Years later, the paradigm has shifted from exercise restriction to encouragement of exercise in those patients with mild to moderate heart failure symptoms.

HF may be defined as the inability of the heart to meet the demands of the tissues, which results in symptoms of fatigue or dyspnea on exertion progressing to dyspnea at rest. Exercise intolerance may be one of the symptoms experienced by patients and may usually trigger them to seek medical attention and could prompt the diagnosis of heart failure. Exercise intolerance is defined as the reduced ability to perform activities that involve dynamic movement of large skeletal muscles because of symptoms of dyspnea and fatigue (Pina et al., 2003).

Factors Affecting Exercise Tolerance

There are many factors affecting exercise tolerance. The ability to perform aerobic activity depends on both an increase in cardiac output to active muscles and the ability of these active muscles to use oxygen delivered by the blood. A reduced aerobic capacity is largely the result of inadequate blood supply to active muscles as a result of reduced cardiac output. In addition, there are several peripheral factors affecting exercise capacity. In patients with chronic HF, the nitric oxide production is reduced as it is normally stimulated by exercise in healthy individuals. Nitric oxide is a mediator for peripheral vascular resistance and tissue perfusion. Peripheral vascular resistance also fails to decrease during exercise in HF patients. This may lead to blood flow going to non-exercising tissues and thereby reducing perfusion to active muscles and causing endothelial dysfunction (Malzewski & Koplin, 2009). Recently, it has been demonstrated that endothelial dysfunction in patients with chronic HF is associated with increased mortality (Fischer et al., 2005; Katz et al., 2005).

Studies of Exercise Training in HF Patients

With the change in paradigm from exercise restriction to the recommendation of exercise training in this patient population, many studies have shown the overwhelming benefits of structured exercise training. The American Heart Association Committee on Exercise, Rehabilitation and Prevention in 2003 pooled several controlled trials of exercise training in HF that showed improvements in peak oxygen consumption (VO_2). The European Heart Failure Training Group (1998) also performed a pooled analysis of the data from a number of smaller studies that they had performed examining the effects of exercise training. The analysis showed significant training effects with a 13% increase in peak VO_2 (the maximum possible level of oxygen consumption that an individual's cardiopulmonary system can attain), 17% increase in exercise duration, and significant improvement in reported NYHA functional status. A systematic review conducted by Smart and Marwick (2004) reported no exercise-related deaths during more than 60,000 hours of exercise training; however, none of the trials included a design to adequately measure safety

in exercise. The ExTraMATCH collaborative group's analysis of 801 patients from 9 randomized clinical trials calculated a 35% ($P < 0.05$) lower risk for mortality and a 28% ($P < 0.05$) lower risk for the composite end point of mortality and hospitalization in favor of exercise (Piepoli, Davos, Francis, & Coats, 2004).

In spite of published reports of the benefits of exercise to physiological and clinical end points, the health community remained cautious. The HF-Action trial, a prospective study was initiated in 2002 to address the effect of exercise training in mortality, morbidity and in health status of patients with heart failure. The study enrolled 2,331 patients with NYHA class II-IV, the largest study population in heart failure and exercise study. The HF action study demonstrated that regular aerobic-type exercise is safe in patients with chronic, stable HF (O'Connor et al., 2009). With thousands of individual exercise sessions conducted during the trial, only 3% of patients in the exercise group were hospitalized for an event that occurred during and within 3 hours after exercise. The event rate is similar to the event rate (2%) in the usual care arm which reported experiencing events requiring hospitalization during or within 3 hours of activity. This study became a landmark study of exercise in heart failure patients. The result of the HF action trial should be viewed within the context of its limitations. The study did not include patients with isolated diastolic dysfunction. The subjects enrolled were relatively young compared with the general population with HF. The adherence to exercise was less than satisfactory. However, even considering the above limitations, many studies over the past 2 decades clearly indicate that exercise in patients with HF is a useful and effective therapy in heart failure.

Exercise Prescription

The primary goal for exercise training in HF patients is to reverse exercise intolerance (usually measured by peak VO_2). It is suggested that specificity of training that stimulates the cardiorespiratory system be employed (Keteyian, Pina, Hibner, & Fleg, 2010). In addition to the type of exercise prescribed, intensity, duration and frequency of effort will have to be considered. Keteyian et al. (2010) recommend that those who are responsible for writing the exercise prescription and those overseeing patient progress need to ensure that the volume of exercise performed each week is slowly but consistently adjusted over time. All patients should be properly reviewed by their physician, preferably by the cardiologist prior to engaging in exercise training. Although very few patients with severe HF have been involved in exercise training studies, these patients can be carefully selected and be considered eligible for training as long as they are free of symptoms at rest and are carefully supervised during exercise training. It is highly recommended that these individuals be referred to a cardiac rehabilitation program.

Summary

Exercise training in heart failure is safe, useful and effective therapy in the management of heart failure patients. Contrary to the old belief, it does not worsen cardiac function. Smaller studies also reported reduction in mortality and morbidity associated with exercise training. The available data support training HF patients to improve exercise tolerance and symptoms. Patients should be properly reviewed by their physicians prior to engaging in exercise training. It is highly recommended that patients be referred to a cardiac rehabilitation program, especially those with severe or advanced heart failure. ♥

About the Author

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References

European Heart Failure Training Group. (1998). Experience from controlled trials of physical training in chronic heart failure: Protocol and patient factors in effectiveness in the improvement in exercise tolerance. *European Heart Journal, 19,* 466–475.

Fischer, D., Rossa, S., Landmesser, U, Spiefermann, S., Engberding, N., Hornig, B., & Drexler, H. (2005). Endothelial dysfunction in patients with chronic heart failure is independently associated with increased incidence of hospitalization, cardiac transplantation, or death. *European Heart Journal, 26,* 65–69.

Katz, S., Hryniewicz, K., Hriljac, I., Balidemaj, K., Dimayuga, C., Hudaihed, A., & Yasskivy, A. (2005). Vascular endothelial dysfunction and mortality risk in patients with chronic heart failure. Circulation, 111, 310–314.

Keteyian, S., Pina, I., Hibner, B., & Fleg, J. (2010). Clinical role of exercise training in the management of patients with chronic heart failure. *Journal of Cardiopulmonary Rehabilitation and Prevention, 30,* 67–76.

Malzewski, V., & Koplin, L. (2009). Physical activity in heart failure. In J.D. Bisognano, M.L. Baker, & M.B. Earley (Eds). *Manual of heart failure management,* (pp. 247–256). London: Springer-Verlag London Limited. doi: 10.1007/978-1-84882-185-9_19.

O'Connor, C., Whellan, D., Lee, K., Keteyian, S., Cooper, L., Ellis, S., … Pina, I. (2009). Efficacy and safety of exercise training in patients with chronic heart failure. *Journal of the American Medical Association, 301,* 1439–1450.

Piepoli, M., Davos, C., Francis, D., & Coats, A. (2004). ExTraMATCH collaborative. Exercise training meta-analysis of trials in patients with chronic heart failure. *British Medical Journal, 328,* 189–196.

Pina, I., Apstein, C., Balady, G., Belardinelli, R., Chaitman, B., Duscha, B., …Sullivan, M. (2003). Exercise and heart failure: A statement from the American Heart Association Committee on exercise, rehabilitation, and prevention. *Circulation, 107,* 1210–1225.

Smart, N., & Marwick, H. (2004). Exercise training for patients with heart failure: A systematic review of factors that improve mortality and morbidity. *American Journal of Medicine, 116,* 693–706.

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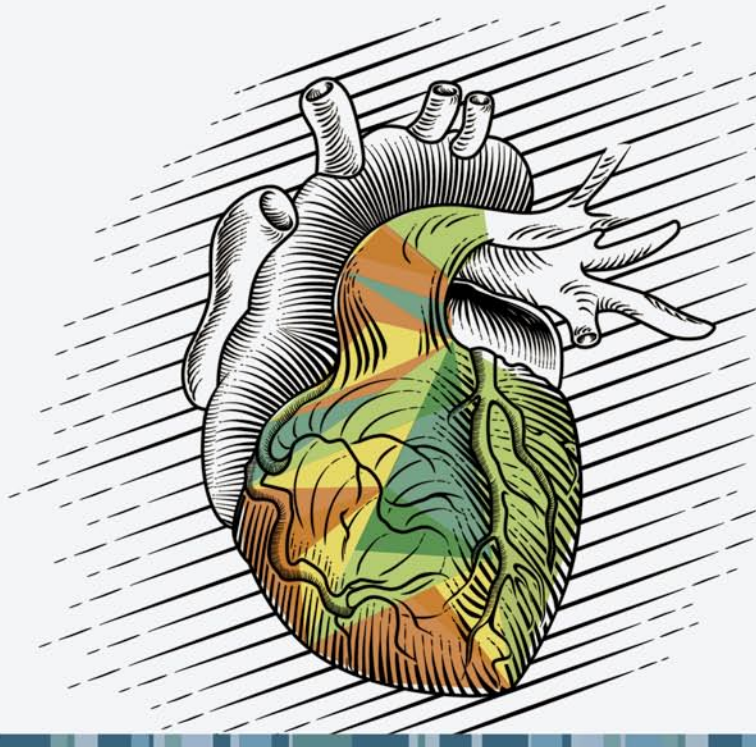

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