

Canadian Journal of Cardiovascular Nursing

Revue canadienne de Nursing cardiovasculaire



In this issue:

Learning by Heart: A Focused Group Study to Determine the Self-Management Learning Needs of Chronic Stable Angina Patients

Chronic stable angina patients have major self-management learning needs with respect to the nature of angina, monitoring symptom severity, coping with angina-induced limitations, and managing symptoms day to day.

Les patients atteints d'angine chronique stable présentent des besoins de formation importants sur la prise en charge de leur maladie. Par conséquent, leur formation devrait porter sur les causes de l'angine, la surveillance de la gravité des symptômes, l'adaptation aux limites imposées par l'angine, ainsi que la maîtrise quotidienne des symptômes.

The Relationship of Self-Efficacy to Selected Outcomes

Cardiac patients who initially had high self-efficacy had greater functional ability and higher HRQL than patients with low self-efficacy. Cardiac rehabilitation improved all outcomes including self-efficacy.

Les patients cardiaques qui, au départ, connaissent mieux leurs capacités, atteignent une capacité fonctionnelle et une qualité de vie liée à la santé supérieures à celles des patients qui, au départ, connaissent moins bien leurs capacités. Toutefois, la réadaptation cardiaque permet d'améliorer tous les aspects de la vie des patients, notamment la connaissance des capacités.

Évaluation par les usagers de l'intervention infirmière dans le cadre des activités d'un réseau de cliniques de prévention des maladies cardiovasculaires

Patients receiving nursing services in a cardiovascular disease prevention clinics network were very satisfied with the services received. Patients recognized the importance of risk factor modification, and all reported that the intervention clinics helped them change their habits and improve their health.

Des patients recevant des services dispensés par les infirmières dans le cadre d'un réseau de cliniques de prévention des maladies cardiovasculaires démontrent une satisfaction supérieure. L'importance de la modification des facteurs de risque est reconnue par tous et les usagers rapportent que les services les ont aidés à changer leurs comportements et à améliorer leur santé.

Positron Emission Tomography: A Study of PET Test-Related Anxiety

Mailing information pamphlets to patients scheduled for PET scans did not decrease pre-test levels of patient anxiety or result in increased patient knowledge about test preparation and procedures.

Les dépliants d'information envoyés aux patients devant subir une tomographie par émission de positons n'ont ni contribué à réduire leur niveau d'anxiété avant l'examen, ni permis de mieux les informer sur la préparation et les procédures liées à cet examen.



SOUTHLAKE
REGIONAL HEALTH CENTRE

This is the place to be!

Join our growing Cardiac Care Nursing Team.

Located just 40 minutes north of Toronto, Southlake is an expanding regional health centre offering enticing career opportunities to individuals who put patients first, care passionately about those around them, seek new challenges and honour their commitments.

With our state-of-the-art Regional Cardiac Care Program now in operation, **this is the place to be!** This is an exceptional opportunity for Registered Nurses to get in on the ground floor of this exciting new initiative and participate in its evolution. We are looking for experienced Cardiac Care Nurses to join us in a wide variety of areas: CVCU, Cardiac Surgery Inpatient Unit, Coronary Care Unit, and Medical Cardiology.

These opportunities will appeal to Registered Nurses who

- ✓ want to join a first-class team,
- ✓ want to enjoy the exciting benefits of a career at Southlake, and
- ✓ want to achieve their career goals!

As part of our commitment to expanding our regional programming

and offering residents close-to-home access to medical expertise and services, our Regional Cardiac Care Program will make the following expanded cardiac care services available to our communities:

- ▶ 2 operating rooms dedicated to cardiac surgery
- ▶ 9-bed Cardiovascular Intensive Care Unit
- ▶ 8-bed Coronary Care Unit
- ▶ 25-bed Cardiovascular Surgery Unit
- ▶ 33-bed Medical Cardiology Unit
- ▶ 3 Cardiac Catheterization Laboratories
- ▶ Special procedure room for invasive cardiology procedures such as pacemaker insertions
- ▶ Cardiac rehabilitation/prevention program
- ▶ Enhanced cardiac clinics

When you join Southlake, you join a team committed to shockingly excellent service! Registered Nurses wishing to practise in a state-of-the-art environment, within one of Canada's fastest growing regions, will find here all the support they need - training, mentoring, educational assistance, and more - to develop their skills and their careers while providing hands-on clinical care. Relocation assistance is available.

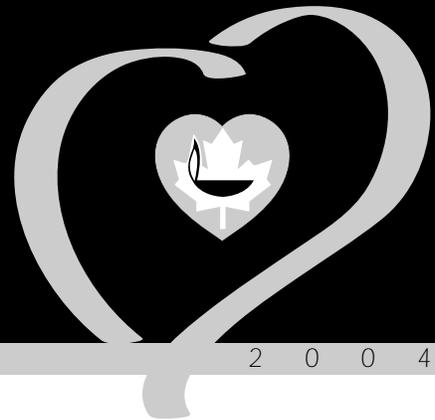
If you are dedicated to excellence in everything you do, this is the place to be. For more information about our organization and the opportunities we offer, visit us online or send your resume to:

Southlake Regional Health Centre
Human Resources Department
596 Davis Drive
Newmarket, ON L3Y 2P9
Fax: 905-853-2218

E-mail (Word format): careers@southlakeregional.org

www.southlakeregional.org





2 Editorial Board

3 Editorial - Thanks to our peer reviewers

5 Your CCCN National Office Staff

7 Clinical Column
Clinical Practice Guidelines for the Management of Dyslipidemia
Natalie Nichols, RN, BA, MN, CCN(C)

Clinical practice questions

12 Learning by Heart: A Focused Group Study to Determine the
Self-Management Learning Needs of Chronic Stable Angina Patients
Michael H. McGillion, RN, PhD(Cand.), Judith H. Watt-Watson, RN, PhD, Julie Kim, RN, MN, ACNP, and Anthony Graham, MD, FRCPC

23 The Relationship of Self-Efficacy to Selected Outcomes
Dawn M. Hamilton, MSc, and Robert G. Haennel, PhD

33 Évaluation par les usagers de l'intervention infirmière dans le cadre des activités
d'un réseau de cliniques de prévention des maladies cardiovasculaires
Maud-Christine Chouinard, inf., PhD (c), Antoine Lutumba Ntetu, inf., PhD, René Lapierre, BSc, Diane Gagnon, inf.,
et Marie-Hélène Hudon, inf., MEd. (c)

42 Positron Emission Tomography: A Study of PET Test-Related Anxiety
Elizabeth Westerman, RN, BHScN, Barbara Aubrey, RN, BScN, Deborah Gauthier, RN, May Aung, MRT (N),
Robert S.B. Beanlands, MD, FRCPC, (Research Scientist supported by CIHR), Terrance D. Ruddy, MD, FRCPC, Ross A. Davies, MD, FRCPC,
Rob A. De Kemp, PhD, and Kirsten Woodend, RN, MSc, PhD

Contents

Editorial Board



EDITOR

A. Kirsten Woodend, RN, MSc, PhD
Ottawa, ON

COPY EDITOR

Lorraine Carter, BA, MA
Sudbury, ON

ASSOCIATE EDITORS

Tracey Colella, RN, MScN, ACNP
Sudbury, ON

Odette Doyon, RN, MEd, PhD (c)
Trois-Rivieres, QC

Nicole Parent, MSc, PhD (c)
Montreal, QC

Ellen Rukholm, RN, BScN, MScN, PhD
Sudbury, ON

Heather Sherrard, BScN, MHA, CHE
Ottawa, ON

Karen Then, RN, BN, MN, PhD
Calgary, AB

Lynne Young, RN, PhD
Vancouver, BC

MANAGING EDITOR

Bruce Pappin
Pembroke, ON

Canadian Journal of Cardiovascular Nursing is published by the Canadian Council of Cardiovascular Nurses (CCCN).

This is a refereed journal concerned with health care issues related to cardiovascular health and illness. All manuscripts are reviewed by the editorial board and selected reviewers. Opinions expressed in articles published are those of the author(s) and do not necessarily reflect the view of the editor or publisher. Produced by Pappin Communications, Pembroke, Ontario.

Yearly Subscription Rates*:

	Canada	International
Individual	\$43.00	
Institution	\$70.00	\$75.00
Student	\$27.00	

If you should become a member of CCCN for \$65.00* (CAD) annually, you will receive your journal subscription at no additional charge.

For information on content please contact:

Kirsten Woodend,
RN, MSc, PhD
Editor

1412 Yorks Corner Rd.,
Edwards, ON K0A 1V0
E-mail: KirstenWoodend@AOL.com

For general information please contact: cccnmail@hsf.ca

For information on advertising please contact Heather Coughlin,

Pappin Communications, The Victoria Centre,
84 Isabella St., Pembroke, Ontario, K8A 5S5,
telephone (613) 735-0952,
fax (613) 735-7983,
E-mail: heather@pappin.com,
Website: www.pappin.com

Subscribe on line at

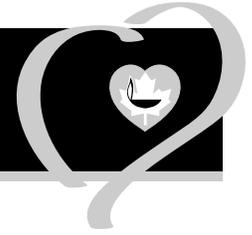
www.cardiovascularnurse.com

Or send cheque or money order to:

Canadian Council of Cardiovascular Nurses
222 Queen Street, Suite 1402, Ottawa, Ontario K1P 5V9

* Includes applicable taxes

Canadian Publications Sales Agreement No. 40051182



Thanks to our peer reviewers...

The *Canadian Journal of Cardiovascular Nursing* is a peer-reviewed journal and peer reviewers are very important members of the team that gets this journal out the door every quarter. What is peer review? It is the process of having experts in the field advise editors on the value of publishing manuscripts which have been submitted to the journal for consideration. When a manuscript is received by this journal, the editor contacts two reviewers whose area of expertise in methodology or content overlaps with that of the submitted manuscript. Reviewers are sent an e-mail 'package' consisting of review forms and the manuscript. Peer reviewers for *CJCN* are asked to review manuscripts and return completed forms and comments within 30 days.

This seems like a lot of extra work for the editor, editorial board, and the peer reviewers, so why do we do it? The main reasons are that the peer review process is supposed to: 1) ensure that published articles have a high standard of quality, 2) contribute to the education of authors and improvement in their writing skills, and 3) prevent publications that contain poor science, promote products, or contain errors of interpretation. Most articles on peer review focus on the benefits of the process for the quality of published science and this has led to much debate about whether peer review truly does this.

There are benefits of a peer review process other than increased journal quality. Through participating in the peer review process, peer reviewers increase their skills in critiquing research and potentially improve their own research and writing skills. The profession benefits because these people may then contribute better science and may be more likely to write. Finally, the journal benefits because a segment of the profession to whom it answers is more fully engaged in the journal's activities and may choose to join the editorial board, mentor authors, or contribute in a variety of other ways.

continued on page 4...

Peer Reviewers - 2003

Many thanks to all these people who reviewed at least one, and often two, manuscripts during 2003.

Marlene Adam, RN, BScN,
University of Ottawa Heart Institute, Ottawa, ON
Pat Bailey, RN, PhD,
Laurentian University, Sudbury, ON
Tracey Colella, RN, MScN,
Laurentian University, Sudbury, ON
Marlene Donahue, RN,
Foothills Hospital, Calgary, AB
Louise Jensen, RN, PhD,
University of Alberta, Edmonton, AB
Joy Kellen, RN, PhD(c), Calgary, AB
Evelyn Kerr, RN, MScN,
Ottawa Hospital, Ottawa, ON
Raymonde Labbe, RN, PhD(c),
University of Ottawa, Ottawa, ON
Fay Lazar, RN, Foothills Hospital, Calgary, AB
Charlene Lester, RN, MN, Sunnybrook
and Women's College Hospital, Toronto, ON
Mary MacDonald, RN,
University of Saskatchewan, Saskatoon, SK
Michael McGillion, RN, PhD(c),
University of Toronto, Toronto, ON
Joanne Morin, RN, MScN, University of Ottawa
Heart Institute, Ottawa, ON
Dorothy Morris, RN, MA, Sydney, BC
Rhada Puri, RN, Delta, BC
Darlene Rebeyka, RN, MSN,
University of Alberta Hospital, Edmonton, AB
Ann Stolarik, RN, MSN, University of Ottawa
Heart Institute, Ottawa, ON
Christine Struthers, RN, MScN,
University of Ottawa Heart Institute, Ottawa, ON
Karen Then, RN, PhD,
University of Calgary, Calgary, AB
Lynne Young, RN, PhD,
University of British Columbia, Vancouver, BC
Anita Ytsma, RN, MSc, Sunnybrook
and Women's College, Toronto, ON

Editorial - continued from page 3...

What training do you need in order to be a peer reviewer? Most peer reviewers have no specific training, although many would have been taught, at some time, how to critique articles. There is a short article which **CJCN** suggests new reviewers read to help them better understand their role (Chilton, 1999). **CJCN**'s peer review forms also offer some guidance and structure to the reviewer. A study was done on the impact of training (workshops or self-teaching packages) on the quality of peer review and, while there was a slight improvement in quality in peer reviewers who received some training, this was felt to be of no editorial significance (Schroter et al., 2004).



Nurses with Heart: Come learn with us at Laurentian University!

The School of Nursing and the Centre for Continuing Education are offering the on-line **Cardiac Care on the Web** program with courses starting in **May, September, and January** every year. This award-winning initiative is an opportunity for registered nurses to achieve speciality training, prepare for accreditation opportunities, and acquire university-level credits towards Laurentian University's post-RN degree program.

For an online preview, visit:

<http://webct.laurentian.ca:8900/public/cardis1/>.

Vous êtes infirmières et vous avez du coeur ? Venez apprendre avec nous à l'université Laurentienne.

L'École des sciences infirmières et le Centre d'éducation permanente ont le plaisir de vous offrir les **Soins cardiaques sur l'infirmerie** à partir de **mai, septembre et janvier** chaque année. Cette initiative donne l'occasion au personnel infirmier de recevoir une formation spécialisée et de se préparer à la certification.

Pour un modèle de démonstration en ligne consultez le site web à

<http://webct.laurentian.ca:8900/public/carfgen1/>.

For information contact / Pour plus d'information, communiquez avec :

Centre for Continuing Education/

Centre d'éducation permanente

Laurentian University/Université Laurentienne

Sudbury, Ontario P3E 2C6,

(705) 673-6569

Fax/télécopieur (705) 675-4897

CCE_L@laurentian.ca

<http://cce.laurentian.ca>



CJCN uses a "double-blind" peer-review process which means that the reviewers do not know who the authors of the manuscripts are and the authors are not told who reviewed their manuscripts. It has been suggested that an open, as opposed to blinded, peer-review process should increase the accountability of the peer reviewer while also giving the reviewer credit. Van Rooyen et al. have conducted randomized controlled trials of blinded versus open peer review (Van Rooyen, Godlee, Evans, Smith & Black, 1998; Van Rooyen, Godlee, Evans, Black & Savage, 1999). While those assigned to the group where their identity would be revealed to the author were more likely to decline to review an article, there was no significant effect of open review on the quality of review or on the final publication decision. For the present time, the **CJCN** will continue to use a blinded review process, but the editorial board will monitor what other health science journals are doing.

Is peer review the perfect process? Peer review can increase the risk of important and groundbreaking work being rejected by peer reviewers because it looks 'different'. It can also lead to delays in the time to publication. Countering this are the benefits mentioned above and the fact that most universities and funding agencies focus on an applicant's peer-reviewed publication lists, considering them much more important than non-peer-reviewed publications.

As the editor-in-chief of **The New England Journal of Medicine**, Arnold Relman, said at a conference on peer review some years ago, "Peer review ain't perfect, but it's all we got, and we need it." If you are interested in becoming a peer reviewer for the **CJCN** please send an e-mail to the editor. ♥

Kirsten Woodend,
Editor, **CJCN**

References

- Chilton, S. (1999). The Good Reviewer. *ACADEME*, November-December, 54-5.
- Schroter, S., Black, N., Evans, S., Carpenter, J., Godlee, F., & Smith, R. (2004). Effects of training on quality of peer review: Randomized controlled trial [Electronic version]. *British Medical Journal*. doi:10.1136/bmj.38023.700775.AE.
- Van Rooyen, S., Godlee, F., Evans, S., Black, N., & Savage, R. (1999). Effect of open peer review on quality of recommendations: A randomized trial. *British Medical Journal*, 318(7175), 23-31.
- Van Rooyen, S., Godlee, F., Evans, S., Smith, R., & Black, N. (1998). Effect of blinding and unmasking on the quality of peer review. *JAMA*, 280, 234-7.

Your CCCN National Office Staff

CCCN is pleased to announce that we have entered into a new era for the council in hiring a full-time administrative assistant, Charlene Kennett, and an executive director, Wes Clark. Both Wes and Charlene come to us with considerable experience in positions with the Heart and Stroke Foundation of Canada

(HSFC), and we are delighted to welcome them aboard! Please join us in welcoming them. Here is a brief profile on each of our staff.

The board and committees look forward to working with our national office team, accomplishing the many goals established in the past and

leading the way for a successful future for CCCN.

Our staff has already accomplished many tasks for CCCN that will pave the way to an exciting future for your organization, and we look forward to the benefits of advancing our CCCN team using their experience, leadership, and vision for the future.

Wes Clark

Most recently, Wes was the manager of Emergency Cardiovascular Care (ECC) for the Heart and Stroke Foundation of Canada, and among his many achievements, was responsible for growing the area of publications into a very successful venture for HSFC through innovative agreements with the American Heart Association and the American Academy of Pediatrics. He also ensured that HSFC remained a leader in ECC through the involvement of a staff and volunteer team in the international ECC science and guideline process and in leading a countrywide staff team in developing many of the excellent resources in the basic life support (CPR and AED) area. His ability to work with staff, volunteers, and various committees also contributed greatly to his success.



He also has prior experience being the executive director of two national organizations that achieved much success under his leadership, but he is quick to emphasize the importance of knowledgeable and energetic volunteers and staff who contributed greatly to the success of these organizations.

As well as the knowledge and experience he has gained through these positions, Wes has complemented his education (MSc in kinesiology from University of Waterloo) with other ventures in the health care field, including hands-on patient care in a hospital environment.

Charlene Kennett

Charlene's connection with CCCN dates back several years as an employee of the Heart and Stroke Foundation, providing services to CCCN under an administrative agreement. She first became CCCN's administrative assistant in May 2001 at a time when the



organization was developing a business plan and vision for growth. Charlene's contributions and support to the journal, website, and membership services were significant, and helped keep the organization on course.

The board is delighted to have now hired Charlene as CCCN's first full-time employee as of December 2003.

Charlene's previous experience spans nine years with the Heart and Stroke Foundation of Canada in both the health promotion and research departments, and with the Health Check™ program. Previously, she worked several years with a private health care company, first as home support field staff and later as assignment coordinator.

Charlene holds a BA Honours degree from Carleton University in Ottawa. ♥

Contacting the CCCN

CCCN has entered into the age of the "virtual office" as we move forward into the future. Both of our employees work from offices in their homes, other than when required to attend meetings in downtown Ottawa and elsewhere. We are working to ensure that our office staff is accessible and available to meet your needs and answer any questions you may have.

To contact Wes and/or Charlene directly, they can be reached at wclark@cccn.ca and/or ckennett@cccn.ca or by phone at (613) 729-1305.

To reach CCCN (staff and volunteers) by mail, please send correspondence to: Canadian Council of Cardiovascular Nurses, 1402- 222 Queen Street, Ottawa, Ontario K1P 5V9

Also for information, you can go to our website at www.cccn.ca or www.cardiovascularnurse.com.

We will advise you of any further evolution and progress in our communications as they develop.

Votre personnel du bureau national du CCINC

Le CCINC est heureux d'annoncer le début d'une nouvelle ère par la nomination de Charlene Kennett au titre d'adjointe administrative, ainsi que de Wes Clark au titre de directeur administratif. Mme Kennett et M. Clark ont acquis une expérience considérable dans l'exercice de leurs fonctions au sein de la Fondation des maladies du cœur du Canada (FMCC). Nous sommes ravis de leur souhaiter la bienvenue! Par ailleurs, nous

espérons que vous leur réserverez un accueil chaleureux. Voici un bref profil des deux nouveaux membres de notre personnel.

Les membres du conseil d'administration et des comités sont impatients de collaborer avec l'équipe de notre bureau national, afin d'atteindre les nombreux objectifs établis par le passé et d'assurer l'avenir prometteur du CCINC.

Notre personnel a déjà accompli, dans l'intérêt du CCINC, de nombreuses tâches qui ouvriront la voie à un avenir stimulant pour notre organisme. Nous sommes remplis d'enthousiasme à l'idée de tirer parti de l'expansion de notre équipe, en faisant appel à l'expérience, au leadership et à la vision d'avenir de nos nouveaux membres. ♥

Wes Clark

Jusqu'à tout récemment, Wes Clark assumait le mandat de directeur des soins cardiovasculaires d'urgence à la Fondation des maladies du cœur du Canada. Parmi ses nombreuses réalisations, il a favorisé l'enrichissement des publications de la FMCC. Cette activité s'est avérée une entreprise des plus fructueuses, grâce à la conclusion d'accords novateurs avec l'American Heart Association et l'American Academy of Pediatrics. En outre, M. Clark a permis à la FMCC de demeurer l'un des chefs de file des soins cardiovasculaires d'urgence; pour ce faire, une équipe de professionnels et de bénévoles ont élaboré une méthodologie scientifique et des lignes directrices relatives à cette discipline. Enfin, il a dirigé une équipe nationale de professionnels chargés de concevoir bon nombre des excellentes ressources proposées dans le domaine du soutien vital de base (RCR et DEA). Sa capacité de collaboration avec les professionnels de la santé, les bénévoles ainsi que les membres de divers comités a grandement contribué à son succès.

Auparavant, Wes Clark a exercé les fonctions de directeur administratif au sein de deux organismes nationaux ayant évolué très positivement sous sa gouverne. Toutefois, il n'hésite pas à souligner l'importance des interventions réalisées par les bénévoles, ainsi que par des professionnels énergiques et compétents. En effet, ces personnes ont fortement contribué au succès de ces organismes.

Outre les connaissances et l'expérience acquises dans le cadre de ces mandats, Wes Clark a complété sa formation (maîtrise ès sciences en kinésiologie de l'Université de Waterloo) grâce à ses activités dans le secteur de la santé, notamment la prestation de soins aux patients en milieu hospitalier.

Charlene Kennett

Le lien établi entre Charlene Kennett et le CCINC remonte à plusieurs années, puisqu'elle fournissait, à titre d'employée de la Fondation des maladies du cœur, ses services au CCINC en vertu d'une entente administrative. Charlene Kennett est devenue adjointe administrative du CCINC à compter de mai 2001, alors que l'organisme élaborait son plan d'action et ses perspectives d'expansion. Mme Kennett a fourni un

apport important à la revue, au site Web et aux services d'adhésion du CCINC, tout en contribuant à maintenir l'organisme sur la bonne trajectoire.

Le conseil d'administration est ravi d'avoir retenu les services de Charlene Kennett à titre de première employée à plein temps du CCINC depuis décembre 2003.

Charlene Kennett a acquis neuf ans d'expérience à la Fondation des maladies du cœur du Canada, tant pour les services de recherche et de promotion de la santé, que dans le cadre du programme Visez santé^{MC}. Auparavant, elle a travaillé durant plusieurs années pour une compagnie privée spécialisée en soins de santé. Elle y a d'abord intégré le personnel de soutien à domicile, pour devenir coordonnatrice des affectations par la suite.

Charlene Kennett est titulaire d'un baccalauréat spécialisé de l'Université Carleton d'Ottawa. ♥

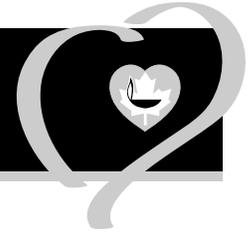
Communications avec le CCINC

Orienté vers l'avenir, le CCINC est entré dans l'ère du «bureau virtuel». Outre leur participation à des réunions organisées au centre-ville d'Ottawa ou ailleurs, nos deux employés travaillent à partir de leur bureau aménagé à domicile. Nous mettons tout en oeuvre pour assurer l'accessibilité de notre personnel de bureau, afin de répondre à vos besoins et à vos questions, le cas échéant.

Pour joindre directement Wes and/or Charlene veuillez écrire aux adresses électroniques wclark@cccn.ca ou ckennett@cccn.ca ou composer le (613) 729-1305.

Pour communiquer avec le CCINC (membres du personnel et bénévoles), veuillez écrire à l'adresse suivante: Canadian Council of Cardiovascular Nurses, 1402- 222 Queen Street, Ottawa, Ontario K1P 5V9. Pour tout complément d'information, veuillez consulter de site Web aux adresses suivantes : www.cccn.ca or www.cardiovascularnurse.com.

Nous vous informerons des développements de nos communications et de nos activités.



Clinical Practice Guidelines for the Management of Dyslipidemia

Natalie Nichols, RN, BA, MN, CCN(C)

The causal relationship between dyslipidemia and atherosclerosis is well-documented. Screening and appropriate management of dyslipidemia by health care providers is imperative in both primary and secondary prevention of coronary artery disease, peripheral vascular disease, and stroke. In response to the release of new research data, clinical practice guidelines for the

management of dyslipidemia in Canada have recently been updated. This article will provide an overview of the recommendations for screening, risk assessment, and target lipid values. Dietary and lifestyle interventions will be discussed in addition to pharmacotherapy as management strategies for achieving therapeutic lipid targets.

Address for correspondence: Natalie Nichols, Expanded Role Nurse (Cardiology) and current CCCN Provincial Director for Nova Scotia, Queen Elizabeth II Health Sciences Centre, Room 6248-1796 Summer St., Halifax, NS B3H 3A7; e-mail natalie.nichols@cdha.nshealth.ca

Cardiovascular disease is the leading cause of death in Canada, accounting for 36% of total deaths. While this rate is actually declining, the number of cases has increased reflecting our aging population and improved medical and surgical care. The economic burden to society in 1998 was 18.4 billion dollars, accounting for 11.6 % of the total cost of all illnesses (Heart and Stroke Foundation of Canada, 2003). The causal relationship between hypercholesterolemia and atherosclerosis is well-established, and several major clinical trials have shown that decreasing low-density lipoprotein cholesterol (LDL-C) results in a reduction of coronary artery disease (CAD) events and total mortality. A reduction in relative risk was also noted in patients with and without clinically evident CAD and in patients with mild or severe dyslipidemia (Fodor, Frohlich, Genest & McPherson, 2000).

Screening and appropriate management of dyslipidemia by health care providers are imperative in both primary and secondary prevention of CAD, peripheral vascular disease (PVD), and stroke. Unfortunately, recent studies suggest that a significant number of patients are not properly evaluated and treated for dyslipidemia (Becker & Allen, 2001; Braunstein et al., 2001; Fodor et al., 2000; Gotto, 1999; Lee et al., 2000; Rich, Shah, Rich, Shah, & Rich, 2000; Safer & Lacivita, 2000). In an effort to promote consistent practice, standardized screening and treatment protocols have been established by consensus groups in both Canada and the United States within the last five years.

In Canada, the Working Group on Hypercholesterolemia and Other Dyslipidemias (WGD) released recommendations for the management of dyslipidemia in 2000 (Fodor et al., 2000). In the United States, the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults released the report of the Adult Treatment Panel III (ATP III) in 2001 (NCEP, 2001). Following the release of the NCEP-ATP III, the results of several clinical trials were reported and the WGD has just published updated

Quiz Answers

Answers to Dyslipidemia quiz on page 11...

1. b; 2. c; 3. a; 4. c; 5. b; 6. d

recommendations for the management of dyslipidemia in Canada (Genest, Frohlich, Fodor & McPherson, 2003).

Screening

The WGD recommends a fasting lipid profile including total cholesterol (TC), LDL-C, high density lipoprotein cholesterol (HDL-C), triglyceride (TG), and a TC/HDL ratio routinely for men over the age of 40 and women who are postmenopausal or over 50 years of age. Individuals who are diabetic, hypertensive, smokers, have abdominal obesity, a strong family history of premature cardiovascular disease, or stigmata of dyslipidemia such as xanthomata or arcus corneae should also be screened, in addition to those who present with clinical evidence of CAD, PVD, or carotid atherosclerosis.

Low-risk clients can be screened routinely every five years. Those at increased risk should be re-evaluated every three to 12 months, depending on the level of risk. Patients who are hospitalized with an acute coronary syndrome need to have lipid values drawn within 24 hours of admission, or the levels may be inaccurate (Fodor et al., 2000).

Risk assessment

Data from the Framingham Heart Study is used to calculate risk scores for those who do not have diabetes or CAD. Clients with diabetes, chronic kidney disease, or existing atherosclerotic disease are automatically classified as high risk (Genest et al., 2003). Risk is determined through scores for different variables including age, gender, TC, HDL-C, systolic blood pressure (treated or untreated), and whether the person is a smoker. The WGD has recently released new guidelines to harmonize cardiovascular risk assessment across North America and has adopted the NCEP ATP III risk estimation algorithm (NCEP, 2001). There are currently three levels of risk: low is defined as a 10-year risk of less than or equal to 10%; moderate is a 10-year risk of 11% to 19%; and high is a 10-year risk of greater than or equal to 20%.

Target lipid levels are determined according to the level of risk. The latest guidelines focus on the LDL-C level and the ratio of TC/HDL-C. Low-risk targets for LDL-C are less than 4.5 with a TC/HDL-C ratio of 6.0. Moderate-risk levels for LDL-C are less than 3.5 with a ratio of 5.0 and high-risk clients should have an LDL-C less than 2.5 with a ratio of less than 4.0. The previous recommendations included target TG levels, but these have been eliminated in order to simplify the guidelines. The WGD supports an optimal TG level of less than 1.7

mmol/L. Triglyceride levels exceeding 10 mmol/L should be treated, as this is a risk factor for pancreatitis (Genest et al., 2003).

If LDL-C is elevated, it is essential to assess for secondary causes of dyslipidemia. Hypothyroidism, renal disease, diabetes, obstructive liver disease, obesity, and excessive alcohol intake may result in dyslipidemia. Medications including thiazide diuretics, beta-blockers without intrinsic sympathomimetic or alpha blocking activity, oral contraceptives, hormone replacement therapy, and corticosteroids may also induce dyslipidemia (Gotto & Pownall, 2003).

Treatment

Lifestyle modification and nutritional therapy are the foundations for the non-pharmacologic management of dyslipidemia (Becker & Allen, 2001; Nettina, 2001). A trial of diet therapy and risk factor modification should be instituted for those at low and moderate risk. For those at high risk, lifestyle interventions should be started concomitantly with drug therapy. The WGD cautions that adults with severe dyslipidemias such as familial hypercholesterolemia and LDL-C greater than 5 mmol/L are at high risk of CAD even in the absence of other risk factors for CAD and will often require pharmacological intervention despite healthy lifestyle changes (Fodor et al., 2000).

Dietary and lifestyle interventions

A low-fat, high-fibre diet is recommended, with less than 30% of total calories from fat and less than 7% of total calories from saturated fats and trans-fatty acids. Substituting monounsaturated fat, polyunsaturated fat, or carbohydrates for saturated fat can lower LDL-C by approximately 80% (Denke, 2002). Caution must be exercised in replacing fat calories with calories from carbohydrates, as they may elevate TG and lower HDL-C levels (Gotto & Pownall, 2003; Logan & Clarke, 2001). Dietary cholesterol intake should not exceed 300 mg per day and 25 to 35 grams of fibre are recommended.

Clients are advised to decrease their intake of refined carbohydrates and sugar to assist in maintaining a body mass index less than 25 kg/m². Increasing daily intake of omega-3 fatty acids from fish and plant sources will assist in lowering TG and raising HDL-C levels. The addition of salmon oil (one to three grams three times daily) to statin therapy is suggested by the WGD for clients with moderate hypertriglyceridemia (Genest et al., 2003).

Soy protein has been shown to lower both TC and LDL-C if consumed in recommended quantities (25 to 50 grams/day) (Gotto & Pownall, 2003). Lifestyle interventions should include regular physical activity such as 30 to 60 minutes of aerobic activity four to seven times a week (Fodor et al., 2000; Genest et al., 2003).

Smoking is another important modifiable cardiac risk factor, and a meta-analysis of 54 published studies revealed significantly higher plasma TC, LDL-C, and TG levels in association with lower HDL-C levels in smokers. Those exposed to second-hand smoke also had significantly lower HDL-C levels. Smoking cessation increased HDL-C levels by five to 10% (Denke, 2002; University of Michigan, 2000). Alcohol consumption should be limited to two or fewer standard drinks (150 mL of wine, 360 mL of beer, or 30 mL of spirits) per day. There is increased risk for hypertriglyceridemia if the alcohol is consumed with fatty foods (Fodor et al., 2000; Gotto & Pownall, 2003).

Pharmacological therapy

Drugs of choice for elevated LDL-C alone are statins, bile acid sequestrants, or cholesterol absorption inhibitors. Bile acid sequestrants, cholestyramine and colestipol, are the only lipid-lowering drugs approved for use in pregnant or lactating women. They can lower LDL-C by 20% and increase HDL-C by five per cent, but are rarely used as initial therapy due to poor palatability and patient tolerance. Gastrointestinal disturbances are common, including constipation, nausea, and bloating. They interfere with the absorption of fat-soluble vitamins, minerals, and medications such as propranolol, levothyroxine, thiazide diuretics, and digoxin. Triglyceride and transaminase levels may increase. Monitoring of liver function and TG levels is necessary after six weeks (Safeer & Lacivita, 2000; Roederer, 2000).

Cholesterol absorption inhibitors (ezetimibe) are a new therapy that are better tolerated than the bile acid sequestrants and are usually given in combination therapy with statins to achieve LDL-C targets. Ezetimibe is not recommended for patients with moderate or severe hepatic insufficiency, or in combination use with fibrates, due to a lack of outcome data (Merck Frosst, 2003; Sudhop et al., 2002).

Statins are the preferred drug for initial therapy, as they are effective, are supported by many clinical studies, and have few adverse effects. They have been demonstrated to reduce the incidence of CAD by 25 to 60% and reduce the risk of all cause mortality by 30% (Knopp, 1999). Statins have also been associated with a significant reduction in the incidence of new stroke (Aronow, 2001). Statins currently available include

atorvastatin, fluvastatin, pravastatin, lovastatin, simvastatin and rosuvastatin. Data released from The Heart Protection Study in 2002 revealed that the use of 40 mg/day of simvastatin decreased the death rate by 13% and reduced the rate of all cardiovascular end points by 24%. In light of these results, the WGD recommends that clients who are at high risk be treated with the equivalent of 40 mg/day of simvastatin to achieve the LDL-C target of 2.5 with a TC/HDL-C ratio of four (Genest et al., 2003).

Adverse effects of statins are gastrointestinal disturbances, headache, myalgias, and rash. Elevated liver enzymes (greater than three times normal levels) have been noted in one to two per cent of patients. Liver function tests should be performed prior to starting therapy and at regular intervals (every three to six months) following initiation of treatment. It is also wise to have a baseline creatine kinase (CK), should there be concern about myalgias once treatment is started. Plasma lipid levels should reach a steady state six weeks after drug therapy is initiated. Long-term follow-up can be performed every six to 12 months depending on dose and if the client is receiving combination therapy (Edmunds & Mayhew, 2000; Genest et al., 2003; Safeer & Lacivita, 2000; Roederer, 2000).

If the lipid profile includes a low HDL-C level, then a fibrate or niacin may need to be added to statin therapy. Fibrates (gemfibrozil and fenofibrate) are primarily indicated for use in hypertriglyceridemia, reducing TG levels by 20 to 45%, and have also been shown to increase HDL-C levels by seven to 15%. Adverse effects are usually related to gastrointestinal intolerance. Abdominal pain, nausea, vomiting, diarrhea, constipation, and dyspepsia are most common, however headache, dizziness, arthralgias, and dermatologic reactions have also been reported. When fibrates are given with a statin in combination therapy, there is an increased risk for developing rhabdomyolysis.

Prior to starting treatment with fibrates, a CK, complete blood count, and liver and renal function test should be performed. These should be repeated in three months, six months and then yearly. Fibrates are contraindicated in patients with severe liver or renal disease and pre-existing gall bladder disease, as they increase gall bladder and hepatic cholesterol concentrations. These drugs may also potentiate the effects of insulin and glyburide, so patients need to be monitored for hypoglycemia (CPhA, 2003; Safeer & Lacivita, 2000; Roederer, 2000).

Niacin is one of the oldest lipid-lowering drugs proven to decrease cardiovascular morbidity and total mortality. It increases HDL-C more effectively

than other medications and has also been indicated for hypertriglyceridemia. Unfortunately, this drug is poorly tolerated due to flushing and pruritis. New extended release formulations have helped to combat these side effects. Alternatively, starting on a low dose at bedtime and titrating upwards slowly may help to minimize flushing, as will the administration of aspirin or non-steroidal anti-inflammatory agents prior to taking the niacin. Avoiding alcoholic and hot beverages may also help to prevent flushing (Logan & Clarke, 2001; Safeer & Lacivita, 2000).

Other adverse effects include abdominal pain, nausea, vomiting, hepatotoxicity, increased uric acid levels (gout), and glucose intolerance. It is best to avoid this drug in diabetics, and monitoring should include baseline glucose, uric acid, and liver function tests with repeats at three, six, and 12 months and then yearly. The drug should be discontinued if liver enzymes are three

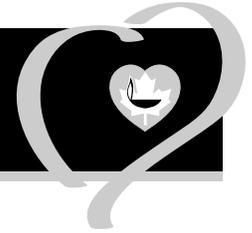
times normal levels. The possibility of rhabdomyolysis is increased in combination therapy (Edmunds & Mayhew, 2000; Genest et al., 2003; Safeer & Lacivita, 2000).

It is essential to closely monitor and titrate medications for dyslipidemia to ensure that target levels are being achieved and to prevent adverse effects. Medications must be prescribed for the specific lipid abnormality the client experiences. Long-term compliance is best with statins, however studies suggest that up to 50% of clients discontinue treatment after one year. Clients must be aware that lipid-lowering drug therapy is long-term and usually for the rest of their lives. Education regarding the survival benefit, decrease in morbidity, and the pleiotropic effects of statins must be communicated to clients. Careful evaluation of comorbidities such as thyroid disease, diabetes, and nephrotic syndrome, as well as medications that impact on lipid levels, must also be conducted (Safeer & Lacivita, 2000; Logan & Clarke, 2001). ♥

References

- Aronow, W.S. (2001). Cholesterol 2001: Rationale for lipid-lowering in older patients with or without CAD. *Geriatrics*, 56(9), 22-30.
- Becker, D.M., & Allen, J.A. (2001). Improving compliance in your dyslipidemic patient: An evidence-based approach. *Journal of the American Academy of Nurse Practitioners*, 13(5), 200-207.
- Braunstein, J.B., Cheng, A., Cohn, G., Aggarwal, M., Nass, C.M., & Blumenthal, R.S. (2001). Lipid disorders: Justification of methods and goals of treatment. *Chest*, 120(3), 979-988.
- Canadian Pharmacists Association. (2003). *Compendium of pharmaceuticals and specialties* (38th ed.). Ottawa, ON: Author.
- Denke, M.A. (2002). Dietary prescriptions to control dyslipidemias. *Circulation*, 105, 132-135.
- Edmunds, M.W., & Mayhew, M.S. (2000). *Pharmacology for the primary care provider*. St. Louis, MO: Mosby.
- Fodor, J.G., Frohlich, J.J., Genest, J.J.G., & McPherson, R.P. (2000). Recommendations for the management and treatment of dyslipidemia: Report of the working group on hypercholesterolemia and other dyslipidemias. *CMAJ*, 162(10), 1441-1447.
- Genest, J., Frohlich, J., Fodor, G., & McPherson, R. (2003). Recommendations for the management of dyslipidemia and the prevention of cardiovascular disease: 2003 Update [Electronic version]. *CMAJ*, 169(9), 1-10.
- Gotto, A.M. (1999). Lipid-lowering therapy for the primary prevention of coronary heart disease. *Journal of the American College of Cardiology*, 33(7), 2078-82.
- Gotto, A.M., & Pownall, H.J. (2003). *Manual of lipid disorders: Reducing the risk for coronary heart disease* (3rd ed.). Philadelphia, PA: Lippincott, Williams and Wilkins.
- Heart and Stroke Foundation of Canada. (2003). *The growing burden of heart disease and stroke in Canada 2003*. Ottawa, ON: Author.
- Knopp, R.H. (1999). Drug treatment of lipid disorders. *The New England Journal of Medicine*, 341(7), 498-511.
- Lee, T.H., Cleeman, J.I., Grundy, S.M., Gillet, C., Pasternak, R., Seidman, J. et al. (2000). Clinical goals and performance measures for cholesterol management in secondary prevention of coronary heart disease. *JAMA*, 283(1), 94-98.
- Logan, P., & Clarke, S. (2001). Nutritional and medical therapy for dyslipidemia in patients with cardiovascular disease. *AACN Clinical Issues*, 12(1), 40-52.
- Merck Frosst/Schering. (2003). *Product monograph - ezetrol*. Kirkland, Quebec: Author.
- National Cholesterol Education Program, National Heart, Lung and Blood Institute. (2001). Executive summary of the third report of the national cholesterol education program (NCEP) expert panel on detection, evaluation, and treatment of high blood cholesterol in adults (adult treatment panel III). *JAMA*, 285(19), 2486-2497.
- Nettina, S.M. (2001). *What's new in dyslipidemia management: Intervening to reduce coronary heart disease risk*. Presented at the National Conference for Nurse Practitioners. Retrieved March 30, 2002 from <http://www.medscape.com/viewarticle/420204>.
- Rich, S.E., Shah, J., Rich, D.S., Shah, R., & Rich, M.W. (2000). Effects of age, sex, race, diagnosis-related group and hospital setting on lipid management in patients with coronary artery disease. *The American Journal of Cardiology*, 86, 328-330.
- Roederer, G.O. (2000). Dyslipidemias. In J. Gray (Ed.), *Therapeutic Choices* (3rd ed.) (pp191-201). Ottawa, ON: Canadian Pharmacists Association.
- Safeer, R.S., & Lacivita, C.L. (2000). Choosing drug therapy for patients with hyperlipidemia. *American Family Physician*, 61(11), 3371-82.
- Sudhop, T., Lutjohann, D., Kodal, A., Igel, M., Tribble, D.L., Shah, S. et al. (2002). Inhibition of intestinal cholesterol absorption by ezetimibe in humans. *Circulation*, 106, 1943-1948.
- University of Michigan Health System. (2000). *Screening and management of lipids: Guidelines for clinical care*. Retrieved April 4, 2002 from www.guideline.gov.

Clinical practice questions



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

1. A 56-year-old female asks your advice on fat content of her diet to control her cholesterol. You advise her that her diet should contain which of the following?
 - a) Total fat calories <20% and 7% of these total calories from saturated and transfatty acids
 - b) Total fat calories <30% and 7% of these total calories from saturated and transfatty acids
 - c) Total fat calories <20% and 10% of these total calories from saturated and transfatty acids
 - d) Total fat calories <30% and 10% of these total calories from saturated and transfatty acids
2. Mr. S., age 62, complains of upset stomach, headache, and muscle aches. He has a history of cholelithiasis, ischemic heart disease, and the following risk factors: ex-smoker, diabetes, and dyslipidemia. Which of the following interventions would be most helpful to diagnose the problem?
 - a) Blood sugar, Hgb A1C – suspecting hyperglycemia
 - b) BUN, creatinine, electrolytes – suspecting electrolyte imbalance
 - c) Liver enzymes, and CK – suspecting myalgia
 - d) Doppler studies – suspecting PVD
3. MJ is concerned that she will need frequent bloodwork to check her cholesterol levels now that she has been started on a statin. You advise her that:
 - a) Plasma lipid levels are reached within six weeks of initiation of therapy and long-term follow-up consists of bloodwork q6-12 months
 - b) Plasma lipid levels are reached within six weeks of initiation of therapy and long-term follow-up consists of bloodwork q12-18 months
 - c) Plasma lipid levels are reached within 12 weeks of initiation of therapy and long-term follow-up consists of bloodwork q6-12 months
4. What are the target lipid levels for a 42-year-old female with no known heart disease and the only risk factor is diabetes which is well-controlled with oral agents?
 - a) LDL-C <4.5 & TC/HDL-C ratio 6.0
 - b) LDL-C <3.5 & TC/HDL-C ratio 5.0
 - c) LDL-C <2.5 & TC/HDL-C ratio 4.0
 - d) LDL-C <4.5 & TC/HDL-C ratio 3.0
5. What effect does second-hand smoke have on cholesterol levels?
 - a) Higher HDL-C levels
 - b) Lower HDL-C levels
 - c) Higher TG levels
 - d) Lower LDL-C
6. JH is a 55-year-old diabetic female who was recently started on combination therapy for dyslipidemia. Her past medical history includes hypothyroidism and episodes of NSVT. She complains of feeling weak, sweating, and is having difficulty concentrating. You suspect a drug interaction and symptoms may be associated with which of the following:
 - a) Tachycardia
 - b) Hypotension
 - c) Hyperthyroidism
 - d) Hypoglycemia

Answers to questions are found on page 7.

Learning by Heart: A Focused Group Study to Determine the Self-Management Learning Needs of Chronic Stable Angina Patients

Michael H. McGillion, RN, PhD(Cand.), Judith H. Watt-Watson, RN, PhD, Julie Kim, RN, MN, ACNP, and Anthony Graham, MD, FRCPC

The purpose of this study was to determine the self-management learning needs of chronic stable angina (CSA) patients living at home, in order to inform the content of a future CSA self-management program. Four focus groups were organized: two with CSA patients and two with clinicians. Each audiotaped session involved six to eight participants and consisted of a semi-structured interview lasting approximately 1.5 hours. Clinicians emphasized that CSA patients need help understanding the nature of angina and the symptomatic manifestations that require management. Patients emphasized that they need to learn how to minimize and manage symptoms,

as well as how to cope with angina-induced limitations. Both groups identified management of physical, emotional, and role-related limitations, and uncertainty related to symptom interpretation as high learning priorities. The findings of this exploratory study have confirmed that CSA patients have major self-management learning needs with respect to the nature of angina, monitoring symptom severity, coping with angina-induced limitations, and managing symptoms day to day.

Key words: chronic stable angina, learning needs, nursing, self-management

Address for correspondence: Michael McGillion RN, PhD (Cand.), University of Toronto, Faculty of Nursing, 50 George Street, Toronto, ON M5S 3H4; Office: (416) 946-3989, Fax: (416) 978-8222

Background

Chronic stable angina (CSA) is a distressing cardinal symptom of coronary artery disease (CAD) that affects thousands of individuals in Canada each year. CSA is a subset of angina pectoris wherein the afflicted individual experiences no change in angina-precipitating factors, or in duration and frequency of episodes for a minimum of 60 days (Friesinger & Hurst, 1998). CSA is characterized by severe pain or discomfort in the chest, upper abdomen, back, arms, shoulders, neck, jaw, and/or teeth (Beattie, 1999; Lilly, 1998). This pain is triggered by transient myocardial ischemia caused by inadequate perfusion relative to the needs of the heart (Alyn, 1981; Wright, 1984).

There is a considerable body of published evidence that documents CSA as having a major negative impact on health-related quality of life (HRQOL) including general health status, role functioning, activity restriction, disability, and self-care (Brorsson, Bernstein, Brook & Werko, 2001; Brorsson, Bernstein, Brook & Werko, 2002; Brown et al., 1999; Caine, Sharples & Wallwork, 1999; Erixon, Jerlock & Dahlberg, 1997;

Gardner & Chapple, 1999; Lyons, Lo & Littlepage, 1994; Miklaucich, 1998; Pocock, Henderson, Seed, Treasure & Hampton, 1996; Wandell, Brorsson & Aberg, 2000). CSA also imposes numerous direct and indirect psychosocial and economic costs on the individual and society (Lewin, 1999; Heart and Stroke Foundation of Canada, 2000; Nissinen et al., 1991; Taylor, 1987; Vetter & Ford, 1990; Wenger & Mattson, 1984).

Although CSA is a known predictor of poor HRQOL, CSA patients lack adequate knowledge about the nature of angina and how to self-manage symptoms. This lack of knowledge results in continued angina episodes, poor HRQOL, and subsequent reliance on tertiary health services (Gardner & Chapple, 1999; Lewin, 1999; Miklaucich, 1998; Webster & Christman, 1988; Wynn, 1967).

Literature Review

Prevalence of CSA

Over 33% of the 345,000 individuals in Canada who live with coronary artery disease (CAD) suffer from CSA and experience disability and activity restriction (Statistics

Canada, 1999). With Canada's aging population, CSA will be among the country's leading causes of disease burden by 2020 (Naylor & Slaughter, 1999; HSFC, 2000).

Angina is currently among the three most common cardiovascular reasons for admission to hospital (along with acute myocardial infarction and congestive heart failure) in Ontario, and has seen the greatest increase in admission rate over the last five years at 1.4% per annum (Naylor & Slaughter, 1999). The Institute for Clinical Evaluative Sciences (ICES) estimated the number of admissions for angina in 2002 would be 31,620 per 100,000 patients over 20 years old (Naylor & Slaughter, 1999). ICES also estimated that the number of urgent/acute re-admissions within 30 days of discharge from hospital averaged at 22,000 per annum from 1992-1997.

Response to the CSA Problem

Given the daunting impact of CAD, CSA, and cardiovascular disease in general, the Ontario Cardiac Care Network (CCN) Consensus Panel on Cardiac Rehabilitation and Secondary Prevention (CCNCP) has emphasized that there is an urgent need for developments in cardiovascular rehabilitation and prevention (1999). The success of health care specialists in treating acute cardiovascular problems through tertiary emergency, medical, surgical, and pharmacological services overshadows the importance of secondary prevention (CCNCP, 1999). The CCN (1999) attributed large hospital re-admission rates for heart disease to a province-wide lack of attention to secondary prevention measures, particularly for those patients with chronic disease and symptoms. Cardiovascular secondary prevention in Ontario is minimal, inconsistent, and lacks coordination between institutions. For example, only 20% of Ontario hospitals provide variable levels of cardiac rehabilitation, and these programs are available to only 20% of all those referred. Consequently, a mere 15% of eligible people receive rehabilitation services (CCNCP, 1999; CCN, 2002).

Moreover, current cardiovascular rehabilitation programs focus on conventional CAD risk factor modification after a cardiac event or revascularization procedure. Such programs provide only brief patient-health professional contact time and are largely inaccessible to those with chronic symptoms (Naylor, 1999). Consequently, the absence of accessible secondary prevention services causes those with CAD and CSA to rely heavily on tertiary health services for intervention during potentially preventable acute episodes (CCNCP, 1999; Naylor, 1999). Given the prevalence of CAD and CSA and the psychosocial and economic costs related to these conditions, further research to develop secondary prevention services is needed to meet the self-management needs of this large, heavily burdened patient group.

A comprehensive literature search of databases including Medline 1992-2001, CINAHL, Cochrane Database of Systematic Reviews, Cochrane Controlled Trials Register (CCTR), and PubMed yielded four published trials of CSA secondary prevention management programs (Bundy, Carroll, Wallace & Nagle, 1994; Gallacher, Hopkinson, Bennett, Burr & Elwood, 1997; Payne et al., 1994). These trials tested the effects of psychoeducation interventions for the management of angina symptoms. Psychoeducation interventions are multi-modal self-help treatment packages that employ information-based material and cognitive-behavioural strategies, designed to assist disease-related learning that effects changes in knowledge, understanding, behaviour, and skill acquisition for disease self-management (Barlow, Shaw & Harrison, 1999). The interventions in these trials focused on CAD risk factor modification strategies, in combination with various cognitive and exercise techniques, to reduce ischemic threshold in patients with both newly diagnosed and chronic angina. These trials demonstrated some positive effects on the exercise tolerance, angina symptoms, and stress of patients. However, methodological problems — particularly the lack of a well-standardized psychoeducation intervention approach to chronic pain and disease — precluded generalization.

The positive effects of a standardized psychoeducation program for other chronic pain populations have been well documented. Lorig (1986) developed a low-cost, community-based psychoeducation program for the self-management of arthritis that has been examined in four large, well-designed randomized controlled trials (RCT). This program, the Arthritis Self-Management Program (ASMP), was shown to improve self-management knowledge and behaviours, including self-efficacy and resourcefulness, for chronic arthritis patients up to four years post-intervention.

Building on Lorig's work, LeFort, Gray-Donald, Rowat & Jeans (1998) tested the effects of an adaptation of Lorig's (1986) program for those living with chronic nonmalignant pain in the Chronic Pain Self-Management Program (CPSMP). Lorig's standard psychoeducation protocol was replicated, consisting of two-hour sessions once a week for a six-week period and employing a combination of cognitive and behavioural chronic pain self-management techniques. This psychoeducation program was found to improve pain-related outcomes, dependency on health service utilization, role functioning, life satisfaction, self-efficacy, and resourcefulness ($p < 0.003$). These results pointed to a successful intervention based on a sound study design (i.e. random allocation, low attrition rate, blind assessors, use of a standard protocol and patient education materials, and intention-to-treat analysis),

that compared favourably with results of the ASMP studies. Although initial studies indicated that secondary prevention programs may be helpful for individuals living with CSA, and psychoeducation has proven to be effective for other chronic pain populations, a well-standardized psychoeducation program addressing the specific self-management needs of patients with chronic angina has yet to be developed.

Purpose

The purpose of this focus groups study was to identify the self-management learning needs of CSA patients in order to inform the content of a future CSA self-management psychoeducation program.

Methods

Focus Groups

This study used focus groups to identify the self-management learning needs of CSA patients. Madriz (2000) argues that the use of focus groups is a 'collectivistic', rather than an individualistic qualitative approach (i.e. participant observation, individual interview), that focuses on the 'multivocality', or collective voice, of participants' attitudes, experiences, and beliefs. First used by social scientists circa 1920 to develop surveys, focus groups gained popularity as a qualitative method after World War II when market researchers used them to understand the purchasing needs of people (Morgan, 1998).

The 'collectivistic' approach of focus groups is akin to the philosophical orientation of this study: Denzin's (1989) postmodern notion of 'interpretive interactionism'. According to 'interpretive interactionism', the sharing of experiences in a group allows for the simultaneous engagement of multiple participants, thereby facilitating the social construction of the meaning of common experiences and the creation of a shared 'stock' of new knowledge (Denzin, 1989; Holstein & Gubrium, 1995).

As a vehicle for 'interpretive interactionism', some have argued that focus groups are an effective means to mitigate the influence of the researcher on the subject (Madriz, 2000). With the balance of power oriented toward the group, the researcher's control of the data collection process is limited (Madriz, 2000). Focus groups foster the 'collective voice', rather than individual voices, allowing for more free expression of ideas from participants who may otherwise feel constrained or pressured by the researcher in a one-to-one interview situation. The 'multivocality' of the focus group is therefore thought to elicit responses that better reflect the reality of social phenomena than more traditional individualistic qualitative methods (Madriz, 2000).

Study Participants

This study targeted CSA patients and clinicians, after approval from the ethical review boards of a Canadian university and the university-affiliated hospital. Eligible CSA patients: a) had angina symptoms for at least six months, b) were experiencing either class I, II, or III angina, and c) had a medical diagnosis of CAD confirmed either by nuclear imaging or angiography. Eligible clinicians were: a) registered nurses (RNs), nurse practitioners (NPs), or physicians (MDs) practising in the field of cardiology, and b) at a university-affiliated teaching hospital. All eligible participants spoke and read English and were recruited from two outpatient clinics and the cardiovascular rehabilitation centre at the study site. The clinicians included five RNs, four NPs, and two MDs, all with cardiac experience. The eight CSA patients ranged in age from 44 to 70 years, and one had post-secondary education. These two women and six men had lived with CSA from six months to 10 years. Three participants worked full-time, one part-time, two were retired, and two were on disability pay due to their CSA symptoms.

Researcher Perspective

The principal investigator (PI) was a registered nurse and a doctoral candidate in nursing, with five years of experience working with patients experiencing angina in both acute medical and emergency room settings. During the course of the study, the PI was a full-time doctoral student at a Canadian university. He had a strong commitment to understanding the self-management learning needs of CSA patients, with the intention of using data from this study to develop a self-management psychoeducation intervention for CSA patients.

Data Collection/Setting

Four groups were held in the same classroom setting at a major university-affiliated, teaching hospital and included two for clinicians (n=6, n=5) and two for CSA patients (n=5, n=3). Once the PI explained the procedure, informed consent was obtained at the beginning of each group and all participants completed a basic demographic sheet. Each session lasted approximately 1 1/2 hours and all sessions consisted of semi-structured group interviews moderated by the PI. A set of three questions was developed for both the CSA patient groups and the clinician groups to generate thinking and discussion about the day-to-day problems that CSA patients face in relation to their symptoms and their corresponding self-management learning needs (see Appendix). Three CSA patients were unable to attend the second patient group due to poor weather conditions. As no new themes emerged during the second patient group in relation to the first, the investigators determined that data saturation had

been reached and that interviewing the absent individuals at a later date was unnecessary. The PI acted as the moderator, and an independent assistant-moderator took field notes. At the end of each group, a summary of the results was read back to the participants, enabling them to verify key issues. The PI and the assistant-moderator also debriefed after each session to ensure that the participants' comments were clearly understood.

Data analysis

All focus groups were audiotaped and then transcribed in full. Braden's Self-Help Model was the conceptual framework used to guide the transcript-based analysis. Developed in 1990, Braden's Self-Help Model reflects the dynamics of a learned self-management response to chronic illness (LeFort, 2000). According to the model, self-help is defined as "An informed process of facing definable, manageable adversities by maintaining control over everyday problems" (Braden, 1990a, p. 38). The model was derived from testing hypotheses of three distinct learning-based theories of chronic illness (Braden, 1990a; 1993). The Self-Help Model shows a five-stage process, "Comprised of factors that decrease self-help and life quality and factors that increase learning a self-help response and thus a greater life quality" (Braden, 1990a, p. 42). The constructs of the model are conceptualized as antecedents (perceived severity of illness, limitation, and uncertainty), mediators (enabling skills), and outcomes (self-help and life quality) (Braden, 1990a). According to Braden, an individual's perceived severity of illness is associated

with his or her illness-related limitations and uncertainty (LeFort, 2000). It was felt that, together, these three latent antecedents would serve as key themes to guide the examination of the data, as they broadly reflect the adversities one faces in chronic illness. Therefore, this analysis took on an overall deductive approach. This was seen as the most practical and appropriate method because this study had a specific and applied focus. Analysis was ongoing once the first focus group was conducted. Axial coding and constant comparison were used to derive key themes in the data to be subsumed under the antecedents of Braden's (1990a) model (Krueger, 1998). The frequency, extensiveness, intensity, and specificity of participants' comments were of central importance for the two investigators who reduced the data into these themes and then selected key illustrative quotes. The mechanics of this process were carried out according to the 'long table method' recommended by Krueger (1998). The inter-rater agreement for the final results was 95%.

Results

The results were thematized under the antecedents of Braden's Self-Help Model including perceived severity of illness, uncertainty, and limitation. A summary of these results is presented in Table 1.

Perceived Severity of Illness

Perceived severity of illness refers to an individual's perceived level of affliction due to a chronic health problem (Braden, 1990b). According to Braden (1990b), perception of illness severity operates as an individual's stimulus for learning and behaviour change. This variable is a better predictor of adjustment than many objectively rated scales. Therefore, participants' suggestions for psychoeducation program content under this theme related to establishing clarity about CSA illness severity.

Clinicians and patients both identified that education on interpreting angina symptoms was a high priority. Both agreed that patients have great difficulty knowing when they are experiencing angina versus some other type of pain symptom. The following are examples of typical patient comments:

My main issue is trying to determine when it is angina that I'm having versus some musculoskeletal kind of pain.

The one thing that's ongoing for the rest of your life is angina and learning to identify that you're having it.

Table 1

Summary of results according to antecedent constructs of Braden's Self-Help Model

Model Construct	Content Areas for CSA Psychoeducation Self-Management Program
Perceived Severity of Illness	<ul style="list-style-type: none"> • Symptom interpretation • Deciding when to seek professional/emergency help
Uncertainty	<ul style="list-style-type: none"> • Proper CAD medication use • Balancing activity and rest • Pathophysiology of CAD and angina
Limitation	<ul style="list-style-type: none"> • Diet • Acceptance of limitations (i.e. social, physical) • Managing emotional responses (i.e. stress, depression, anxiety) • Communication with health professionals

I am constantly trying to figure out if it is angina I'm having or not.

Clinicians expressed similar sentiments. Many of the patients they worked with lacked adequate knowledge to discern angina from other syndromes. As one clinician stated:

Many patients, especially those newly diagnosed, are just starting to understand their symptoms and are not able to distinguish their angina from other types of pain, and they don't know what their angina really is.

Most clinicians agreed that teaching patients how to identify symptom patterns, including usual manifestations and corresponding triggers, was key for learning symptom interpretation. Using an angina symptom diary was thought to be helpful:

I recommend that, in this program, you teach patients to keep a diary of their symptoms — there are a number of these developed — so that they can track how their symptoms manifest and what triggers them.

As well, clinicians thought patients needed more education in order to know when to seek professional help. This included consultation with the primary care provider and seeking emergency assistance when necessary. Clinicians expressed frustration because patients often delayed seeking help until their symptoms worsened into an acute crisis. Clinicians attempted to parse out the circumstances leading to their patients' deterioration and the major factors that contributed to the build-up of a crisis:

Knowing when to seek help is a major issue for these patients. They don't really understand because they get used to having bad symptoms, so used to it, they don't know how to recognize when bad symptoms are getting worse.

Most of all, these patients must be taught when to seek help, when to call a doctor, and get advice — they need to learn to prevent the build-up of a crisis. This way, we can help them figure out why their angina might be getting worse, and work out a solution.

Patients also expressed experiencing difficulty in deciding when they should speak to a health professional about their condition. Major reasons for this included uncertainty about and denial of symptom progression, and a reluctance to burden caregivers:

I guess in my life, I've been trained to tough it out and not be a baby — at times I'm also unsure if there is a problem, so I go on ignoring it, and I just hate being a bother to busy people.

Patients also had difficulty deciding to seek help, even when they were certain they were having a crisis that was beyond their capacity to manage at home. The

decision to go to the emergency room (ER) was often put on hold because patients doubted their own judgment, and the ER was seen as a burden. Most patients expressed extreme dislike and fear of the ER and of being subjected to numerous diagnostic procedures. A typical remark was:

When I'm in trouble, going to the emerg just seems like such an added burden, I hate it, they put you through so much — all those tests and it's so chaotic — and I know I have trouble, but I'm never entirely certain that I really have to go.

Another major contributor to indecision about seeking emergency assistance was found to be confusion about how ambulance services and tertiary care centres are organized. A common question raised was why patients are often taken to a hospital where they had not been cared for previously:

My major question is, when I have a major emergency and I call, or my wife calls, for an ambulance, why I am not brought to [name of the hospital], the paramedics just say that "we will get turned away" — but that's where my chart and all my information is. This makes no sense, so I want to put off going, even when I really have to.

Uncertainty

Braden (1993) defines uncertainty as: "The difficulty one has in assigning meaning to their illness" (p. 38). We included suggestions for program content that targeted knowledge deficits around the general principles of day-to-day CAD management and angina symptom prevention that we thought would impede patients' ability to establish their meaning of living with CSA under this theme. Therefore, we conceptualized a lack of knowledge in CAD management as a major contributor to uncertainty. A dominant theme for both clinicians and patients was teaching the proper use of medications. The majority of patients stated that they were taking a minimum of four medications and that they did not know the purpose of most of these medications. Patients were also overwhelmed and confused about medication schedules, especially when they were taking several and had to take them at various times during the day:

I have so many pills and I don't know what I'm taking the pills for, I always get confused and I'm not sure if I'm taking them right.

I'm on a ton of medication, it's so hard to get it right, I need help with this.

What I need help with is, it's so hard to remember to take your pills, and I need to learn what the pills are actually for. There's so many different pills, you get all these different things. It's maybe the same or not the

same pill, but it seems like it does the same thing. Just trying to take them properly is stressful enough. I don't know, I've forgotten to take them on occasion. I really don't worry. I know it's prevention. I maybe will never take them and something will happen to me, but at the same time, this is what it's all about. It's just like you're new at a job and you're not comfortable. You're brand new and you're not comfortable with your material. You just don't feel like you're on top of things, and you stress yourself unnecessarily. And everybody has an opinion about it.

Based on their experiences with patients, clinicians also emphasized the importance of teaching patients about the proper use of CAD-related medications, including dosage, pharmacology, scheduling, and side effects. Several clinicians were concerned that their patients had often taken medications for the wrong purpose. A common example was the incorrect use of nitroglycerine for a headache. The proper use of nitroglycerine was identified by both groups as a major knowledge gap in self-care. Clinicians reported numerous accounts of patients overdosing or inadequately dosing themselves during an angina episode. Most also felt that patients did not know how to use nitrates prophylactically. Patients felt that administering nitroglycerine to themselves was frightening and that they were ill-equipped to handle this responsibility on their own. Fear of incorrect use and physical harm usually resulted in patient avoidance of nitroglycerine use when needed. One patient stated:

I often feel that I should try not to use the nitro... I guess it seems that there is some value in seeing if I could get through it without using the nitro – because I could make a mistake, I'm never sure if I have waited long enough for the next one. If I use it, I wait and see if it goes away, lie down or sit down or whatever. If it doesn't go away, I spray again, and I guess I'm doing what I'm supposed to, but I'm not sure, it's hard to keep track, and what might happen if I do it wrong?

Both groups also placed great emphasis on balancing activity and rest as important content that patients need to learn. This included energy conservation, sleep, and exercise. Clinicians were mainly concerned that many of their patients had adopted overly sedentary lifestyles as a means of avoiding an angina attack. As one clinician expressed:

It's very important that these patients learn the principles of balancing rest and activity. All too often, patients have adopted really sedentary lifestyles because they are afraid of activity. It might give them angina, and they are also usually fatigued, because they haven't slept well. They need to learn the skill of energy conservation. If they could learn to pace their daily household activities (gardening, the dishes, even

washing their hair), they may be able to avoid getting overtired. This way, they might avoid becoming really inactive and they would be less susceptible to angina.

Both groups also felt that patients were confused about exercise, specifically about acceptable duration and frequency. Patients reported a constant struggle with judging the limits of the amount of exercise that would be safe, and with deciding how often they should exercise. Clinicians felt that patients needed to learn the principles of angina threshold so that they could become comfortable with tolerating minimal amounts of angina while exercising in order to improve their cardiovascular condition:

I really need help with not knowing if I push myself too hard when I exercise. Sometimes I think it's better if I just sit on the couch and not do anything at all. I know I have a heart condition, but at the same time, I don't know what I should be doing and what I shouldn't [in reference to exercise]. I have a gut sense of what I should be doing, but at the same time I don't know if I'm doing it right. I don't find that there's anybody to watch over me.

Two additional topics that clinicians stressed for teaching CSA patients to manage symptoms were the pathophysiology of CAD and diet. Most clinicians were adamant that CSA patients lacked sufficient knowledge of anatomy and physiology to have a sound understanding of what was happening to their bodies during the course of CAD progression and angina episodes. This knowledge was seen as integral to developing effective symptom management and prevention skills in patients:

If they had a better grasp of pathophysiology, they would be able to better manage an angina episode because they would understand what was happening to their bodies.

It would be really beneficial for these patients to have a basic review of anatomy, physiology, and pathophysiology so that they can understand their disease process. If they had this knowledge, it would be easier to make lifestyle adjustments – dietary, stress, exercise, whatever.

Finally, the importance of diet teaching was emphasized with respect to portion control. Several clinicians felt that many patients were fairly diligent about eating a well-balanced diet and that patients were well-exposed to this knowledge in popular media, but they lacked adequate knowledge about portions. Several accounts were made of patients who had experienced post-prandial angina due to excessive portions consumed in one sitting. One clinician remarked:

For some, they get angina with meals, even when they're eating healthy. It's that they've eaten a big

heavy meal and it brings their symptoms on. And for some, it's an excessive amount of liquid they've taken in and then they go into a little bit of failure and then get angina.

Limitation

Angina-related limitation refers to an individual's perceived inability to do the things that one wants to do (Braden, 1993). This theme included problems identified by patients and clinicians that required further health teaching and that were perceived as major contributors to feelings of general illness-related limitation.

The main issue brought up by both groups was acceptance. Accepting both the physical and social limitations imposed by angina was repeatedly identified as a difficult issue for CSA patients. Clinicians described innumerable patients who had 'unnecessarily' brought on angina because of excessive work or social activities. They viewed CSA patients as being in 'denial' and often attempting to function in roles they had prior to living with CSA:

They have difficulty accepting being faced with limitations around their angina, and they push themselves too much. When you get a young population, previously working, and they can't do the job they were previously doing, there are usually major denial and acceptance issues around that — they have to cope with limitations they're not yet prepared to accept.

They don't like the limitations that prevent them, because of their angina. They can't do a lot of the things they used to do... They are not sure, they push themselves to the outer limit, but they are not sure what that limit is.

Data suggested that patients dealing with angina-related limitations needed a forum in which to discuss the difficulties of identifying safe activity limits. Clinicians and patients said:

It's good to talk about it. It's a question of being realistic with yourself as you can be in terms of what you are facing, what the limitations are, then you begin to adjust to that. Getting it out has helped me.

Cardiac patients need support and help with this... In my own case, I toughed it out, I took those bags to the kitchen. I live in a townhouse — it's five levels — and I went downstairs and I carried them up and went down and carried more bags and carried them up and kept toughing it out, kind of like I did before the heart attack. Sometimes you just don't know what is ok - I pushed it too much.

Patients need to talk about it. It's difficult for them, it has altered their lives, and they need to feel like we understand what's happening.

Dealing with the emotional responses to and triggers of angina was also a predominant theme. Both groups emphasized measures dealing with depression, anxiety, and stress as high priorities. Most clinicians had worked with CSA patients who were depressed, primarily because of the guilt about previous lifestyle habits that contributed to their CAD, such as smoking and overeating. It was felt that an important part of the psychoeducation program would be to address living with depression in chronic illness:

The percentage of CAD patients who have depression is high... Until that is dealt with, they can't possibly cope with their angina if they are having significance in terms of depression.

They feel a lot of guilt about their condition. Like maybe they were or are smokers — they just withdraw into depression. In the program I'm in right now, we have a psychiatrist, but again, there's the whole stigma of psychiatry. And many patients won't go [to see a psychiatrist] if you recommend it. So I think a supportive group is a great way for them to be able to help each other.

Patients expressed a need for help in dealing with their anxiety. Most reported great anxiety about having to constantly anticipate a subsequent angina episode; this was tied in with the fear of MI and death:

Sometimes I go into a level of anxiety where I become concerned that maybe it's going to progress to another attack. So sometimes I think that level of anxiety may in itself bring on another attack, and I kind of think about what chemically is happening inside my body because of that second level of anxiety and what it may be doing.

Patients suggested that education on stress management would be helpful. Patients felt very stressed about having to manage angina in their lives, and felt that they were ill-equipped to deal with the day-to-day stresses that sometimes exacerbated their angina:

I never know what to eat, so that becomes a concern, because I stress myself off every time I look at a cookie.

If I'm under stress, and more often that stress is associated with work stress or the stress of my life, it will tend to take the form usually of a little pressure [angina].

Several suggestions on how to deal with emotional responses and triggers were generated by both groups. The most popular were teaching guided imagery and progressive muscle relaxation as means to alleviate anxiety, stress, and general tension. A number of patients remarked that these types of strategies had been helpful to them in the past. One patient said:

Guided imagery has really been helpful for me. The one I use most consistently is, I will picture myself in a location that I feel very comfortable with, and I will walk through and work through the environment around. So I would use that. I just really start off with some kind of visualization, and then I will go into a relaxation exercise where I will generally tighten parts of my body, and then relax them, and kind of work through my body that way.

A final suggestion for content was communication with health professionals. Several clinicians thought that patients would benefit from a review of common medical terminology used in reference to CAD and angina. It was felt that if patients had a better understanding of medical jargon, they might feel more comfortable communicating with health professionals about their symptoms:

Another thing that is important to teach them is medical language. I find sometimes their point won't be understood well, because clinicians will be speaking a different language.

Additional Findings

Participants were given an opportunity to share anything else they felt was important at the end of each session. The majority of patients expressed a need for a program wherein they could learn to develop their CSA self-management skills. As one patient said:

From my perspective, because angina is the one thing that stays with you, that you have to manage forever, I think reinforcement of how to manage everything to do with that is important, and that's why I would go into a program like this.

In addition, many patients agreed that medication use and relaxation were things they had already been taught in traditional cardiac rehabilitation programs. However, these topics were identified as learning needs in this study because most patients felt they did not retain the health teaching they received while in cardiac rehab. The two main reasons for this sentiment were: a) their exposure to the new material was too brief, and b) they were not in a state of readiness to learn at the time:

A program like this [psychoeducation] would be so helpful to me, definitely. Especially a program where there is more detail... instead of "this is what you should do". Maybe even spend a little bit of time, but just not so much all at once. It's [cardiac rehabilitation] just too much information all at once.

It's [cardiac rehabilitation] very overwhelming. A lot of information, I'd say 45 per cent of it, I can't remember. I was in there [cardiac rehab]... half in shock. What people said to me, when they were telling me about

exercise or nutrition or whatever the case might be, my pills, I needed more of an explanation... I didn't know anything about nutrition, exercise. It was all too much.

Discussion

Given the fluctuating nature of angina symptoms, both patients and clinicians identified interpreting symptoms and making decisions about when to seek help as major learning needs for establishing clarity about illness severity. Decision-making skills regarding when to seek help may be enhanced by reviewing the classic warning signs of myocardial ischemia and infarction in order to help patients accurately determine the urgency of their condition. Explanation of the organizational structure of emergency services, particularly ambulance redirection protocols, may also help patients to feel less frustrated and reluctant to use the system when they are in crisis.

The data about uncertainty recommended that CSA patients receive education about medication use, balancing activity and rest, the nature of CAD and angina, and diet. Education about medication should include a basic review of the functions, dosages, and side effects of the classes of medications used to treat CAD. Individual consultation, as an additional part of the program, could be given to those who require focused attention to assist them with scheduling their medications as prescribed. Instruction on the proper use of nitrates, both prophylactically and when in a crisis, should also be reinforced. Education about balancing activity and rest should focus on principles of energy conservation such as pacing and the importance of restful sleep. In addition, a review of basic, safe exercise principles would assist patients in planning their fitness routines. Planning and encouraging focused, moderate exercise, such as walking, would be beneficial for those who did not have a contraindication. Those with a prescribed exercise regimen could be given an opportunity to review their prescription and obtain any needed clarification. General teaching about CAD and angina should include a basic review of anatomy and pathophysiology in order to clarify the CAD process and what happens during the course of an angina episode. A review of basic nutrition for CAD patients that included methods for portion control may help prevent the onset of symptoms while eating.

Education on managing angina-related limitations was thought best to be focused on acceptance of physical and social limitations, managing emotions and triggers of angina, and enhancing communication with health professionals. Promoting identification and acceptance of limitations could occur by allowing patients to have an opportunity to voice their frustrations, and to reflect upon the shared experiences of other individuals

within the group. It was felt that emotional responses (i.e. depression and anxiety) would most appropriately be addressed in a group through discussion of ways to remain positive while facing the adversities of CSA. In addition, a variety of strategies could be employed such as guided imagery or progressive muscle relaxation. Patients would also benefit from a review of key medical terms that are commonly used by health professionals in relation to angina and CAD. This understanding may help patients to feel more at ease about discussing their symptoms with clinicians.

The results of this study have uncovered a number of CSA patient self-management learning needs, particularly with respect to various social and functional domains of living. The CSA patient self-management priorities identified in this study resonate with findings of previous qualitative studies that have examined CSA patients' experience of poor HRQOL. HRQOL refers to one's perceived life satisfaction in relation to the level of illness burden experienced with respect to: (a) symptoms, (b) impairment, (c) functioning, and (d) disability (Gladis, Gosch, Dishuk & Critis-Christoph, 1999). For instance, Erixson and colleagues (1997) explored nine CSA inpatients' distress with respect to fear and anxiety. Participants were asked to openly describe their experiences with angina. Recurrent fear and anxiety were associated with the participants' intermittent angina pain: "Chronic illness, physical incapacity and an increased existential awareness forced the participants into an insoluble circle where fear and anxiety were predominant" (Erixson 1997, p. 1). Miklaucich (1998) had similar findings when she studied the lived experience of eight women with CSA who had been admitted to a cardiac ward. These women kept diaries of their experiences, and underwent two semi-structured interviews. A key theme generated from the data was 'living between fear and safety'. Angina instilled feelings of fear, anxiety, and uncertainty in the patients and fuelled tensions between relying on the 'safety of the hospital environment' and desiring the 'security of the home' (Miklaucich, 1998). Gardner & Chapple (1999) found that CSA patients struggle with their angina-induced limitations. Sixteen CSA patients were interviewed to explore barriers to self-referral. Participants reported struggling with physical limitations imposed on them by angina. A common strategy was to adopt a sedentary lifestyle. Patients felt they had to relinquish control of their normal activities, and "accept" the pain. As one patient said, "I now sleep a lot in the day ... if I get up and start dashing around it makes me bad, so I just take it easy" (Gardner & Chapple, p. 418). Gardner & Chapple's (1999) study also revealed CSA patients' self-care deficits with respect to interpretation of angina symptoms. Participants often reported being in a quandary over

whether or not they should seek emergency help during angina episodes. Angina attacks were commonly confused with heartburn, anxiety, or indigestion, and vice-versa (Gardner & Chapple, 1999). Similar to the findings of this study, CSA patients reported requiring assistance with various social and functional domains of living, particularly with symptom distress, activity restriction, and self-care deficits.

In summary, clinicians emphasized the importance of patients understanding the nature of angina, including pathophysiology and symptomatic manifestations. Clinicians also stressed the importance of medical management. Most clinicians felt strongly that patients needed to be educated about the proper use of CAD-related medications, including dosages, scheduling, and side effects. CSA patients focused on areas that would help them deal with the many adversities they face throughout the course of their illness. As CAD is a debilitating and fatalistic nature condition, patients placed great importance on content areas that would help them to cope with angina, including ways to minimize symptoms day-to-day, methods for handling acute crises, and strategies for coping with angina-induced limitations. In addition to their particular emphases, both clinicians and patients saw dealing with the physical, emotional, and role-related limitations of angina pain, and uncertainty with respect to symptom interpretation, as high learning priorities. These findings point to a number of CSA patients' self-management learning needs with respect to various social and functional domains of living, and are supported by previous studies that report CSA patients' experiences of poor HRQOL. Current secondary prevention programs focus on conventional ischemic heart disease (IHD) risk factor modification after a cardiac event/revascularization procedure, include only brief patient-health professional contact time, and are largely inaccessible to those with chronic symptoms (Naylor, 1999). Given the prevalence of CSA, its negative impact on HRQOL, and the numerable self-management learning needs of CSA patients identified in this study, further developments in secondary prevention for CSA patients are needed. It was clear from the concerted voices of the participants that a self-management psychoeducation program, designed as an intervention to enhance CSA self-management skills, would be an important contribution to secondary prevention efforts for this heavily burdened group. The findings of this study will be used to inform the development of a self-management psychoeducation intervention program for individuals living with CSA.

This study had a number of limitations and strengths. This study employed purposive sampling, which may

limit transferability of findings. However, the purpose was to develop a more complete understanding of the self-management learning needs of CSA patients. CSA patients and clinicians with respective conditions and experiences were recruited to meet the specific interests of the study, as these individuals would have the most valuable insights. Burns and Grove (1997) refer to this technique as seeking 'information-rich cases'.

A disadvantage of using focus groups is that they occur in an artificially created setting, outside settings where participant interaction with the phenomenon under investigation typically takes place (Madriz, 2000). Therefore, the range of information gathered in the focus groups was narrow and limited to verbal communication, body language, and self-reported data. Use of other qualitative methods, such as participant observation, may have provided additional insights into the self-management learning needs of CSA patients beyond what was gleaned from the group discussions. The presence of the PI facilitator in the group also posed limitations, as it is difficult to discern the authenticity of the social interaction between participants.

One strength of the study was that it included the perspectives of novice and expert CSA patients. Therefore, the amalgamated suggestions for program content are appropriate for patients with varying levels of experience in living with CSA. Several steps were also taken to ensure the validity of findings (Krueger, 1998). First, the same set of questions was used in each focus group, and these questions were pilot-tested on a small number of patients and clinicians to ensure they would be understood. Second, the participants were asked to verify the data at the end of each session. Third, an independent transcriber collected data and transcribed the discussions in full. Finally, a 95% inter-rater agreement for the main data themes and categories was obtained between two independent nurse-raters.

Conclusion

The findings of this exploratory study have confirmed that CSA patients have major angina self-management learning needs related to social and functional domains of living, including: a) monitoring illness severity and

seeking help accordingly, b) identifying and coping with angina-related emotional and physical limitations, and c) clarifying the nature of CAD and managing angina symptoms day-to-day. This study has also shown that a psychoeducation self-management program designed to target these learning needs is needed, and may be an effective adjunct to conventional cardiovascular secondary prevention approaches that focus on CAD risk factor modification. A feature of this study that enhances the validity of its findings was the inclusion of perspectives from both CSA patients and clinicians. Future research should include a broad range of health professions (i.e. beyond nursing and medicine) in order to obtain a wider perspective on the self-management learning needs of CSA patients. ♥

Acknowledgements

This study was funded by a University of Toronto dissertation support grant. The authors gratefully acknowledge the guidance and support of Dr. Souraya Sidani.

Appendix: Research Questions

Patients

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

Clinicians

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

References

- Alyn, I.B. (1981, Dec.). Chest pain due to angina. *Occupational Health Nursing*, 35-38.
- Barlow, J.H., Shaw, K.L., & Harrison, K. (1999). Consulting the 'experts': Children and parents' perceptions of psychoeducational interventions in the context of juvenile arthritis. *Health Education Research*, 14(5), 597-610.
- Beattie, S. (1999). Management of chronic stable angina pectoris. *The Nurse Practitioner*, 24(5), 44-61.
- Braden, C.J. (1990a). A test of the self-help model: Learned responses to chronic illness experience. *Nursing Research*, 39, 42-47.
- Braden, C.J. (1990b). Learned self-help response to chronic illness experience: A test of three alternative learning theories. *Scholarly Inquiry of Nursing Practice*, 4, 23-41.

- Braden, C.J. (1993). Research program on learned response to chronic illness experience: Self-help model. *Holistic Nursing Practice, 8*, 38-44.
- Brorsson, B., Bernstein, S.J., Brook, R.H., & Werko, L. (2001). Quality of life of chronic angina patients four years after coronary angioplasty or coronary artery bypass surgery. *Journal of Internal Medicine, 249*, 47-57.
- Brorsson, B., Bernstein, S.J., Brook, R.H., & Werko, L. (2002). Quality of life of patients with chronic stable angina before and four years after coronary artery revascularization compared with a normal population. *Heart, 87*, 140-145.
- Brown, N., Melville, M., Gray, D., Young, T., Munro, J., Skene, A.M. et al. (1999). Quality of life four years after acute myocardial infarction: Short form 36 scores compared with a normal population. *Heart, 81*(4), 352-358.
- Bundy, C., Carroll, D., Wallace, L., & Nagle, R. (1994). Psychological treatment of chronic stable angina pectoris. *Psychology and Health, 10*(1), 69-77.
- Burns, N., & Grove, S.K. (1997). *The practice of nursing research conduct, critique and utilization* (3rd ed.). Philadelphia: W.B. Saunders Company.
- Caine, N., Sharples, L.D., & Wallwork, J. (1999). Prospective study of health related quality of life before and after coronary artery bypass grafting: Outcome at five years. *Heart, 81*(4), 347-351.
- Cardiac Care Network of Ontario. (2002). *The Ontario cardiac rehabilitation pilot project: Report and recommendations*. Retrieved 09/01/02 from http://www.ccn.on.ca/rehabpublic/FinalReport_PDF_Sept_30_02_FINALpassword.pdf.
- Cardiac Care Network Consensus Panel on Cardiac Rehabilitation and Secondary Prevention Services in Ontario. (1999). *Final report and recommendations*. Retrieved 09/01/02 from <http://www.A:/rehab-xs.html>.
- Denzin, N.K. (1989). *Interpretive Interactionism*. Newbury Park, CA: Sage.
- Erixon, G., Jerlock, M., & Dahlberg, K. (1997). Experiences of living with angina pectoris. Vard I Norden. *Nursing Science & Research in the Nordic Countries, 17*(20), 34-38.
- Friesinger, G.C., & Hurst, J.W. (1998). The natural history of atherosclerotic coronary artery disease: A historical perspective. In R. Alexander, R.C. Schlant & V. Fuster (Eds.), *Hurst's the heart, arteries and veins* (pp. 1127-1138). New York: McGraw-Hill.
- Gallacher, J.E.J., Hopkinson, C.A., Bennett, M.L., Burr, M.L., & Elwood, P.C. (1997). Effect of stress management on angina. *Psychology and Health, 12*, 523-532.
- Gardner, K., & Chapple, A. (1999). Barriers to referral in patients with angina: Qualitative study. *British Medical Journal, 319*, 418-421.
- Gladis, M.M., Gosch, E., Dishuk, N.M., & Critis-Christoph. (1999). Quality of life: Expanding the scope of clinical significance. *Journal of Consulting and Clinical Psychology, 67*(3), 320-331.
- Heart and Stroke Foundation of Canada. (1999). *The changing face of heart disease and stroke in Canada*. Retrieved 09/01/02 from www.hc-sc.gc.ca/hpb/lcdc/bcrdd/hdsc2000/index.html.
- Heart and Stroke Foundation of Canada. (2000). *Living with heart disease*. Retrieved 09/01/02 from www.hsf.p.html
- Holstein, J.A., & Gubrium, J.F. (1995). *The active interview*. Thousand Oaks, CA: Sage.
- Krueger, R.A. (1998). *Analyzing and Reporting Focus Group Results*. Thousand Oaks: Sage.
- LeFort, S. (2000). A test of Braden's Self-help model in adults with chronic pain. *Journal of Nursing Scholarship, 32*(2), 153-160.
- LeFort, S., Gray-Donald, K., Rowat, K.M., & Jeans, M.E. (1998). Randomized controlled trial of a community based psychoeducation program for the self-management of chronic pain. *Pain, 74*, 297-306.
- Leonard, L. (1998). *Pathophysiology of Heart Disease* (2nd ed.). Philadelphia: Lippincott.
- Lewin, R.J.P. (1999). Improving the quality of life in patients with angina. *Heart, 82*(6), 654-655.
- Lilly, L. (1998). *Pathophysiology of heart disease* (2nd ed.). Baltimore, MA: Lippincott.
- Lorig, K. (1986). Development and dissemination of an arthritis patient education course. *Family and Community Health, 9*, 23-32.
- Lorig. (1996). *Patient education: A practical approach*. Thousand Oaks, California: Sage.
- Lyons, R.A., Lo, S.V., & Littlepage, B.N.C. (1994). Comparative health status of patients with 11 common illnesses in Wales. *Journal of Epidemiological and Community Health, 48*(4), 388-390.
- Madriz, E. (2000). Focus groups in feminist research. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 835-850). Thousand Oaks, CA: Sage.
- Miklaucich, M. (1998). Limitations on life; women's lived experiences of angina. *Journal of Advanced Nursing, 28*(6), 1207-1215.
- Morgan, D.L. (1998). *Focus groups as qualitative research*. Newbury Park, CA: Sage.
- Naylor, C.D., & Slaughter, P.M. (Eds.). (1999). *Cardiovascular health and services in Ontario: An ICES Atlas*. Toronto: Institute for Clinical Evaluative Sciences.
- Naylor, S.D. (1999). Summary, reflections and recommendations. In C.D. Naylor & P.M. Slaughter (Eds.), *Cardiovascular Health and Services in Ontario: An ICES Atlas*. Toronto: Institute for Clinical Evaluative Sciences.
- Nissinen, A., Wiklund, I., Lahti, T., Akkila, J., Wilson, A., Wahl, M. et al. (1991). Anti-anginal therapy and quality of life. *Journal of Clinical Epidemiology, 44*(9), 989-997.
- Payne, T.J., Johson, C.A., Penzein, D.B., Porzelius, J., Eldridge, G., Parisi, et al. (1994). Chest pain self-management training for patients with coronary artery disease. *Journal of Psychosomatic Research, 38*(95), 409-418.
- Pocock, S.J., Henderson, R.A., Seed, P., Treasure, T., & Hampton, J. (1996). Quality of life, employment status, and anginal symptoms after coronary artery bypass surgery: Three-year follow-up in the randomized intervention treatment of angina (RITA) trial. *Circulation, 94*(2), 135-142.
- Statistics Canada. (1999). *Health Reports: Living with Heart Disease*. Retrieved 09/01/02 from www.statcan.ca/english/ads/82-003-XIB/04-99.htm
- Taylor, S.H. (1987). Drug therapy and quality of life in angina pectoris. *American Heart Journal, 114*, 234-240.
- Vetter, N.J., & Ford, D. (1990). Angina among elderly people and its relationship with disability. *Age and Aging, 19*, 159-163.
- Wandell, P.E., Brorsson, B., & Aberg, H. (2000). Functioning and well-being of patients with type 2 diabetes or angina pectoris, compared with the general population. *Diabetes and Metabolism (Paris), 26*, 465-471.
- Webster, K.K., & Christman, N.J. (1988). Perceived uncertainty and coping post-myocardial infarction. *Western Journal of Nursing, 10*(4), 384-400.
- Wenger, N.K., & Mattson, M.E. (1984). Assessment of quality of life in clinical trials of cardiovascular therapies. *American Journal of Cardiology, 54*, 908-913.
- Wright, C.W. (1984, Feb.). Managing chronic stable angina pectoris: Nitroglycerine, beta-blockers and risk factors reduction. *Nurse Practitioner, 54*-62.
- Wynn, F. (1967). Unwarranted emotional stress in men with ischemic heart disease. *Medical Journal of Australia, 2*, 847-851.

The Relationship of Self-Efficacy to Selected Outcomes

Dawn M. Hamilton, MSc, and Robert G. Haennel, PhD

The benefits of cardiac rehabilitation (CR) have been linked to an individual's level of self-efficacy (SE) for the behaviours required. Successful behaviour performance is one way of increasing SE. The purpose of this study was to examine the reciprocal relationship of exercise SE to the specific outcomes of functional ability and health-related quality of life (HRQL) among a relatively healthy population in a CR program. One hundred and seventy new CR clients participated in this study. Those with high initial SE had greater functional ability and higher HRQL

($p < .01$) than those with low initial SE through 12 weeks of CR. All outcomes, including SE, improved after 12 weeks of CR. Thus, the reciprocal nature of SE and CR exercise behaviours was demonstrated. We recommend further research to test the effectiveness of pre-screening new CR clients for SE, and using this information to guide the individual CR experience to optimize outcomes.

Key words: cardiac rehabilitation, self-efficacy, functional ability, quality of life

Address for correspondence: Robert G. Haennel, Faculty of Kinesiology and Health Studies, University of Regina, Regina, SK S4S 0A2; Phone: (306) 585-4844, E-mail: bob.haennel@uregina.ca

Participation in cardiac rehabilitation (CR) exercise programs has been shown to provide many physiological and psychological benefits for people living with heart disease. Physically, cardiac rehabilitation can improve functional ability (Fridlund, Hogstedt, Lidell & Larsson, 1991; Kugler, Dimsdale, Hartley & Sherwood, 1990), increase exercise capacity, produce favourable changes in blood lipid profiles, and reduce body weight (Franklin, Gordon & Timmis, 1992; Lavie & Milani, 1995b). Cardiac rehabilitation may also increase an individual's psychological well-being (Denollet, 1993; Fridlund et al.; Taylor, Houston-Miller, Ahn, Haskell & DeBusk, 1986), quality of life, and self-efficacy (Engebretson et al., 1999; Foster et al., 1995).

Self-efficacy (SE) theory, a component of Bandura's social learning theory, is defined as a person's belief in his or her ability to successfully perform a specific behaviour (Bandura, 1977, 1982, 1986). If a person is confident in his or her ability to perform a behaviour, then he or she is more likely to actually be able to perform that behaviour (Bandura, 1977). Self-efficacy is an important determinant of how much effort a person expends and how long a person will persist in the presence of obstacles or barriers (Bandura, 1977, 1982). Essentially, SE is a mediator between knowledge and action; it acts as a bridge between knowing what to do, and actually doing it (Bandura, 1982).

Self-efficacy has been shown to be an important predictor of physical function (Allen, Becker & Swank,

1990; Jeng & Braun, 1995; Sullivan, LaCroix, Russo & Katon, 1998; Taylor, Bandura, Ewart, Miller & DeBusk, 1985) and participation in CR activities (Ewart, Stewart, Gillilan, Kelemen, et al., 1986; Ewart, Taylor, Reese & DeBusk, 1983; Vidmar & Rubinson, 1994). Three studies have reported that SE scores predict CR activity better than treadmill performance (Taylor et al., 1985; Ewart et al., 1983; Ewart, Stewart, Gillilan, Kelemen & Valenti, 1986). These findings support Bandura's theory that confidence in one's ability to perform a task is more important than one's actual physical capabilities (1986).

Self-efficacy is "a dynamic process that is continually adjusted as a function of behavioural, cognitive, and environmental information" (McAuley, 1992, p.124). According to Bandura (1977, 1982), the most powerful way to increase an individual's SE for a particular behaviour is to gradually expose the individual to that behaviour and to allow the individual to witness other people having positive experiences while engaging in the same behaviour. Oldridge and Rogowski (1990) found that SE scores for walking time and overall exertion increased significantly after an inpatient CR program. Jeng and Braun (1997) also found an improvement in SE after 12 weeks of an outpatient CR exercise program.

To maximize CR benefits for patients, it is important to identify factors that may influence the desired outcomes. Examining the reciprocal relationship between SE and CR may help to determine the utility

of pre-screening participants for their initial levels of SE, and also to ascertain the effect of CR on the beliefs and behaviours of participants. If a reciprocal relationship is found, then pre-screening new CR patients on their initial levels of SE may identify those who would benefit from additional efforts to raise low SE. In turn, these extra efforts may help such patients achieve higher levels of functional ability and a better quality of life by the end of the program.

Therefore, this study was conducted within a 12-week CR exercise program to determine the reciprocal effects of initial SE on functional ability and health-related quality of life, as well as the reciprocal effects of participation in 12 weeks of CR on SE, functional ability, and health-related quality of life.

Methods

Participants

All participants in this study were advised to undertake CR by their physicians. Participation in the study was voluntary, and all participants provided written informed consent. Of the 173 new entrants to the CR program, 170 agreed to take part in the study. This study complied with ethical guidelines for research involving human subjects and was approved by the University of Regina Research Ethics Board.

Of the 170 study participants, 64 dropped out of the CR program before the end of the session, and thus 106 participants completed the program (62% of population). Reasons given for withdrawal from the program included illness, too busy, inconvenient times, and exercising elsewhere. The dropout rate of 38% was consistent with the dropout rates of 38% reported by Foster et al. (1995) and 27% reported by Fridlund, et al. (1991) in similar studies. Those participants who did drop out were significantly younger (mean age 57 ± 12 years compared to 64 ± 9 years, $p = .001$) and healthier (41% attending for risk reduction compared to 21%, $p = .005$) than those who did not drop out. These findings are consistent with the findings of Engebretson et al. (1999), who also reported younger and healthier CR dropouts. A further discussion of compliance in CR programs can be found in Hamilton & Haennel (2002).

Demographic data is presented in Table 1. The participants were mostly male (68%) with a mean age of 64 ± 9 years. The majority of participants (84%) were in Class I of the New York Heart Association (NYHA) functional class, meaning their functional ability was not limited due to cardiovascular disease. The most common reason given by participants for attending the CR program was risk reduction (21%); 14.2% of the participants were attending the program because of MI; another 14.2% of participants were attending because of cardiac ischemia; and 11% of participants

were attending because of ECG abnormalities. Those participants attending the program for risk reduction all had two or more risk factors for heart disease. There were no differences in any variables between participants who had experienced a cardiac event and those who were attending for the purpose of risk reduction.

Procedures

This study was conducted at a physician-supervised, community-based cardiac rehabilitation program. Participants entering the CR exercise program were

Table 1
Demographic Characteristics of Participants
(N = 106)

Characteristics		N	%
Gender	Male	72	67.9
	Female	34	32.1
Age Tertile	35-56 years	22	20.8
	57-67 years	44	41.5
	68-80 years	40	37.7
NYHA	Class I	89	84.0
	Class II	15	14.2
	Class III	2	1.9
	Class IV	0	0.0
Diagnosis	MI	15	14.2
	CABG	5	4.7
	PTCA	5	4.7
	MI+CABG	10	9.4
	MI+PTCA	9	8.5
	MI+CABG+PTCA	4	3.8
	Ischemia/Angina	15	14.2
	Risk Reduction*	22	20.8
	CAD+COPD	2	1.9
	ECG Abnormalities	12	11.3
	Stroke	3	2.8
	Valve Disease/ Replacement	2	1.9
Other**	2	1.9	

NYHA: New York Heart Association Functional Classification; MI: Myocardial Infarction; CABG: Coronary Artery Bypass Graft; PTCA: Percutaneous Transluminal Coronary Angioplasty; CAD: Coronary Artery Disease; COPD: Chronic Obstructive Pulmonary Disease.

*Has two or more risk factors for heart disease.

**hypertrophic cardiomyopathy + pacemaker, valve disease + pacemaker.

given an individualized exercise prescription based on guidelines established by the American College of Sports Medicine (ACSM, 1995). Exercise sessions consisted of 40 minutes of self-paced aerobic exercise such as walking, cycling, and rowing, and circuit weight training. Participants attended sessions two to three times per week on non-consecutive days for 12 weeks. Each session was preceded and followed by 10 minutes of group warm-up and cool-down exercises led by a qualified instructor; these exercises consisted of low-intensity aerobic movements and light stretching.

Walk tests and questionnaires were completed by the participants with the assistance of an ACSM-certified exercise specialist at 0, six, and 12 weeks into the CR program. Questionnaires were explained, then given to participants to take home. When necessary, the principle investigator was available to assist participants with the completion of the questionnaires.

Instruments

Cardiac exercise self-efficacy instrument (CESEI)

The Cardiac Exercise Self-Efficacy Instrument (CESEI) is a 16-item, self-administered questionnaire developed specifically to measure SE for exercise in a CR population (Hickey, Owen & Fromen, 1992) and can be found in Appendix A. A panel of experts in CR and SE established the content validity of the questionnaire. Known-groups validity was established by a t-test that compared the mean CESEI scores of 54 marathon runners to the scores of 370 outpatient CR program participants. Initial CESEI scores were able to predict subsequent exercise goals attained of a separate group of 101 outpatient CR participants ($r=0.53$, $p<0.001$) (mean age 61 years, 79% male). Reliability was supported by an internal consistency of $r=.90$, and a test-retest reliability (three days apart) of $r=.87$. We concluded that these validity and reliability data supported the use of the CESEI to assess SE for exercise in a CR exercise program. Each question asks the participant to rate his or her level of confidence regarding a certain exercise-related item, such as the ability to perform warm-up and cool-down exercises, the ability to measure heart rate, the ability to endure strenuous and moderate exercise, and the ability to schedule exercise into a busy day. The questionnaire uses a five-point response scale with "1" representing the lowest and "5" the highest efficacy rating. The CESEI score is obtained by adding the scores for each question together to obtain a total SE score. Possible SE scores range between 15 and 75, with higher scores representing higher levels of SE.

Duke Activity Status Index (DASI)

The Duke Activity Status Index (DASI) is a 12-item, self-administered questionnaire developed by Hlatky et al. (1989) to measure functional ability, and can be found in Appendix B. Each question asks if the respondent is

able to perform such activities as bathing and dressing, walking indoors and outdoors, climbing stairs, housework, yardwork, and recreational activities such as basketball or tennis. Every question has a pre-assigned value that increases with the difficulty of the task in question (e.g. the ability to bathe, dress, and use the toilet without difficulty is given a score of 2.75, while ability to participate in strenuous sports like tennis or basketball is given a score of seven). The respondent is given full marks for a question if he or she reports the ability to perform an activity "without difficulty" while a mark of zero is assigned if the respondent reports having difficulty performing the activity or being unable to perform the activity. Scores may range from 0 (those who cannot bathe or dress themselves) to 57.7 (those who can perform all listed activities without difficulty). Hlatky et al. reported significant correlation between the DASI total score and peak oxygen uptake in both the DASI development sample and an independent sample. Nelson et al. (1991) found that the DASI discriminated between the functional status of patients afflicted by heart disease of varying severity. Further, Jaeger, Hlatky, Paul, and Gortner (1994) suggested that the DASI could be used post-operatively to assess recovery, and Mark et al. (1994) reported that the DASI was the single most important predictor of employment status one year after cardiac catheterization. These results suggest that the DASI is a brief, valid, and reliable measure of functional ability. The DASI was scored according to standard procedures with one exception: the responses to the DASI question regarding the participant's ability to have sexual relations was not included in this study's analysis because approximately 25% of the participants declined to answer. This question has an assigned value of 5.25 and, therefore, the maximum total DASI score in this study was 52.45.

Six-minute walk test (6MW)

The six-minute walk test (6MW) is a simple, safe, and inexpensive test that uses an exercise mode relevant to everyday activities. A thorough description of the 6MW procedure can be found elsewhere (Steele, 1996; Hamilton & Haennel; 2000). The 6MW is a good measure of functional exercise ability because it is self-paced and submaximal in nature (Steele, 1996). The 6MW is also well-accepted by patients, easily administered, and easily reproduced (Cahalin, Mathier, Semigran, Dec & DiSalvo, 1996; Guyatt, 1987; Guyatt, Sullivan et al., 1985; Guyatt, Thompson et al., 1985). Additionally, the 6MW shows some correlation with other measures of exercise capacity and with self-reported measures of functional status (Bauman & Arthur, 1997; Cahalin et al., 1996; Delahaye et al., 1997; Redelmeier, Bayoumi, Goldstein & Guyatt, 1997). Walk tests are routinely conducted on participants upon their entry to a CR program, and an earlier study found

that the total distance covered in meters during the 6MW was a valid and reliable test of functional ability in a CR population (Hamilton & Haennel, 2000).

Walk tests were conducted at the same time of day and by the same investigator for each patient at zero, six, and 12 weeks into the CR program. Each day, patients participated in a 10-minute group aerobic warm-up prior to performing the walk test. Walks were conducted over a pre-measured, 98.62 meter rectangular path in an enclosed gymnasium, timed with a stopwatch, and strictly administered according to a standardized written protocol adapted from Steele (1996). Patients were instructed to cover as much ground as possible in six minutes and were allowed to use mobility aids when necessary. Participants could slow down or stop, but the clock continued to run and participants were expected to resume walking as soon as possible. Eye contact was made on each lap, but no verbal encouragement was provided. Early work by Guyatt and colleagues (Guyatt, Sullivan et al., 1985; Guyatt, Thompson, et al., 1985) determined that a learning effect was evident in the 6MW; walking distance improved significantly between the first walk and third walk before plateauing in subsequent walks. To control this learning effect and to establish a stable baseline, when participants entered the CR program 6MWs were performed on three consecutive days. The best distance achieved by a participant during the first three walks was recorded as the participant's initial walking distance. The complete testing protocol is described in detail elsewhere (Hamilton & Haennel, 2000).

Medical Outcomes Trust Short Form (SF-36)

The SF-36 Health Survey is a comprehensive, short-form, health-related quality of life (HRQL) questionnaire that has been proven to be valid and reliable for many populations (Ware, 1993). The SF-36 measures an individual's health status through eight multi-item scales containing two to 10 questions each, and compares current health to health one year ago with one additional question. The internal consistency of the SF-36 has been evaluated by correlating each item with its scale; all items were found to have an $r \geq .40$. Item discriminant validity was evaluated by ensuring that each item correlated significantly higher (two standard errors or more) with its hypothesized scale compared to another scale. The questions have answers ranging from a one to six Likert scale to yes/no answers. Raw scores are summed across questions in the same scale, and transformed to a 0 to 100 scale, with a higher score indicating a better health state. Analysis was done on the transformed scores for each scale and the total score.

Statistical Analysis

Results were analyzed using the Statistical Package for Social Sciences (SPSS 9.0, Chicago, IL). In this paper, data

are expressed as mean \pm standard deviation (SD) unless otherwise indicated. Significance was set at the 0.05 level of probability for all analyses. Because age and gender are thought to influence SE and functional ability (Lavie & Milani, 1995a & 1995b; Schuster & Waldron, 1991), preliminary analysis was done to determine the effects of age and gender on the outcome measures in this study. Repeated measures multivariate analysis of variance (MANOVA) using age and gender as independent variables and scores from the CESEI, DASI, 6MW, and SF-36 as dependent variables confirmed the significant effects of age ($p = 0.001$) and gender ($p = 0.002$). Details of these age and gender effects are discussed elsewhere (Hamilton & Haennel, 2000 & 2001). Due to these effects, age and gender were used as covariates in all subsequent analyses. To test the effect of SE on outcomes, the independent (grouping) variable was high or low initial SE for exercise, measured by the CESEI (Hickey et al., 1992). The dependent variables were functional ability, as measured by the 6MW test (Guyatt et al., 1985) and the DASI (Hlatky et al., 1989), and HRQL, as measured by the SF-36 (Ware, 1993). SE for exercise was also measured at six weeks and 12 weeks, and used as a continuous dependent variable when looking at the change in SE over time. Repeated measures MANOVA were performed with both absolute and change (Δ) variables to determine changes in functional ability, HRQL, and SE at different time periods throughout the CR program, and between SE groups. Where repeated-measures analysis violated the sphericity assumption, the Greenhouse-Geisser correction factor was applied. Where significant differences were found, post-hoc analyses of variance (ANOVAs) were done using the Bonferroni adjustment for multiple comparisons (Zar, 1999).

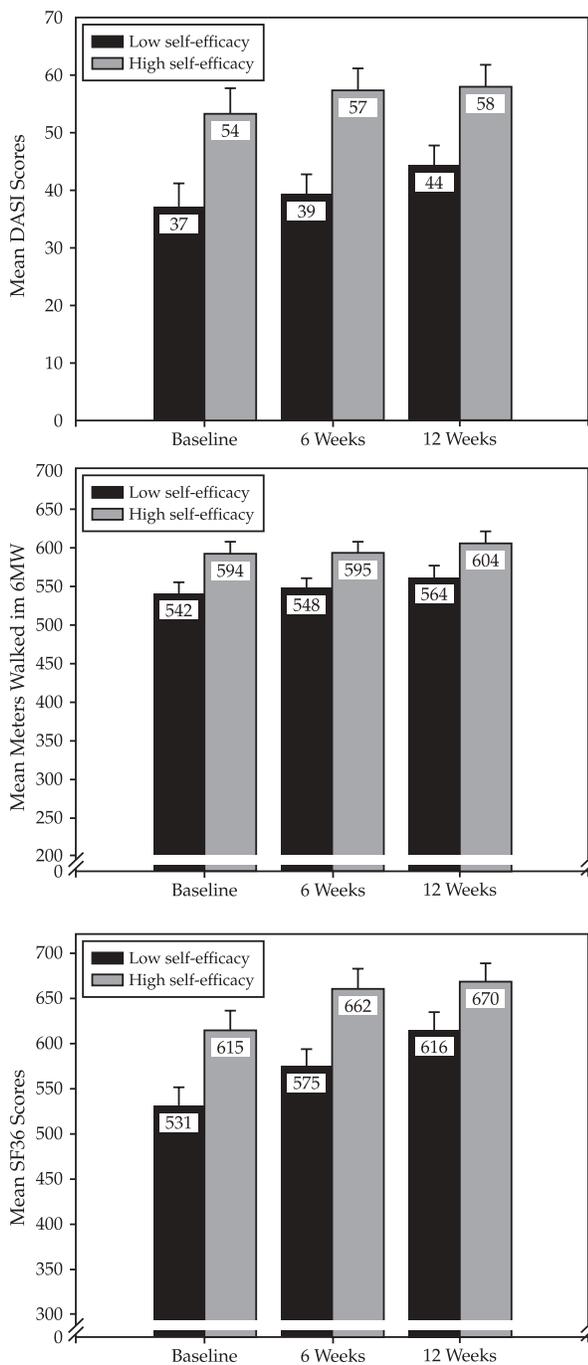
Results

The Effect of Initial Self-Efficacy

To test the relationship between the initial level of SE and the outcomes of functional ability and HRQL, three groups of approximately equal size were created according to participants' baseline scores on the CESEI questionnaire. Mean scores (\pm SD) for the groups were: low SE = 44.99 ± 5.70 ; moderate SE = 55.60 ± 2.36 ; and high SE = 65.62 ± 4.40 . The difference between groups was significant ($p < 0.000$). The middle group was removed (for this analysis only) to leave two distinct groups of high SE and low SE. Repeated-measures MANOVA was used to compare the high and low SE groups on the 6MW, DASI, and SF-36 at the three data collection times of zero, six, and 12 weeks.

SE was higher in males than females ($p = 0.004$), and was also higher in younger participants than older participants ($p = 0.011$). There were significant differences between high and low SE groups in all

Figure 1

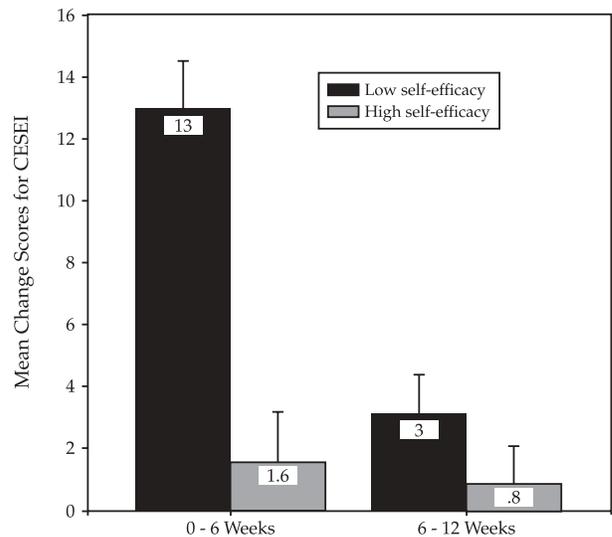


Mean (\pm SEM) scores on the Duke Activity Status Inventory (DASI); the six-minute walk test (6MW); and the Medical Outcomes Trust Short Form (SF36) for high and low self-efficacy groups. The overall difference between groups was significant for each measure ($p < 0.000$). Individual differences at each time period show a similar, but non-significant trend of higher scores for the group with high initial self-efficacy.

outcomes ($p = 0.01$). Follow-up ANOVAs showed that the high SE group had better functional ability (DASI: $p = 0.002$; 6MW: $p = 0.02$) and HRQL (SF-36: $p = 0.006$) than the low SE group. Specific subscales of the SF-36 exhibiting differences were vitality ($p < 0.001$), physical function ($p < 0.001$), general health ($p = 0.001$), bodily pain ($p = 0.009$), and role function physical ($p = 0.030$). Although time did not interact significantly with group, a comparison of mean scores and visual graphing (Figure 1) reveals that participants with high SE had higher scores on all variables at each time period than participants with low SE.

Further analysis was conducted with Δ variables (computed as the difference between the initial scores and the scores at six and 12 weeks) to explore the change in the outcome measures over time between high and low SE groups. Δ CESEI was the only variable to display a significant difference between high and low SE groups ($p < 0.001$). The group with low initial SE experienced a larger increase in self-efficacy than the group with high initial SE, with the largest increase occurring in the first six weeks (Figure 2).

Figure 2



The mean (\pm SEM) change in self-efficacy as assessed by the Cardiac Exercise Self-Efficacy Instrument (Δ CESEI) by high and low initial self-efficacy (SE) groups at two time periods. There was a significant difference between groups ($p = 0.013$), and also a significant interaction between time and groups ($p = 0.022$). The group with low initial SE experienced a larger increase in SE in the first six weeks than in the second six weeks of CR, and larger increases in SE at both times than the group with high initial SE.

Outcomes of CR

Repeated-measures MANOVA tested the changes in SE, functional ability and HRQL over the 12 weeks of CR and found significant increases over time ($p = 0.004$). Follow-up ANOVAs and within-subjects contrasts revealed that the largest increase for the CESEI ($p = 0.004$), the 6MW ($p = 0.006$), and the SF-36 ($p = 0.014$) occurred in the first six weeks; smaller, non-significant increases occurred in each of these variables in the second six weeks. The DASI showed a similar trend over time; however, the differences were not large enough to be significant in either time period (Figure 3).

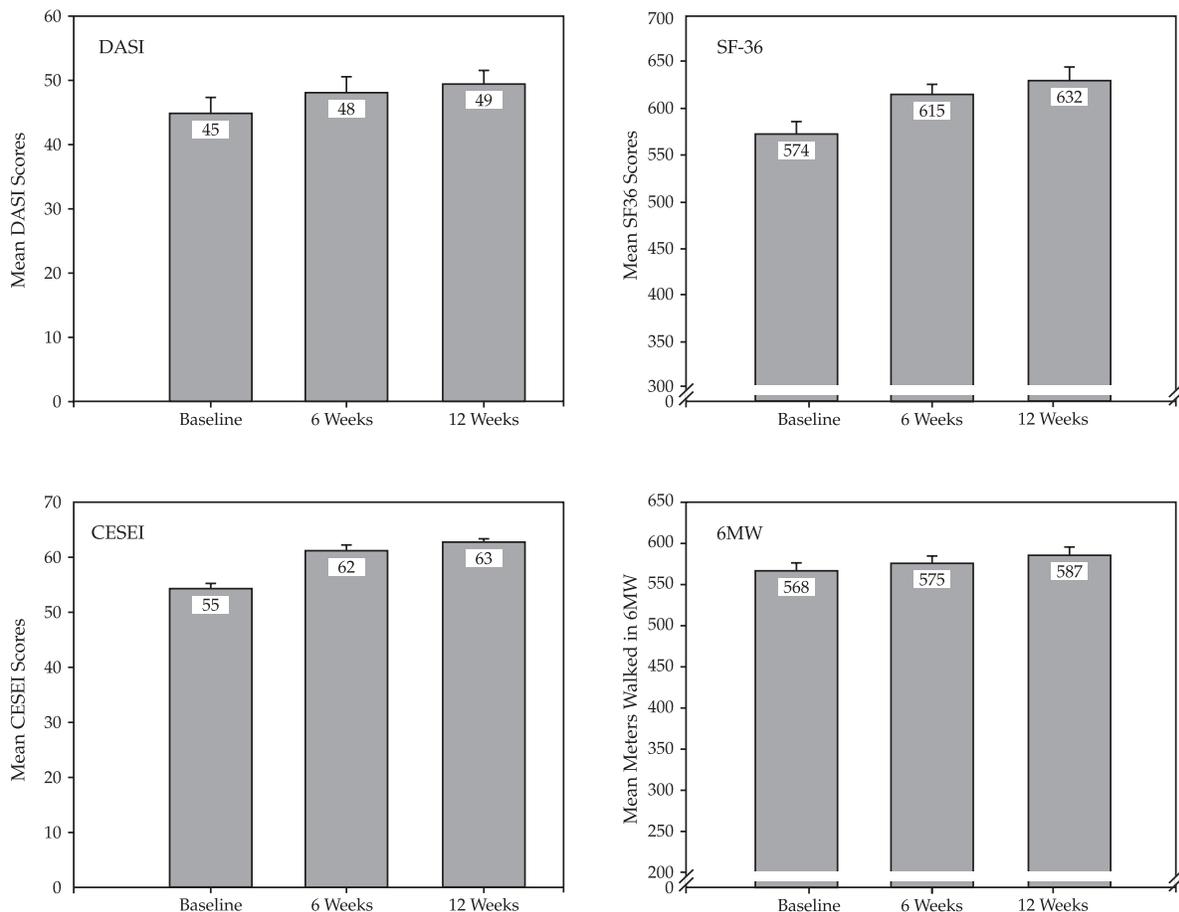
Discussion

The Effect of SE on Outcomes

Participants who entered the CR program with high SE for exercise had higher functional ability and HRQL

throughout the program than those with low initial SE. The subjective measure of functional ability (the DASI) was found to have a larger difference between groups than the objective measure (the 6MW). The reason for this finding could be that those who are confident in their ability to exercise are also confident in their ability to perform everyday functional tasks, and this confidence is greater than their actual ability. Bandura's suggestion that confidence in one's ability to perform a task is more important than one's actual physical capabilities (1986) is an idea that supports this premise. This finding is also corroborated by the results of other studies of cardiac populations. SE predicted physical function in 198 coronary artery disease patients six months after coronary catheterization (Sullivan et al., 1998), and was a better predictor of functional status in 125 men who had undergone a coronary artery bypass graft procedure than any other psychosocial or physical measure (Allen et al., 1990). Ewart (1989)

Figure 3



Mean (\pm SEM) scores observed at the three times during CR. DASI = Duke Activity Status Inventory, CESEI = Cardiac Exercise Self-Efficacy Instrument; 6MW = six-minute walk test; and SF36 = Medical Outcomes Trust Short Form. The DASI and 6MW measure functional ability, CESEI measures self-efficacy for exercise in CR, SF36 measures health-related quality of life. Note (non-significant) trend for increases in all outcomes over time.

found that exercise SE predicted return to normal activities after MI more accurately than actual medical status, and Ewart, Stewart, Gillilan, and Kelemen (1986) found that pre-training SE judgments predicted post-test strength gains even after controlling for baseline strength, type of training, and frequency of participation. Jeng and Braun (1995; 1997) found positive correlations between exercise SE and treadmill performance, VO_{2max} , bike performance, stamina, and quality of life, and a negative correlation with fatigue throughout a 12-week CR exercise program.

In the present study, the comparison of the change in outcomes over time between high and low SE groups showed a significant difference between groups in the change in SE over time, but not in functional ability or HRQL. In other words, participants who had the lowest initial SE made the biggest gains in SE during the 12-week study. These findings are consistent with results reported by Jeng and Braun (1997) who found no correlation between initial SE and the change in outcome variables, but found a negative relationship between SE at baseline and the improvement in SE after 12 weeks of CR. One possible explanation for this finding may be that low initial SE simply allows for a bigger gain in SE, due to a ceiling effect of the questionnaire. The CESEI uses a rating scale of one to five, where "1" indicates "no confidence" and "5" indicates "very confident". Hypothetically, if the patient feels very confident initially in all exercise activities included in the CESEI, they will achieve the maximum possible score on this questionnaire. They may subsequently experience gains in SE, but the questionnaire would not be able to measure those gains. Another possible reason for this finding may be that those with low SE for exercise may have had little experience with exercise in the past. Once they participate in the exercise program, and especially if their exercise experience is a positive one, their SE rises. Those with initially high exercise SE may already be familiar with exercise, so the effect of a positive exercise experience has less impact on them than on those who have not had extensive experience with exercise. This explanation is plausible because it illustrates part of Bandura's (1982; 1986; 1994) theory of SE, namely that successful performance experiences have the largest influence on SE.

The significance of these findings is that patients who enter a CR program with low SE have a greater capacity for improving their SE than those who already have high SE. However, even though both groups made overall gains in all outcome measures over the study period, those with high initial SE remained higher in SE, HRQL, and functional ability after 12 weeks than those with low initial SE. This finding provides support for the usefulness of pre-screening

patients for SE at the beginning of a CR program. Perhaps patients with low SE would benefit from longer rehabilitation time or special attention from CR staff. In addition to potentially raising SE levels, such treatments may also help participants to attain higher levels of functional ability and HRQL by the end of the program.

Outcomes of CR

This study also found a positive trend in SE, functional ability, and HRQL of the participants over the 12 weeks of CR. No control group was available because the subject pool included all the participants of the CR exercise program. However, because all outcomes changed, both physical and psychological, with both subjective and objective measurements, and occurred in both participants who had, and those who had not, experienced a cardiac event, the assumption that the CR program is at least partially responsible for these changes is plausible. This supposition is supported by the findings of Kugler et al. (1990), who documented larger improvements in aerobic fitness in hospital-supervised exercise than home exercise after a MI, and by Fridlund et al. (1991), who reported less chest pain and breathlessness in the intervention (CR) versus the control group of post-MI patients. More supporting evidence for the assumption that CR influences health status is provided by the study of Denollet (1993), who reported that several meta-analyses found that participation in a CR program significantly reduced mortality by 20 to 30%.

The overall positive effects of the CR exercise program on physical and psychological outcomes are similar to those reported in other studies. Functional improvements as a result of CR have been reported as an increase in aerobic fitness (Kugler et al., 1990; Jeng & Braun, 1997), physical capacity (Fridlund et al., 1991), and power output (Foster et al., 1995). Favourable changes in quality of life following CR have also been documented by Engebretson et al. (1999), Foster et al. (1995), Jeng and Braun (1997), Lavie and Milani (1995a; 1995b) and Lavie et al. (1999). Bandura (1977; 1982) asserted that SE perceptions could be changed by direct, graduated exposure to a related activity, which results in performance accomplishment. The improvement in SE over the course of the CR program demonstrated in this study supports Bandura's theory. Although several studies reviewed by Denollet (1993) did not find psychological changes to be a result of CR, Foster et al. (1995), Jeng and Braun (1997), and Oldridge and Rogowski (1990) did find that a CR exercise program increased cardiac patients' SE for exercise.

There are three main limitations to the present study. First, there was no control group. Therefore the positive outcomes found after participation in CR cannot

conclusively be attributed to the rehabilitation program. However, the results of this study do provide some support for an already considerable body of evidence that attests to the beneficial effects of participation in CR exercise programs. Second, the study was only conducted over a time period of 12 weeks. Therefore, it is not known how long the benefits of CR continue to accrue or how long participation in CR continues to increase a participant's SE for exercise. Third, the possible ceiling effect of the SE questionnaire discussed previously may have limited the results of this study. This hypothesis should be tested against other self-efficacy instruments in future studies.

Conclusion

To help participants derive the greatest benefit from CR, it is important to identify factors that can influence the desired outcomes of CR. This study found that participants with high initial SE for exercise displayed higher functional ability and HRQL than those with low SE throughout the first 12 weeks of a CR exercise program. In addition, all participants in the CR exercise program exhibited continuous positive changes in SE, functional ability, and HRQL throughout the 12 weeks. Participants with low initial SE gained the most SE during the study. Consequently, this study has

demonstrated the reciprocal nature of SE for exercise and outcomes of CR. Confirming Bandura's (1982; 1986; 1994) theory, when SE for a behaviour is high, the outcomes of performing that behaviour are better than when SE is low. Additionally, as the behaviour continues to be performed, SE for the behaviour continues to improve. In practical terms, pre-screening to identify CR participants with low initial SE may provide a more comprehensive picture of the individual's psychological state and rehabilitation prognosis. The participants with low SE could be given extra attention in the initial several weeks, or be allowed a longer rehabilitation time to increase SE levels through positive experiences. By the end of the program, these participants may also gain the additional benefits of higher levels of functional ability and HRQL. We recommend further research into the effectiveness of pre-screening new CR clients for SE, and the usefulness of this information in formulating the individual exercise prescription. ♥

Acknowledgements

The authors wish to thank the staff of the Dr. Paul Schwann Cardiac Rehabilitation Program for their help with data collection, and the Regina Qu'Appelle Health Region for continuing support of the Cardiac Rehabilitation Program.

Appendix A

Cardiac Exercise Self-Efficacy Instrument*

Circle the number that best describes how much confidence you have in performing each of the activities below.

	No confidence	Very little confidence	Some confidence	Confident	Very confident
<i>Warming up before exercise</i>	1	2	3	4	5
<i>Exercising without getting chest pain</i>	1	2	3	4	5
<i>Knowing when I have exercised too much and need to stop</i>	1	2	3	4	5
<i>Exercising when it is inconvenient</i>	1	2	3	4	5
<i>Knowing what my heart rate should be before and after exercise</i>	1	2	3	4	5
<i>"Cooling down" after exercise</i>	1	2	3	4	5
<i>Fitting exercise into a busy day</i>	1	2	3	4	5
<i>Enduring strenuous exercise</i>	1	2	3	4	5
<i>Knowing what exercise is healthy for me</i>	1	2	3	4	5
<i>Knowing when I can increase my exercise level</i>	1	2	3	4	5
<i>Enduring moderate exercise</i>	1	2	3	4	5
<i>Taking my heart rate before and after exercise</i>	1	2	3	4	5
<i>Resuming my pre-hospital level of activity</i>	1	2	3	4	5
<i>Enduring light exercise</i>	1	2	3	4	5
<i>Exercising for at least 20 minutes three times a week</i>	1	2	3	4	5
<i>Exercising at home by myself</i>	1	2	3	4	5

*From Hickey, M.L., Owen, S.V., & Froman, R.D. (1992).

Instrument development: Cardiac diet and exercise self-efficacy. *Nursing Research*, 41, 347-51

Appendix B

Duke Activity Status Inventory

Please check the box that best describes how well you can perform each of the activities below.

Can you...	Without difficulty	With some difficulty	Cannot do it	Did not start for other reasons
Take care of yourself; that is eating, dressing, bathing or using the toilet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk indoors, such as around your house?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk a block or two on level ground?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climb a flight of stairs or walk up a hill?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Run a short distance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do light work around the house like dusting or washing dishes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do moderate work around the house like vacuuming, sweeping floors, or carrying in groceries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do heavy work around the house like scrubbing floors, or lifting or moving heavy furniture?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do yardwork like raking leaves, weeding or pushing a power mower?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have sexual relations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participate in moderate recreational activities like golf?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participate in strenuous sports like swimming, singles tennis, football, basketball or skiing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* Hlatky, M.A., Boineau, R.E., Higginbotham, M.B., Lee, K.L., Mark, D.B., Califf, R.M., Cobb, F.R., & Pryor, D.B. (1989). A brief self-administered questionnaire to determine functional capacity (The Duke Activity Status Index). *American Journal of Cardiology*, 64, 651-654.

References

- Allen, J.K., Becker, D.M., & Swank, R.T. (1990). Factors related to functional status after coronary artery bypass surgery. *Heart and Lung*, 19, 337-43.
- American College of Sports Medicine. (1995). *ACSM's Guidelines for Exercise Testing and Prescription*, 5th Ed. Baltimore: Williams and Wilkins.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review*, 84, 191-215.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37, 122-147.
- Bandura, A. (1986). *Social foundations of thought and action: A Social Cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1994). Self-efficacy. In V.H. Ramachandran (Ed.), *Encyclopedia of human behaviour* (Vol. 4, pp. 71-81). San Diego: Academic Press.
- Bauman, H.C., & Arthur, H.M. (1997). Relationship between functional exercise capacity and general quality of life in nonsurgical patients with lower-extremity peripheral artery disease. *Journal of Vascular Nursing*, 15, 21-28.
- Cahalin, L.P., Mathier, M.A., Semigran, M.J., Dec, W., DiSalvo, T.G. (1996). The six-minute walk test predicts peak oxygen uptake and survival in patients with advanced heart failure. *Chest*, 110, 325-332.
- Delahaye, N., Cohen-Solal, A., Faraggi, M., Czitrom, D., Foutl, J.M., Daou, D. et al. (1997). Comparison of left ventricular responses to the six-minute walk test, stair climbing, and maximal upright bicycle exercise in patients with congestive heart failure due to idiopathic dilated cardiomyopathy. *American Journal of Cardiology*, 80, 65-70.
- Denollet, J. (1993). Sensitivity of outcome assessment in cardiac rehabilitation. *Journal of Consulting and Clinical Psychology*, 61, 686-695.

- Engebretson, T.O., Clark, M.M., Niaura, R.S., Phillips, T., Albrecht, A., & Tilkemeier, P. (1999). Quality of life and anxiety in a phase II cardiac rehabilitation program. *Medicine & Science in Sports & Exercise*, 31, 216-23.
- Ewart, C.K. (1989). Psychological effects of resistive weight training: Implications for cardiac patients. *Medicine & Science in Sports & Exercise*, 21, 683-8.
- Ewart, C.K., Stewart, K.J., Gillilan, R.E., & Kelemen, M.H. (1986). Self-efficacy mediates strength gains during circuit weight training in men with coronary artery disease. *Medicine & Science in Sports & Exercise*, 18, 531-40.
- Ewart, C.K., Stewart, K.J., Gillilan, R.E., Kelemen, M.H., Valenti, S.A., Manley, J.D. et al. (1986). Usefulness of self-efficacy in predicting overexertion during programmed exercise in coronary artery disease. *American Journal of Cardiology*, 57, 557-61.
- Ewart, C.K., Taylor, C.B., Reese, L.B., & DeBusk, R.F. (1983). Effects of early postmyocardial infarction exercise testing on self-perception and subsequent physical activity. *American Journal of Cardiology*, 51, 1076-80.
- Foster, C., Oldridge, N.B., Dion, W., Forsyth, G., Grevenow, P., Hansen, M. et al. (1995). Time course of recovery during cardiac rehabilitation. *Journal of Cardiopulmonary Rehabilitation*, 15, 209-15.
- Franklin, B.A., Gordon, S., & Timmis, G.C. (1992). Amount of exercise necessary for the patient with coronary artery disease. *American Journal of Cardiology*, 69, 1426-32.
- Fridlund, B., Hogstedt, B., Lidell, E., & Larsson, P.A. (1991). Recovery after myocardial infarction. Effects of a caring rehabilitation programme. *Scandinavian Journal of Caring Sciences*, 5, 23-32.
- Guyatt, G. (1987). Use of the six-minute walk test as an outcome measure in clinical trials in chronic heart failure. *Heart Failure*, October-November, 211-217.
- Guyatt, G.H., Sullivan, M.J., Thompson, P.J., Fallen, E.L., Pugsley, S.O., Taylor, D.W., & Berman, L.B. (1985). The six-minute walk: A new measure of exercise capacity in patients with chronic heart failure. *Canadian Medical Association Journal*, 132, 919-922.
- Guyatt, G.H., Thompson, P.J., Berman, L.B., Sullivan, M.J., Townsend, M., Jones, N.L., & Pugsley, S.O. (1985). How should we measure function in patients with chronic heart and lung disease? *Journal of Chronic Diseases*, 38, 517-524.
- Hamilton, D.M., & Haennel, R.G. (2000). Validity and reliability of the six-minute walk test in a cardiac rehabilitation population. *Journal of Cardiopulmonary Rehabilitation*, 20, 156-164.
- Hamilton, D.M., & Haennel, R.G. (2001). The influence of age and gender on outcome expectations in cardiac rehabilitation [Abstract]. *Clinical and Investigative Medicine*, 24(suppl 3), S53.
- Hamilton, D.M., & Haennel, R.G. (2002). Predictors of compliance in a cardiac rehabilitation population [Abstract]. *Journal of Cardiopulmonary Rehabilitation*, 22(5), 373.
- Hickey, M.L., Owen, S.V., & Froman, R.D. (1992). Instrument development: Cardiac diet and exercise self-efficacy. *Nursing Research*, 41, 347-51.
- Hlatky, M.A., Boineau, R.E., Higginbotham, M.B., Lee, K.L., Mark, D.B., Califf, R.M. et al. (1989). A brief self-administered questionnaire to determine functional capacity (The Duke Activity Status Index). *American Journal of Cardiology*, 64, 651-654.
- Jaeger, A.A., Hlatky, M.A., Paul, S.M., & Gortner, S.R. (1994). Functional capacity after cardiac surgery in elderly patients. *Journal of the American College of Cardiology*, 24, 104-108.
- Jeng, C., & Braun, L.T. (1995). Instrument development and measurement of exercise self-efficacy in cardiac rehabilitation patients. *Progress in Cardiovascular Nursing*, 10, 28-35.
- Jeng, C., & Braun, L.T. (1997). The influence of self-efficacy on exercise intensity, compliance rate and cardiac rehabilitation outcomes among coronary artery disease patients. *Progress in Cardiovascular Nursing*, 12, 13-24.
- Kugler, J., Dimsdale, J.E., Hartley, L.H., & Sherwood, J. (1990). Hospital supervised vs home exercise in cardiac rehabilitation: Effects on aerobic fitness, anxiety, and depression. *Archives of Physical Medicine & Rehabilitation*, 71, 322-5.
- Lavie, C.J., & Milani, R.V. (1995a). Effects of cardiac rehabilitation and exercise training on exercise capacity, coronary risk factors, behavioural characteristics, and quality of life in women. *American Journal of Cardiology*, 75, 340-3.
- Lavie, C.J., & Milani, R.V. (1995b). Effects of cardiac rehabilitation programs on exercise capacity, coronary risk factors, behavioural characteristics, and quality of life in a large elderly cohort. *American Journal of Cardiology*, 76, 177-9.
- Lavie, C.J., Milani, R.V., Cassidy, M.M., & Gilliland, Y.E. (1999). Effects of cardiac rehabilitation and exercise training programs in women with depression. *American Journal of Cardiology*, 83, 1480-3, A7.
- Mark, D.B., Lam, L.C., Lee, K.L., Clapp-Channing, N.E., Williams, R.B. Jr., Pryor, D.B. et al. (1994). Identification of patients with coronary disease at high risk for loss of employment: A prospective validation study. *Circulation*, 86, 1485-1494.
- McAuley, E. (1992). Understanding exercise behaviour. A self-efficacy perspective. In G.C. Robers (Ed.), *Motivation in Sport and Exercise*. Champaign, Illinois.
- Nelson, C.L., Herndon, J.E., Mark, D.B., Pryor, D.B., Califf, R.M., & Hlatky, M.A. (1991). Relation of clinical and angiographic factors to functional capacity as measured by the Duke Activity Status Index. *American Journal of Cardiology*, 68, 973-975.
- Oldridge, N.B., & Rogowski, B.L. (1990). Self-efficacy and in-patient cardiac rehabilitation. *American Journal of Cardiology*, 66(3), 362-5.
- Redelmeier, D.A., Bayoumi, A.M., Goldstein, R.S., & Guyatt, G.H. (1997). Interpreting small differences in functional status: The six minute walk test in chronic lung disease patients. *American Journal of Respiratory and Critical Care Medicine*, 155, 1278-1282.
- Schuster, P.M., & Waldron, J. (1991). Gender differences in cardiac rehabilitation patients. *Rehabilitation Nursing*, 16, 248-53.
- Steele, B. (1996). Timed walking tests of exercise capacity in chronic cardiopulmonary illness. *Journal of Cardiopulmonary Rehabilitation*, 16, 25-33.
- Sullivan, M.D., LaCroix, A.Z., Russo, J., & Katon, W.J. (1998). Self-efficacy and self-reported functional status in coronary heart disease: A six-month prospective study. *Psychosomatic Medicine*, 60, 473-8.
- Taylor, C.B., Bandura, A., Ewart, C.K., Miller, N.H., & DeBusk, R.F. (1985). Exercise testing to enhance wives' confidence in their husbands' cardiac capability soon after clinically uncomplicated acute myocardial infarction. *American Journal of Cardiology*, 55, 635-8.
- Taylor, C.B., Houston-Miller, N., Ahn, D.K., Haskell, W., & DeBusk, R.F. (1986). The effects of exercise training programs on psychosocial improvement in uncomplicated postmyocardial infarction patients. *Journal of Psychosomatic Research*, 30, 581-7.
- Vidmar, P.M., & Rubinson, L. (1994). The relationship between self-efficacy and exercise compliance in a cardiac population. *Journal of Cardiopulmonary Rehabilitation*, 14, 246-254.
- Ware, J.E. (1993). *SF-36 Health Survey: Manual & Interpretation Guide*. Boston, MA: Medical Outcomes Trust.
- Zar, J.H. (1999). *Biostatistical analysis* (4th ed.). Upper Saddle River, NJ: Prentice Hall.

Évaluation par les usagers de l'intervention infirmière dans le cadre des activités d'un réseau de cliniques de prévention des maladies cardiovasculaires

Maud-Christine Chouinard, inf., PhD (c), Antoine Lutumba Ntetu, inf., PhD, René Lapiere, BSc, Diane Gagnon, inf., et Marie-Hélène Hudon, inf., MEd. (c)

Cette étude visait à faire une évaluation de processus des services dispensés par les infirmières dans le cadre d'un réseau de cliniques de prévention des maladies cardiovasculaires selon la perspective des usagers. Elle cherchait à répondre aux questions suivantes : Quel est le degré de satisfaction envers les services infirmiers reçus? Quelles perceptions ont les usagers des services, des interactions avec l'infirmière et des changements dans leur santé? Deux approches ont été utilisées : 1) enquête par questionnaire à laquelle ont répondu 1137 personnes (875 usagers et 262 accompagnateurs); 2) 19 entrevues individuelles inspirées de l'approche axée sur l'utilisation de Patton (1997). Les résultats démontrent une

satisfaction supérieure à 90 % pour la rencontre de groupe, notamment vis-à-vis la compétence du formateur, le contenu et le climat de la rencontre. Le format privilégié est la rencontre individuelle. Les rencontres devraient être plus fréquentes dans les premiers mois. L'importance de la modification des facteurs de risque est reconnue par tous et les usagers rapportent que les services les ont aidés à changer leurs comportements et à améliorer leur santé.

Mots clés : cardiovascular care, cardiovascular risk factors, program evaluation, patient education, qualitative studies

Adresse de correspondance : Maud-Christine Chouinard, Professeure Module des sciences infirmières et de la santé, Université du Québec à Chicoutimi, 555 boul. de l'Université, Chicoutimi, Québec G7H 2B1; Tél. : (418) 545-5011 poste 5344, Fax : (418) 545-5012, Courriel : maud-christine_chouinard@uqac.ca

Problématique

Au Québec, les maladies cardiovasculaires (MCV) constituent la première cause de mortalité, comptant pour 35 % des décès et pour près de 20 % de la somme des années potentielles de vie perdue. La région du Saguenay-Lac-Saint-Jean est l'une des plus touchées, avec une surmortalité pour les cardiopathies ischémiques chez les hommes et pour les infarctus du myocarde et les maladies vasculaires cérébrales chez les femmes.

Dans la lutte contre les MCV, le gouvernement du Québec s'était fixé comme objectif de réduire de 30 % la mortalité due à ces maladies d'ici 2002. Afin d'atteindre cet objectif au niveau régional, la Régie régionale de la santé et des services sociaux de la Région du Saguenay-Lac-Saint-Jean (RRSSS-02) avait adopté une stratégie pour une coordination efficace et une dispensation sécuritaire des services de prévention secondaire des MCV (RRSSS-02, 1995).

La création d'un Réseau régional de cliniques de prévention des MCV s'inscrivait dans le cadre de cette stratégie. Ce Réseau a comme mission d'optimiser et

d'harmoniser les soins et services en prévention secondaire des MCV afin de promouvoir la santé par une autoresponsabilisation des usagers. Il regroupe sept cliniques réparties à travers la région offrant des services accessibles à toute personne atteinte d'une MCV et à sa famille, à la suite d'une hospitalisation ou sur recommandation de son médecin traitant. Les services y sont dispensés par une équipe composée d'une infirmière, d'une diététiste et d'un médecin. Ceux assurés par l'infirmière consistent en : l'évaluation de la situation de santé de l'utilisateur et de ses facteurs de risque des MCV, la formulation d'objectifs de prise en charge, l'enseignement sur les facteurs de risque et les façons de les modifier, le suivi et le soutien à la personne dans son autoprise en charge et le suivi auprès de son médecin traitant.

Le fonctionnement du Réseau était effectif depuis février 1999. En septembre 2000, il devenait nécessaire de procéder à une évaluation de son efficacité conformément aux règles du Fonds pour l'adaptation des services de santé (FASS), l'organisme qui a subventionné son implantation. Un des aspects de l'évaluation devait porter sur la qualité et la quantité

des services infirmiers dispensés. Pour ce faire, un devis de recherche de type qualitatif s'avérait plus approprié afin d'obtenir des données sur l'expérience des usagers. Un tel devis semblait également plus indiqué dans la perspective où une réplique du programme serait envisagée.

Une approche de recherche ouvrant des perspectives intéressantes dans le domaine de l'évaluation de programme d'éducation à la santé est celle développée par Patton (1997; 2002) et connue sous le nom de l'*Utilization-Focused Approach (Approche axée sur l'utilisation)*. Elle consiste en une stratégie qui guide les modalités de l'évaluation en tentant de répondre aux préoccupations des principaux utilisateurs des résultats de l'étude. Il s'agit en fait de planifier l'évaluation de façon à ce qu'elle génère des informations en termes de résultats d'utilité pratique. Dans la présente étude, deux principaux groupes d'utilisateurs avaient été identifiés : le premier groupe était représenté par les décideurs, c'est-à-dire le FASS, le Ministère de la santé et des services sociaux du Québec (MSSSQ) et la RRSS-02; le deuxième groupe était constitué de l'ensemble des personnes qui avaient participé au développement du Réseau et celles qui y œuvraient. De façon plus précise, la présente étude tentait de répondre aux deux questions suivantes : 1) Quel est le degré de satisfaction global des usagers au regard des services infirmiers reçus dans le cadre des activités des cliniques ? 2) Quelles perceptions ont les usagers des services offerts, de leurs interactions avec l'infirmière, du degré d'accessibilité des services et des changements survenus dans leur état de santé ?

Recension des écrits

La prévention secondaire a pour but de prévenir ou de retarder la progression de la maladie chez la personne atteinte d'une MCV. Comme complémentaire aux approches médicales et chirurgicales traditionnelles, la prévention secondaire des MCV se révèle une stratégie efficace. Ses programmes peuvent avoir des objectifs variés, bien que la plupart visent à informer l'utilisateur sur les facteurs de risque, à lui apporter un soutien et un suivi professionnels dans son processus de prise en charge des facteurs de risque ou à lui offrir le soutien de pairs dans le cadre d'un groupe d'entraide. Ils peuvent également revêtir différentes formes : programmes de réadaptation cardiaque intensifs, séances d'enseignement de groupe, groupe d'entraide, enseignement en milieu hospitalier, suivi téléphonique, et suivi systématique de clientèles. Les stratégies d'intervention, qui s'avèrent particulièrement efficaces dans ce domaine, sont, entre autres, celles qui utilisent le développement des habiletés comportementales, l'autosurveillance, la signature de contrats d'entente, le soutien du conjoint, le suivi téléphonique ou par courrier postal, et le suivi systématique de clientèles.

L'importance du soutien social vis-à-vis l'adoption et le maintien de comportements de santé a aussi été mise en évidence (Chouinard & Robichaud-Ekstrand, 2003, in press; Cohen, Gottlieb, & Underwood, 2003).

De nombreux écrits américains et canadiens rapportent des expériences d'implantation de programmes de prévention secondaire des MCV. Certains de ces programmes se sont intéressés spécifiquement aux usagers coronariens, et plusieurs ont fait l'objet d'une évaluation formelle; les résultats obtenus suggèrent l'importance d'un suivi des usagers en période post-hospitalisation. Cependant, la plupart des études recensées ont été réalisées selon un devis expérimental quantitatif et les résultats obtenus, bien que donnant des indications évidentes sur l'efficacité de ces programmes, ne fournissent pas d'explications détaillées sur la façon dont les résultats ont été obtenus ni de points de vue des usagers au regard des soins.

Bien que les recherches portant sur l'évaluation des programmes mettent souvent l'accent sur des études d'impacts et de résultats, une évaluation des programmes, qui se veut complète, doit couvrir quatre aspects : 1) l'évaluation des besoins; 2) l'évaluation de processus; 3) l'évaluation des impacts, et 4) l'évaluation des résultats. L'évaluation de processus est particulièrement indiquée quand on veut avoir un *feedback* sur l'implantation du programme et sur la réponse du milieu, des participants ou du personnel. En permettant d'élucider la dynamique interne des opérations du programme, l'évaluation de processus devient particulièrement recommandée quand on cherche à mettre en évidence des éléments du programme à corriger, à maintenir ou à renforcer. L'organisation des services de santé reflète souvent une vision centrée sur les professionnels qui y œuvrent. Pour contrebalancer cette tendance, il est essentiel de tenir compte du point de vue des usagers des services dispensés lorsque l'on souhaite adapter les services à la réalité des personnes présentant un problème de santé chronique, tel qu'une MCV.

Quelques études portant sur l'évaluation de programme de prévention secondaire des MCV par des approches qualitatives de recherche ont pu être recensées. Ces études ont utilisées diverses méthodes de collecte des données : entrevues en profondeur, *conceptual modeling seminars*, focus group. Elles ont mis en évidence plusieurs éléments qui n'auraient pas pu être appréhendés par des études d'impacts seulement : qualité du programme offert ; problèmes de fonctionnement et divergence de vue dans des informations données par les différents professionnels de la santé ; fragmentation des services et absence d'une vision globale de la situation des usagers de la part des professionnels ; acceptabilité des soins dispensés par l'infirmière et difficultés à rejoindre les

usagers ayant le plus besoin des services offerts ; éléments positifs du programme et améliorations souhaitées.

De toutes les études recensées s'étant intéressées à évaluer des programmes de prévention secondaire des MCV, une seule eut recours à l'*Approche axée sur l'utilisation* pour évaluer un programme de suivi offert à des usagers cardiaques. Les résultats indiquèrent que les aspects du programme particulièrement appréciés par les usagers ont été : l'information donnée et le soutien apporté lors des rencontres ainsi que la participation du cardiologue aux séances d'information en groupe. Quelques recommandations ont été formulées : explorer en profondeur les questions posées par des participants, favoriser les échanges et entrecouper des séances par des pauses.

Toutes ces études démontrent les possibilités d'évaluation offertes par les approches de recherche qualitatives. Ces dernières permettent notamment d'explorer en profondeur les perceptions des bénéficiaires des services ainsi que celles des intervenants impliqués. Également, elles sont utiles pour évaluer la qualité ainsi que les forces et les lacunes des services offerts.

Méthodologie

L'élaboration de la méthodologie de cette étude s'est inspirée largement des principes de l'approche axée sur l'utilisation de Patton (1987). En référence à cette dernière approche, les décisions relatives aux considérations méthodologiques ont été arrêtées en concertation par l'équipe de recherche et les membres du Comité d'opérationnalisation du Réseau. La méthodologie a fait aussi appel à la triangulation visant l'utilisation de deux procédures (systématique-continue et ponctuelle à variabilité maximale) et de deux techniques de collecte des données (questionnaire et entrevue). Le projet a, au préalable, obtenu l'approbation du comité d'éthique de la recherche de l'hôpital régional de référence en soins cardiovasculaires.

La première procédure visait à répondre uniquement à la première question sur le degré de satisfaction des usagers au regard des services infirmiers reçus dans le cadre des activités des cliniques. Elle consista en une enquête réalisée de façon systématique et continue dès le début des activités du Réseau. Sur 895 personnes qui ont bénéficié de cet enseignement entre février 1999 et septembre 2000, 875 répondirent au questionnaire d'évaluation. À ce nombre s'étaient ajoutés les 262 accompagnateurs qui acceptèrent également de donner leur opinion. Le questionnaire comportait deux parties. La première comprenait huit énoncés repris sur une échelle de type Likert à quatre niveaux, allant de « très bien » à « inadéquat », en passant par « bien » et «

passable ». La deuxième contenait trois questions ouvertes invitant les répondants à se prononcer sur les aspects positifs et négatifs de l'enseignement reçu et à formuler des suggestions pour des améliorations. Des statistiques descriptives ont été effectuées afin de dégager l'information en réponse à la première partie du questionnaire. Quant aux données obtenues grâce à la deuxième partie du questionnaire, elles furent soumises à l'analyse de contenu pour identifier les facteurs qui auraient contribué à la satisfaction ou à l'insatisfaction des usagers.

Le devis qualitatif de type phénoménologique a soutenu la deuxième procédure de collecte des données de type ponctuel à variabilité maximale. Il a permis d'explorer en profondeur la satisfaction des usagers et aidé à trouver des réponses aux deux questions de recherche. Les répondants furent choisis par une procédure intentionnelle sur la base de leur diagnostic et de la durée de leur participation au programme (en début du processus, à six mois et à 12 mois) jusqu'à saturation théorique des données. L'échantillon final regroupa 19 personnes dont 13 femmes et six hommes (âge moyen = 57,5 ans) réparties de la manière suivante : six personnes avec un diagnostic d'insuffisance artérielle des membres inférieurs, cinq personnes avec un diagnostic d'infarctus du myocarde, quatre avec angine, deux cas de pontage aorto-coronarien, un cas d'hypertension artérielle et un cas d'insuffisance carotidienne. Au moment de l'enquête, sept répondants venaient de participer aux rencontres initiales (individuelle et de groupe), huit autres venaient de participer à la rencontre organisée à six mois et quatre venaient de bénéficier de l'ensemble des services après un an de suivi.

Les données furent recueillies par des entrevues semi-structurées en profondeur de durée variant entre 30 et 60 minutes. Avec l'accord des répondants, les entrevues, toutes réalisées par une même infirmière retenue pour son expérience en santé cardiovasculaire, furent enregistrées sur cassettes audio. Trois guides d'entrevue ont été nécessaires pour récolter les avis des différents répondants. Les guides d'entrevue comprenaient des questions sur les services en général, sur la rencontre individuelle initiale avec l'infirmière, sur la rencontre de groupe ainsi que sur les rencontres de suivi à six mois et à 12 mois. Les données recueillies furent analysées selon la procédure d'analyse de contenu en six séquences proposée par Colaizzi (1978) : 1) audition des entrevues, 2) dégagement des énoncés significatifs, 3) analyse de la signification des énoncés retenus, 4) regroupement des unités de signification en thèmes plus globaux, 5) rassemblement des résultats de l'analyse et description exhaustive du phénomène à l'étude et 6) validation, auprès de quelques participants, de la description ainsi obtenue. La

dernière étape de cette procédure n'a pas été complétée, faute de temps. Pour pallier à cette lacune, une méthode de validation continue des données a été utilisée faisant appel à plusieurs analystes, soit les cinq membres de l'équipe de recherche dont faisait partie l'infirmière qui avait réalisé les entrevues.

Résultats

Satisfaction au Regard de la Rencontre de Groupe

La compilation des questionnaires sur la rencontre de groupe animée par une infirmière montre une satisfaction supérieure à 90 %, notamment pour la compétence du formateur, le contenu et le climat de la rencontre (Tableau 1). Le contact avec les autres participants et l'organisation des lieux de la rencontre ont été les deux éléments qui ont enregistré les plus faibles taux de satisfaction, à la suite de l'analyse des réponses à la première partie du questionnaire utilisé dans la première procédure de collecte des données. Quant aux réponses obtenues aux trois questions ouvertes du questionnaire, l'analyse de celles relatives à la première question a permis de dégager neuf thèmes principaux reliés : 1) à la quantité des

informations, 2) à la qualité des informations, 3) aux caractéristiques de la formatrice, 4) au climat de la rencontre, 5) à l'organisation matérielle, 6) à la durée de la rencontre, 7) aux réponses aux questions, 8) à la prise de conscience et 9) à la satisfaction globale. La deuxième question ouverte visait à identifier les points négatifs des services infirmiers. L'analyse des réponses à cette deuxième question a fait ressortir quatre thèmes. Ceux-ci portaient sur : 1) la qualité de l'information, 2) le climat de la rencontre, 3) la durée de la rencontre, 4) l'organisation matérielle concernant le local et l'audiovisuel. Sept propositions principales étaient contenues dans des réponses à la troisième et dernière question ouverte du questionnaire sur les suggestions. Les répondants ont souhaité : 1) la pérennité des services, 2) des rencontres de courte durée dans un cadre plus élargi, 3) un ajout des services, 4) une intensification de la publicité pour arriver à recruter un plus grand nombre d'utilisateurs, 5) une meilleure organisation matérielle, 6) un enrichissement du contenu du programme et 7) un assouplissement de l'horaire des séances.

Tableau 1

Compilation des réponses à la première partie du questionnaire d'évaluation de la rencontre de groupe avec l'infirmière (N = 875 usagers, 262 accompagnateurs)

Éléments		Nombre de répondants	Très bien	Bien	Passable	Inadéquat
Climat de la rencontre	Usagers	838	785 (93,7 %)	53 (6,3 %)	0	0
	Accompagnateurs	233	217 (93,1 %)	16 (6,9 %)	0	0
Contact avec les autres participants	Usagers	821	596 (71,9 %)	225 (27,1 %)	8 (1 %)	0
	Accompagnateurs	254	185 (72,8 %)	66 (26 %)	3 (1,2 %)	0
Pertinence du contenu de l'enseignement	Usagers	841	776 (92,3 %)	65 (7,7 %)	0	0
	Accompagnateurs	245	229 (93,5 %)	16 (6,5 %)	0	0
Organisation matérielle (feuilles, affiches)	Usagers	823	736 (89,4 %)	84 (10,2 %)	3 (0,4 %)	0
	Accompagnateurs	260	220 (84,6 %)	38 (14,6 %)	1 (0,4 %)	1 (0,4 %)
Organisation physique (local, nombre de participants)	Usagers	814	632 (77,7 %)	167 (20,5 %)	14 (1,7 %)	1 (0,1 %)
	Accompagnateurs	194	172 (88,7 %)	15 (7,7 %)	5 (2,6 %)	2 (1 %)
Clarté de l'information	Usagers	840	786 (93,4 %)	54 (6,4 %)	0	0
	Accompagnateurs	250	228 (91,2 %)	22 (8,8 %)	0	0
Qualité des réponses aux questions	Usagers	832	781 (93,9 %)	50 (6 %)	1 (0,1 %)	0
	Accompagnateurs	246	232 (94,3 %)	14 (5,7 %)	0	0
Compétence du formateur	Usagers	833	810 (97,2 %)	23 (2,8 %)	0	0
	Accompagnateurs	248	238 (96 %)	10 (4 %)	0	0

N.B. : Le total des réponses n'est pas toujours de 875 pour les usagers et de 262 pour les accompagnateurs en raison de données manquantes.

Satisfaction Globale pour L'ensemble des Services des Cliniques

Une des questions des guides d'entrevue utilisés dans la deuxième procédure cherchait à évaluer la satisfaction globale des usagers. Les deux principaux éléments mentionnés ont été que les services avaient contribué à accroître le niveau des connaissances et le sentiment de sécurité des participants. Les participants ont également rapporté que le Réseau leur a assuré une forme de suivi, de surveillance et de soutien en plus de leur avoir procuré de la satisfaction du fait de la modification de certains facteurs de risque et de l'augmentation de leur qualité de vie. La compétence des intervenants du Réseau et la souplesse des modalités entourant l'offre de services ont également été notées comme points positifs.

Perception des Services Offerts

Les guides d'entrevue ont été construits de façon à évaluer aussi la perception des usagers par rapport à l'ensemble des modalités de services offerts par le Réseau. Le premier aspect évalué porta sur les motivations à utiliser les services des cliniques, sur les attentes des usagers par rapport aux services offerts ainsi que sur les préoccupations des usagers relativement à leur santé cardiovasculaire. Les principaux facteurs motivationnels à l'utilisation du Réseau ont été : 1) la recherche d'informations additionnelles et rassurantes, 2) le besoin d'un suivi sous la forme d'un intermédiaire faisant le lien entre les différents services de santé (médecin, milieu hospitalier), et 3) l'opportunité d'une voie d'accès aux services de santé généraux.

« C'est pas une motivation, c'est une incertitude, c'est plutôt un besoin parce que tu n'as jamais vécu cela et ce que tu cherches c'est la sécurité, des informations, ... mais tu vois encore ton cardiologue seulement aux trois mois, trois mois et demi après ». /-/ « C'était la chance d'apprendre des choses et d'avoir un suivi qui m'aide disons... parce qu'il y a des fois que nous autres mêmes, on ne s'aide pas tout à fait comme on devrait, alors des fois quand on a de l'aide de l'extérieur, il y a des fois que ça ne fait pas tort ».

Les opinions étaient diversifiées quant au service le plus apprécié. Certains répondants ont davantage apprécié la rencontre de groupe pour avoir permis une meilleure communication, la possibilité de partager son vécu avec les autres participants et pour avoir été une source de motivation et une occasion de bénéficier d'un soutien du groupe. D'autres ont préféré la rencontre individuelle pour son caractère plus personnalisé, la plus grande disponibilité dont a fait montre l'infirmière, la bonne qualité de l'interaction qu'elle a assurée et la motivation qu'elle a procurée. Parmi les services additionnels souhaités, des usagers

ont mentionné qu'ils apprécieraient des rencontres plus nombreuses, des suivis plus serrés avec davantage d'examen de laboratoire et de services de réadaptation physique. Enfin, des répondants ont formulé le souhait d'avoir des services de soutien disponibles 24 heures sur 24, ce qui, selon eux, leur permettraient de bénéficier des services d'une infirmière bien au courant de leur situation donc mieux placée pour les guider dans les soins et services que requiert leur état de santé.

Une des questions des guides d'entrevue visait à évaluer si les usagers avaient perçu des éléments négatifs dans les services offerts. Les quelques commentaires négatifs recueillis concernaient une répétition jugée inutile des notions déjà connues et une redondance avec l'information donnée par la diététiste. Une autre question visait à évaluer la perception que les usagers avaient des appels téléphoniques de sollicitation à participer aux activités du Réseau et de rappel des rendez-vous. Les réactions enregistrées indiquent que ces appels ont été bien reçus, appréciés et même souhaités par les répondants : *« Oui c'est pratique parce que nous on oublie. Ils sont là pour nous le rappeler, pour nous rafraîchir la mémoire... une telle date c'est votre rendez-vous, ne l'oubliez pas... ».*

La situation a été bien différente en ce qui concerne la lettre de suivi envoyée aux usagers après le deuxième et le huitième mois d'engagement dans le processus. En effet, environ deux tiers des personnes interrogées ne s'en souvenaient plus ou alors vaguement. Celles qui s'en souvenaient ont apprécié l'initiative; le geste fut perçu comme un témoignage de l'attention portée à leur endroit ainsi que de l'importance et du sérieux programme : *« J'ai dit, ils m'oublent pas, c'est gentil. Alors, même si moi j'ai tendance à m'oublier, eux autres m'oublent pas. Dans le fond j'étais bien content de voir que mon dossier est encore vivant ». /-/ « J'ai pensé que c'était sérieux. J'ai trouvé que c'était une démarche qui était sérieuse ».*

De façon générale, la rencontre individuelle à six mois été jugée très appropriée comme stratégie de suivi, pour avoir facilité l'adoption de bonnes habitudes, suscité une prise de conscience et aidé au rappel de connaissances. Elle a également été appréciée pour avoir été un facteur d'encouragement et de motivation. Finalement plusieurs répondants l'ont perçue comme une gratification pour des efforts consentis. La rencontre après un an a également été jugée très utile pour les encouragements et la motivation qu'elle a apportés, le suivi qu'elle a assuré et pour le rappel des connaissances qu'elle a permis. Quant à la participation du conjoint aux rencontres individuelles et de groupe, elle répondait aux attentes de nombreux répondants qui l'ont jugée indispensable. Il a été noté que cette participation apportait une présence rassurante, un soutien, une aide physique et favorisait une meilleure rétention des enseignements :

« J'avais pas besoin de l'inviter, elle veut tout le temps être avec moi. De toute façon, c'est bien qu'elle ait été là. C'est très bien. Elle tient à cœur à ce que ça aille bien ». /-/ « ... quand ta femme est avec toi, ça te rassure » /-/ « Comme vous savez, j'ai un handicap des mains... je ne suis pas capable d'écrire après ça il y a beaucoup de petites choses que je ne suis pas capable de faire... moi ma femme... quand quelqu'un dit : tu rentres, ta femme rentre pas, je vais dire : salut je ne rentre pas non plus ».

Une autre question cherchait à savoir si les usagers discutaient des services des cliniques lors des rencontres avec leur médecin traitant. Quelques participants ont dit avoir discuté avec leur médecin de l'importance des facteurs de risque qui les concernaient. Certains ont même mentionné avoir été encouragés par leur médecin à continuer d'utiliser les services du Réseau. Les usagers qui n'en discutèrent pas avec leur médecin, ont avancé comme raisons : le manque de temps ou le fait de ne pas avoir vu leur médecin entre-temps.

En ce qui concerne la fréquence des rencontres, les avis ont été partagés. Certains ont trouvé la fréquence adéquate : « C'est pas mal. Ça donne rien d'y aller à répétition, c'est toujours les mêmes affaires qui se répètent », d'autres auraient souhaité des rencontres plus fréquentes surtout au cours des six premiers mois : « C'est juste six mois, c'est loin. Moi je trouve que six mois, ils pourraient faire cela aux trois mois, tu irais pareil; six mois j'ai trouvé, c'est les derniers mois, tu dis maudit, vont-ils rappeler? ». En ce qui a trait à la prolongation des services, elle a été souhaitée par plusieurs, soit sous la forme de rencontres individuelles ou de groupe.

Perception des Interactions avec l'Infirmière

Quelques questions cherchaient à évaluer la perception qu'avaient les usagers de leurs interactions avec l'infirmière. La première question concernait le degré de concordance entre les informations données par cette dernière et celles qui ont été fournies par les autres professionnels de la santé (médecin, diététiste). Bien qu'une grande concordance ait été notée, de l'avis des répondants, l'information donnée par l'infirmière semblait la plus riche : « Non, excepté c'était plus large d'explications que l'on avait là-bas que ce que le médecin pouvait dire. Mon médecin : la cigarette, la cigarette... en tout cas pour une couple de médecins comme ça ».

Une autre question portait particulièrement sur l'attention accordée par l'infirmière aux besoins et préoccupations manifestés par les usagers. L'attention accordée par l'infirmière a été qualifiée de soutenue par de nombreux répondants. Sa gentillesse, sa compétence, sa capacité de vulgarisation et sa disponibilité ont été soulignées. Tous les répondants lui ont témoigné un fort degré de confiance : « Oui. Elle

inspire la confiance d'abord. Je trouvais que la chimie ça marchait bien avec elle. Oui, j'ai trouvé qu'elle avait l'air compétente. Parce qu'en fait je suis renseigné un peu. Je sais un peu des choses. Ça concordait avec le peu que je sais ».

Accessibilité des Services

Une question des guides d'entrevue portait spécifiquement l'accessibilité des services. Bien qu'à certains endroits le lieu de localisation de la clinique n'ait pas été facile à trouver, dans l'ensemble cet aspect a été très apprécié en raison, entre autres, de la flexibilité de l'horaire des rencontres et de la proximité géographique des cliniques : « Oui ils étaient flexibles. Je demandais des horaires le matin ou ces affaires-là, il n'y avait pas de problème, ils étaient tout le temps disponibles. S'il y a quelque chose, rappelle-moi et pas de problème... Elle était disponible, vraiment disponible » /-/ « Disons que moi en ce qui me concerne, ça faisait mon affaire comme vous dites le lieu, c'est dans ma ville alors ça ne fait pas loin à courir ».

Changements Survenus dans l'État de Santé

À ce niveau, tous les usagers ont reconnu l'importance de la modification des facteurs de risque pour leur santé future. Plusieurs répondants ont noté que l'information reçue a favorisé des changements positifs dans leurs habitudes de vie. Quelques-uns ont dit ne pas avoir observé d'améliorations dans ce sens, bien qu'ils croyaient être dans la bonne voie. Plusieurs répondants ont noté une amélioration de leur état de santé général :

« Ben c'est ça, ça m'a aidée à changer de comportement dans l'alimentation, puis dans mes façons de procéder dans les exercices à faire avec ma jambe » /-/ « Nécessairement... ça faisait cinq, six ans que je ne faisais plus aucun exercice cardiovasculaire. Maintenant que j'en fais, je me sens plus résistant qu'avant ».

Enfin, il demeurait chez la plupart des répondants quelques préoccupations relatives à leur santé cardiovasculaire notamment celles qui ont trait au pronostic qui y était associé et à l'autoprise en charge des facteurs de risque : « De tous les jours, c'est le quotidien pour un cardiaque » /-/ « Quand on a déjà eu quelque chose, on y pense toujours un petit peu » /-/ « On est toujours préoccupés ».

Discussion

Les résultats obtenus au moyen de deux procédures de recherche utilisées dans le cadre de cette étude indiquent une satisfaction globale très élevée de la part des usagers au regard des services offerts par le Réseau. De façon générale, il semble que les services répondent à plusieurs besoins de la clientèle, particulièrement au niveau de l'information donnée et du suivi assuré. Il ressort de façon très évidente que

l'infirmière est une intervenante très appréciée et est la professionnelle de choix pour ce type de service. Enfin, la structure générale du programme semble adéquate, bien que quelques ajustements seraient nécessaires.

En ce qui concerne la perception des services, la modalité d'intervention la plus appréciée est une rencontre individuelle avec l'infirmière dans un laps de temps assez rapproché après l'hospitalisation. Plusieurs répondants auraient apprécié avoir des rencontres plus fréquentes au cours des premiers mois de convalescence. Les autres modalités offertes (rencontre de groupe, lettre de suivi, appel téléphonique, rencontre à six mois et à 12 mois), bien qu'appréciées par plusieurs, ont parfois été jugées moins utiles. Ceci suggère l'importance de conserver une structure générale de base pour tous les usagers, au cours de la période suivant immédiatement l'événement aigu. Par la suite, les modalités de suivi proposées devraient davantage être adaptées aux besoins et aux particularités de chaque usager. Plusieurs répondants ont exprimé le souhait de voir les services du Réseau se poursuivre au-delà de la période d'une année initialement prévue. La forme privilégiée est la poursuite des rencontres individuelles avec l'infirmière. Cependant, comme ce suivi n'a pas été désiré par tous, il faudra donc voir à mettre en place un suivi adapté aux besoins et aux attentes individuelles des usagers. Les améliorations à apporter aux rencontres de groupe se rapprochent de celles qu'avaient proposées Davis et al. (1995). Elles consistent à favoriser les questions et les échanges entre les participants ainsi qu'à prévoir une pause au cours de la rencontre. Ainsi, le fait de prendre comme point de départ les expériences des participants permettrait vraisemblablement de rendre le contenu plus pertinent et moins redondant.

La philosophie d'intervention du programme consistant à « optimiser le potentiel de l'utilisateur atteint d'une maladie cardiovasculaire en favorisant son implication ainsi que celle de ses aidants naturels, dans la prise en charge de sa santé », n'a pas été complètement réalisée du fait que les conjoints et les proches ont été peu nombreux à participer aux rencontres. Effectivement peu de conjoints ont participé aux rencontres, bien que plusieurs usagers aient, par la suite, reconnu la nécessité de cette présence compte tenu de l'importance des informations données. L'importance du soutien social vis-à-vis l'adoption et le maintien de comportements de santé est de plus en plus reconnue. Les conjoints devraient donc être conviés de façon systématique aux rencontres et leur participation devrait être encouragée de façon plus soutenue. Mais le fait que certains usagers préfèrent y aller seuls, suggère d'organiser les rencontres de groupe selon deux modalités : l'une pour

les usagers qui aimeraient se faire accompagner et l'autre pour les usagers qui préfèrent venir seuls. L'importance de l'autoprise en charge des facteurs de risque ainsi que la prise de conscience, qui en découle, sont reconnues par tous.

En ce qui concerne les interactions avec l'infirmière, seuls des commentaires positifs ont été notés. Cela suggère premièrement que les critères de sélection du personnel ont été adéquats. Deuxièmement, cela soulève la qualité de la formation donnée aux infirmières dont la plupart n'avaient en partant aucune expertise dans le domaine de la santé cardiovasculaire. Enfin, l'importance de l'harmonisation des interventions et des informations données à la clientèle a également été notée. Dans le cadre de ce programme, des efforts particuliers ont été faits pour s'assurer que le programme véhiculait des informations provenant de données probantes de recherche les plus récentes et pour s'assurer une diffusion large de ces informations au-delà du cadre restreint du programme. Cette stratégie semble avoir porté fruit, quand on sait que ce manque d'uniformisation avait été noté dans l'étude de Bradley et Cupples (1999).

En ce qui a trait à l'emplacement géographique des services, il a été jugé très bon par tous les répondants, malgré l'étendue du territoire couvert. L'ouverture d'une clinique dans chacun des six secteurs de la région a probablement beaucoup contribué à cette perception positive de l'accessibilité. L'accessibilité en termes d'horaire a également été jugée très bonne par les répondants. En fait, les usagers des cliniques se voyaient offrir un choix de possibilités d'horaire tant pour les rencontres individuelles que celles de groupe. Cette flexibilité semble importante et devrait être maintenue. Par ailleurs, il y a lieu de se demander si les personnes ayant décliné l'offre de services des cliniques ne l'ont pas fait en raison d'un conflit entre l'horaire de travail et les heures où étaient dispensés les services du Réseau. Il semble alors essentiel d'améliorer l'accessibilité en offrant des rencontres avec un horaire élargi.

Au niveau des changements survenus dans l'état de santé, il est observé que tous les répondants sont convaincus de l'importance de la modification des facteurs de risque pour leur santé cardiovasculaire future. En fait, le développement d'un service entièrement dédié à la prise en charge de ces facteurs souligne vraisemblablement cette importance aux yeux de la clientèle. Plusieurs ont relié leur modification de comportement à risque aux services dispensés par la clinique et ont souligné l'importance des informations données lors des rencontres. Enfin, il n'est pas surprenant que la clientèle démontre encore des préoccupations relatives à leur état de santé.

Limites de l'étude

Quelques biais pourraient limiter la portée des résultats de l'étude. Premièrement, bien que la liste des participants à l'étude ait été établie par l'équipe de chercheurs sur la base des critères qu'elle avait elle-même fixés, il revenait aux infirmières animatrices des cliniques d'approcher chaque personne identifiée, de lui expliquer le but de l'étude, les modalités de participation, l'importance et l'impact de sa collaboration sur la récurrence ou non des services et de procéder, s'il y a lieu, à son recrutement. Dans ces conditions, il est permis de se questionner sur la neutralité du message transmis aux participants par les infirmières à ces occasions.

Un autre biais possible se situerait au niveau de la personne qui a réalisé les entrevues et qui se présentait d'emblée aux répondants comme étant une infirmière. Dans un contexte où les personnes avaient à se prononcer sur les services infirmiers, on peut se demander si elles se sont senties à l'aise d'émettre des opinions négatives. Finalement, il est parfois survenu un délai relativement long, allant jusqu'à deux ou trois mois entre les visites à la clinique et l'entrevue de recherche. Cela a parfois eu comme conséquence l'obtention de réponses évasives, car les répondants se souvenaient plus ou moins de certains aspects des services. Par ailleurs, le fait que l'étude n'a pas pris en compte les caractéristiques socio-démographiques des répondants, cela n'a pas permis d'établir jusqu'à quel point les caractéristiques biographiques pourraient avoir influé sur les résultats. Il s'agit là d'une lacune importante, bien que les auteurs de la présente étude se soient donné un but très modeste qui se voulait tout simplement exploratoire.

Conclusion

Cette étude visait à évaluer, à partir de la perspective des usagers, le processus des services dispensés par les infirmières dans le cadre du Réseau de cliniques de prévention des maladies cardiovasculaires du Saguenay-Lac-Saint-Jean. L'étude a fait appel à la triangulation combinant une procédure d'enquête systématique-continue et une autre continue à variabilité maximale. Les données ont été recueillies au moyen de questionnaire et d'entrevues individuelles semi-structurées. La compilation des questionnaires pour la rencontre de groupe montre une grande satisfaction, notamment pour la compétence du formateur, le contenu et le climat de la rencontre. Les entrevues ont également permis d'observer un taux de satisfaction globale très élevé au regard de la compétence des infirmières et de la structure du programme. La prise de conscience de

l'importance de la modification des facteurs de risque est reconnue par tous. Les usagers rapportent également que les services offerts les ont aidés à changer leurs comportements et à améliorer leur état de santé. En définitive, les services offerts par le Réseau répondent aux besoins de la clientèle et méritent d'être maintenus en y apportant certains ajustements, notamment au niveau de : (a) la fréquence et de l'animation des rencontres et de l'individualisation des services, en multipliant les rencontres dans les premiers mois et en favorisant les questions et les échanges entre les participants tout en prévoyant une pause au cours de la rencontre; (b) l'organisation des rencontres de groupe qui devrait prévoir deux modalités : l'une pour les usagers qui aimeraient se faire accompagner et l'autre pour les usagers qui préfèrent venir seuls; (c) l'accessibilité, en offrant des rencontres avec un horaire élargi qui permettrait d'éviter des conflits avec les horaires de travail; (d) suivi dont les modalités devraient être adaptées aux besoins et aux particularités de chaque personne.

Recommandations pour les recherches futures

Les enseignements tirés de cette étude poussent à suggérer quelques recommandations dans la perspective d'améliorer la qualité des résultats d'évaluation des expériences d'implantation de programmes de prévention secondaire des MCV. Il ressort que l'évaluation des programmes selon la perspective des usagers est à vulgariser si on veut arriver à des conclusions d'utilité pratique permettant un ajustement des services offerts rejoignant davantage et à la fois les besoins des usagers et ceux des décideurs. Les recherches futures devront s'intéresser à évaluer l'impact des caractéristiques socio-démographiques sur la demande de services par les usagers et sur la mise en pratique des enseignements qu'ils reçoivent. Pour le recrutement des répondants comme pour la réalisation des entrevues, les chercheurs devront penser à faire appel aux services des personnes extérieures, plus neutres, qui n'ont pas d'intérêt direct à défendre le maintien ou non des services du réseau. Enfin, il est proposé que les recherches futures dans le domaine de la santé cardiovasculaire aient recours à une combinaison d'approches qualitatives et quantitatives de collecte de données qui puissent permettre une évaluation plus complète, notamment au niveau des programmes de prévention secondaire. ♥

Remerciements

À Santé Canada qui a financé ce projet par le biais de son programme « Fonds pour l'adaptation des services de santé » (FASS) et qui a ainsi permis sa réalisation.

Références

- American Association of Cardiovascular & Cardiopulmonary Rehabilitation. (2004). *Guidelines for cardiac rehabilitation and secondary prevention* (4th ed.). Champaign, IL: Human Kinetics.
- Anderson, J., Nangle, M., & Alexander, W.A. (1997). Cardiovascular outcomes management and managed care contracting: Experience from St. Luke's Episcopal Hospital and the Texas Heart Institute. *Critical Care Nursing Quarterly*, 19(4), 48-55.
- Bradley, F., & Cupples, M.E. (1999). Reducing the risk of recurrent coronary heart disease. We know a bit more about what doesn't work. *British Medical Journal*, 318(7197), 1499-1500.
- Bradley, F., Wiles, R., Kinmonth, A.L., Mant, D., & Gantley, M. (1999). Development and evaluation of complex interventions in health services research: Case study of the Southampton heart integrated care project (SHIP). *British Medical Journal*, 318(7185), 711-715.
- Burke, L.E., Dunbar-Jacob, J.M., & Hill, M.N. (1997). Compliance with cardiovascular disease prevention strategies: A review of the research. *Annals of Behavioral Medicine*, 19(3), 239-263.
- Chouinard, M.-C., & Robichaud-Ekstrand, S. (2003, in press). La contribution du soutien social dans l'adoption et le maintien de comportements de santé chez l'usager cardiaque. *Recherche en Soins Infirmiers*(75).
- Cohen, S., Gottlieb, B.H., & Underwood, L.G. (2003). Social relationships and health. In S. Cohen, L.G. Underwood & B.H. Gottlieb (Eds.), *Social support measurement and intervention* (pp. 3-25). New York: Oxford University Press.
- Colaizzi, P. (1978). Psychological research as the phenomenologist views it. In R.S. Valle & M. King (Eds.), *Existential-phenomenological alternatives for psychology* (pp. 48-71). New York: Oxford University Press.
- Davis, S., Sullivan, P., & Tan, P. (1995). A qualitative approach to the evaluation of a cardiac education follow-up program. *Canadian Journal of Cardiovascular Nursing*, 6(1-2), 13-21.
- Dracup, K., Meleis, A.I., Clark, S., Clyburn, A., Shields, L., & Staley, M. (1984). Group counseling in cardiac rehabilitation: Effect on patient compliance. *Patient Education and Counseling*, 6(4), 169-177.
- Duryee, R. (1992). The efficacy of inpatient education after myocardial infarction. *Heart & Lung*, 21(3), 217-227.
- Giannuzzi, P., Saner, H., Bjornstad, H., Fioretti, P., Mendes, M., Cohen-Solal, A., et al. (2003). Secondary prevention through cardiac rehabilitation. Position paper of the working group on cardiac rehabilitation and exercise physiology of the European society of cardiology. *European Heart Journal*, 24(13), 1273-1278.
- Gouvernement du Québec. (2001). *Le portrait de santé: Le Québec et ses régions*. Québec: Institut national de santé publique.
- Gouvernement du Québec. (2003). *Programme national de santé publique 2003-2012*. Québec: Ministère de la santé et des services sociaux.
- Greene, J.C. (1994). Qualitative program evaluation. In N.K. Denzin & Y.S. Loncoln. (Eds.), *Handbook of qualitative research* (pp. 530-544). Thousand Oaks, CA: Sage.
- Hartley, L.H., Foreyt, J.P., Alderman, M.H., Chesney, M.A., Friedman, M., Hendrix, G.H., et al. (1987). Secondary prevention of coronary artery disease. *Circulation*, 76(Suppl. I), I168-I173.
- Haskell, W.L., Alderman, E.L., Fair, J.M., Maron, D.J., Mackey, S.F., Superko, H.R., et al. (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 Project (SCRIP). *Circulation*, 89(3), 975-990.
- Henriksen, E., & Rosenqvist, U. (2002). Understanding and practice: A 7-year follow-up study on implementation of a cardiac rehabilitation program. *Qualitative Health Research*, 12(5), 671-684.
- Henriksen, E., & Rosenqvist, U. (2003). Understanding cardiac follow-up services - A qualitative study of patients, healthcare professionals and managers. *European Journal of Cardiovascular Nursing*, 2(2), 95-104.
- Hentinen, M. (1986). Teaching and adaptation of patients with myocardial infarction. *International Journal of Nursing Studies*, 23(2), 125-138.
- Israel, B.A., Cummings, K.M., Dignan, M. B., Heaney, C. A., Perales, D.P., Simons-Morton, B.G., et al. (1995). Evaluation of health education programs: Current assessment and future directions. *Health Education Quarterly*, 22(3), 364-389.
- Levknecht, L., Schriefer, J., & Maconis, B. (1997). Combining case management, pathways, and report cards for secondary cardiac prevention. *Joint Commission Journal on Quality Improvement*, 23(3), 162-174.
- Mahler, H.I.M., Kulik, J.A., & Taraza, R.Y. (1999). Effects of a videotape information intervention at discharge on diet and exercise compliance after coronary bypass surgery. *Journal of Cardiopulmonary Rehabilitation*, 19(3), 170-177.
- Moore, S.M. (1996). Women's views of cardiac rehabilitation programs. *Journal of Cardiopulmonary Rehabilitation*, 16(2), 123-129.
- Ornish, D., Scherwitz, L.W., Billings, J.H., Gould, L., Merritt, T.A., Sparler, S., et al. (1998). Intensive lifestyle changes for reversal of coronary heart disease. *JAMA*, 280(23), 2001-2007.
- Patton, M.Q. (1997). *Utilization focused evaluation* (3rd ed.). Thousand Oaks, CA: Sage.
- Patton, M.Q. (2002). *Qualitative research & evaluation methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Plach, S., Wierenga, M.E., & Heidrich, S.M. (1996). Effects of a postdischarge education class on coronary artery disease knowledge and self-reported health-promoting behaviors. *Heart & Lung*, 25(5), 367-372.
- Racelis, M.C., Lombardo, K., & Verdin, J. (1998). Impact of telephone reinforcement of risk reduction education on patient compliance. *Journal of Vascular Nursing*, 16(1), 16-20.
- Régie régionale de la santé et des services sociaux - 02. (1995). Maladies de l'appareil circulatoire. In *Ensemble vers un mieux-être de la population régionale* (pp. 24-27). Chicoutimi: Direction de la santé publique.
- Régie régionale de la santé et des services sociaux - 02. (1999). *Indicateurs socio-sanitaires: La région du Saguenay-Lac-Saint-Jean et les six secteurs de CLSC*. Chicoutimi: Direction de la santé publique.
- Taylor, C.B., Miller, N.H., Smith, P.M., & DeBusk, R.F. (1997). The effect of a home-based, case-managed, multifactorial risk-reduction program on reducing psychological distress in patients with cardiovascular disease. *Journal of Cardiopulmonary Rehabilitation*, 17(3), 157-162.
- Thompson, D.R. (1991). Effect of in-hospital counseling on knowledge in myocardial infarction patients and spouses. *Patient Education and Counseling*, 18(2), 171-177.
- Wiles, R. (1997). Empowering practice nurses in the follow-up of patients with established heart disease: Lessons from patients' experiences. SHIP Collaborative Group. Southampton Heart Integrated care Project. *Journal of Advanced Nursing*, 26(4), 729-735.
- Wright, F.L., Wiles, R.A., & Moher, M. (2001). Patients' and practice nurses' perceptions of secondary preventive care for established ischaemic heart disease: A qualitative study. *Journal of Clinical Nursing*, 10(2), 180-188.
- Young, L.E., & Jillings, C.R. (2000). Qualitative methods add quality to cardiovascular science. *Canadian Journal of Cardiology*, 16(6), 793-797.

Positron Emission Tomography: A Study of PET Test-Related Anxiety

Elizabeth Westerman, RN, BHScN, Barbara Aubrey, RN, BScN, Deborah Gauthier, RN, May Aung, MRT (N), Robert S.B. Beanlands, MD, FRCP(C), (Research Scientist supported by CIHR), Terrance D. Ruddy, MD, FRCP (C), Ross A. Davies, MD, FRCP (C), Rob A. De Kemp, PhD, and Kirsten Woodend, RN, MSc, PhD

The objective of this study was to determine whether sending an information pamphlet to patients scheduled for a PET test two weeks prior to the appointment date significantly reduced patient anxiety and increased patient knowledge about the test.

This study was conducted as a randomized controlled trial in which patients were randomly allocated to receive a mailed information pamphlet (intervention) or no mailed

For correspondence: Elizabeth Westerman, RN, Westerman@primus.ca, phone (613) 446-5658

pamphlet two weeks prior to the appointment (usual care). The results of this study suggested that sending information pamphlets to patients scheduled for PET scans did not decrease pre-test levels of patient anxiety or result in increased patient knowledge about test preparation and procedures.

Key words: cardiac PET, anxiety, information to patients, HAD, VAS

321 Agathe St., Rockland, ON K4K 1K7; e-mail

Introduction

Positron emission tomography (PET) is a non-invasive approach used to assess myocardial blood flow and viability (Tamaki, Ruddy, de Kemp & Beanlands, 2002; Beanlands, Ruddy & Maddahi, 2002). PET has certain advantages over other techniques that improve its accuracy, such as correction for certain artefacts and the ability to quantify measurements such as flow and metabolism. Previously, PET imaging in Canada was limited to a few centres, but it is now being done in most major centres in Canada. At the University of Ottawa Heart Institute, rubidium-82, a radiotracer, is used in combination with PET imaging to measure blood flow. Rubidium-82 is a generator-produced positron emitter with a physical half-life of 75 seconds that allows for repeated blood flow measurements in short time intervals. Rubidium-82 flow imaging with PET is thus done at rest and after pharmacological stress using dipyridamole to assess the severity of coronary artery disease in patients who are not capable of exercise testing. Twelve hours prior to the test, patients must fast and abstain from ingesting any nitrates, caffeine, or codeine. Including consent and preparation time, the test takes approximately one-and-a-half to two hours to complete.

The nurses in the cardiac PET facility of the University of Ottawa Heart Institute have found that patients often possess an inaccurate understanding of PET procedures. Furthermore, patients report and exhibit

anxiety about the procedure when they arrive at the hospital on the day of the test (Mitchell, 2000a). Although studies of PET scan pre-test anxiety have not been published, studies of other types of diagnostic testing have shown that patients have high levels of pre-test anxiety (Deane & Degner, 1998; Nugent, Tamlyn-Leaman, Isa, Reardon & Crumley, 1993). Since the methods of inducing pharmacological stress are similar to the methods of other non-invasive stress testing, evaluating anxiety and knowledge in these patients has relevance to other diagnostic tests as well.

There is evidence that knowledge decreases anxiety (Marteau, Kidd & Cuddeford, 1996). The effect of pre-diagnostic test information on anxiety levels has not been published. There is evidence that patient education does reduce pre-operative stress (Beddows, 1997). Beddows compared the effects of pre-admission teaching to post-admission teaching on anxiety in patients undergoing simple elective surgery. She found that pre-admission teaching significantly reduced anxiety at admission. A pilot study by Nelson, Zimmerman, Barnason, Nieven & Schmaderer (1998) of pre-operative patients provided with information in their homes prior to admission as well as on their first day in hospital found patients were more likely to report that their anxieties had been relieved than were patients who only received information on admission. Sherrard and Lindsay's study (1998) also documented a trend of lower levels of depression in patients who attended classes prior to surgery.

Trillium
HEALTH CENTRE

A history of clinical innovation

makes Trillium the health-care destination for Cardiac Care Nurses.

A regional cardiac care centre, with an unparalleled commitment to innovation, collaboration and cutting-edge patient care, Trillium continues to earn recognition as one of Canada's Top 100 Employers, and the recipient of the national 3M Health Care Quality Award in acute care.

Ours is a culture of shared leadership that encourages decision-making as close as possible to the point of care. As part of our commitment to continued learning and excellence in patient care, we promote quality of work life, and support the personal and professional growth of our Nurses and other staff through numerous learning initiatives.

The Canadian leader in 'beating heart' surgeries, Trillium's Cardiac Services offers a broad range of inpatient and outpatient programs and services – from prevention and diagnosis to treatment, surgery, rehabilitation and education. Our modern, high-end cardiac diagnostic and treatment facility houses catheterization suites, operating rooms, a cardiovascular intensive care unit, inpatient cardiovascular beds, beds for angioplasty and pacemaker patients, and facilities for families, staff and physicians.

It's in this sophisticated Cardiac Care environment, which recently saw Trillium become the first hospital in Canada to use the Sorin Biomedica Synergy miniature bypass system – a new device that is expected to dramatically reduce blood transfusions, that we offer exciting opportunities for **Registered Nurses** who share our commitment to excellence.

Our location on two sites, in a beautiful community setting just minutes from downtown Toronto, only serves to enhance our role as an ideal destination for patients and staff. To learn more about expansion initiatives within our growing organization and opportunities to make Trillium your destination, please visit us online, or contact us by fax at 905-848-5598 or e-mail at careers@thc.on.ca

www.trilliumhealthcentre.org

Objectives

The objective of this study was to determine whether sending an information pamphlet to patients two weeks prior to the PET test significantly reduces patient anxiety about the test. It was hypothesized that:

1. Patients who receive printed information prior to the test will have lower levels of anxiety immediately prior to the test than patients who only receive information by phone two weeks prior to the test.
2. Patients who receive printed information prior to the test will have greater knowledge of the test's procedures and purpose than patients who only receive information by phone two weeks prior to the test.

Methods

This study was conducted with the approval of the University of Ottawa Heart Institute committee for human investigation. Fully informed, written consent was obtained from each patient prior to the patient's involvement in the study. A copy of the consent form was also provided to each patient. To ensure consistency in data collection, a nuclear technologist already involved in patient telephone preparation was appointed to do data collection. Her familiarity with

the everyday routines of patient preparation ensured that data collection would be consistent.

This study was conducted as a randomized controlled trial in which patients were randomly allocated to receive a mailed information pamphlet (intervention) or no mailed pamphlet two weeks prior to the appointment (usual care). All patients were called, as per standard practice, two weeks prior to their appointment. This phone call included information about the time and location of the appointment, instructions on how to prepare for the test, and a brief explanation of test procedures. Eligible patients were informed of the study at the beginning of this phone call, and invited to participate in the study. If the patient consented to participate, a short interview that included questions about the patient's knowledge and anxiety levels was administered before the routine content of the phone call was delivered. After this phone call, some patients were randomized to the pamphlet group and were sent an information pamphlet by mail.

Patients qualified to participate in the study if they were undergoing a routinely scheduled persantine rubidium-82 PET, able to read and write English, and provided consent. Patients were excluded if they had previously undergone a PET scan or were scheduled

for an urgent test (scheduled for a test with less than one week's notice). When study patients arrived in the waiting area prior to their PET appointment, they were again asked to complete a short knowledge and anxiety questionnaire and blood was drawn from study patients in order to gauge serum cortisol levels.

Outcome measures

Anxiety was measured by a visual analogue (VAS) anxiety scale, seven anxiety questions from the Hospital Anxiety and Depression Scale (HAD), and serum cortisol levels. Studies have shown visual analogue scales to be simple, sensitive, and reproductive instruments that can successfully measure subjective feelings (Gift, 1989; Lee & Kieckhefer, 1989; Wewers & Lowe, 1990). The VAS has also been shown to be a reliable and valid instrument for assessing patient fear and anxiety (Elliott, 1993). A numerical version of the scale with the two anchors "no fear" and "extremely intense fear" was used. The subjects were asked to provide a number between one and 10 that best described the intensity of their fear at the moment. The construct validity of VAS scales and numerical scales for pain assessment has been demonstrated repeatedly (Stephenson, 1994; Choiniere & Amsel, 1996; Wilkie, Lovejoy, Dodd & Tesler, 1990). Correlation between the two types of scales ranged from 0.82 to 0.91. A similar correlation exists between numerical and visual scales of anxiety.

The seven anxiety questions from the Hospital Anxiety and Depression Scale were administered just prior to the PET. The questionnaire asks the respondent about his or her feelings over the course of the past week and can be self-administered. Ratings by subjects are made on four-point scales, which represent the degree of distress: none=0, a little=1, a lot=2 and unbearable=3. High scores on each scale indicate the presence of anxiety or depression problems (non-cases=7 or less; doubtful cases=8-10; definite cases=11+). Zigmond and Snaith (1983) reported good reliability and validity results for HAD during initial tests, and scale scores were not affected by the presence of physical illness. This feature of the scale makes it ideal for clinical research involving patients afflicted by physical conditions.

Blood was drawn prior to the scan for serum cortisol levels because cortisol levels have been shown to respond to anxiety/stress-reducing interventions in a number of studies (Field, 1998; Ironside et al., 1999).

Knowledge was assessed during the initial phone call, using two open-ended questions: (1) Do you know what a PET scan is and, if yes, please explain, and (2) Do you know why you're having the test? A short multiple-choice questionnaire about the information provided during the initial phone call was completed by each patient immediately prior to the scan.

Sample size and data analysis

At the time of study design, it was estimated that 40 patients would be required in each of the intervention and control groups to detect a 30% decrease in VAS anxiety, a 36 per cent decrease in anxiety as measured by the HAD scale, and a 50% difference in cortisol level (assuming an alpha of 0.05, and a beta of 0.20 and standards deviation of three and four for VAS anxiety and the HAD anxiety subscale respectively.)

Means, standard deviations, and frequencies were used to report attributes of the intervention and control groups. T-tests and chi-square tests were used to compare the baseline characteristics of the two groups. Repeated measures analysis of variance was performed to test for differences over time and between treatment groups in VAS anxiety scores. Independent t-tests were used to test the different HAD anxiety scores, cortisol levels, and knowledge scores of the groups.

Results

Of the 39 patients enrolled in the study, 17 were placed in the intervention group and 22 were placed in the control (usual care) group (see Table 1). Males represented 29% of the study population and the mean

	Intervention	Control	p
n	17	22	
Gender (male) n(%)	4 (25%)	7 (32%)	ns
Age (mean ± SD)	57 ± 10	54 ± 9	ns
Mother tongue n(%)			
English	18 (94%)	19 (86%)	ns
French	1 (6%)	1 (5%)	
Working n(%)	5 (41%)	13 (59%)	ns
Education (high school or less) n(%)	9 (53%)	7 (32%)	ns
Days between call and test (mean ± SD)	18 ± 13	24 ± 9	ns

age of participants was 55 years. English was the first language of 90% of the participants and French was the first language of 5% of the participants. Additionally, 46% of the participants were employed, 39% were retired, and 41% had the educational equivalent of a high school diploma or less. There were no statistically significant differences between the intervention and control groups for any of these variables.

Anxiety

Anxiety levels at baseline (two weeks prior to the PET scan) did not differ between the intervention and control groups. The mean scores for intervention and control patients respectively were 3.9 ± 3.5 and 3.0 ± 2.5 indicating moderate levels of anxiety. A repeated-measures analysis of variance was done to compare VAS anxiety scores over time. There was no significant increase in anxiety over time or between groups, nor was there a significant interaction (Figure 1). The mean scores on the HAD anxiety scale for the intervention and control patients were 7.5 ± 3.9 and 7.2 ± 4.1 respectively and there was no significant difference in anxiety levels between the two groups ($p=0.84$). There was also no significant difference in blood cortisol levels between the intervention and control patients ($p=0.57$); intervention patients had a mean cortisol level of 427.18 ± 230.30 and control patients had a mean cortisol level of 388.95 ± 169.58 .

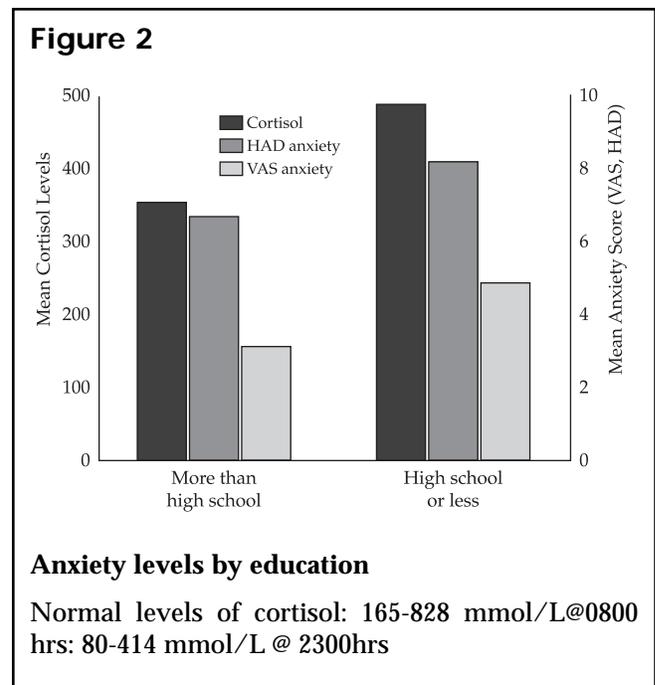
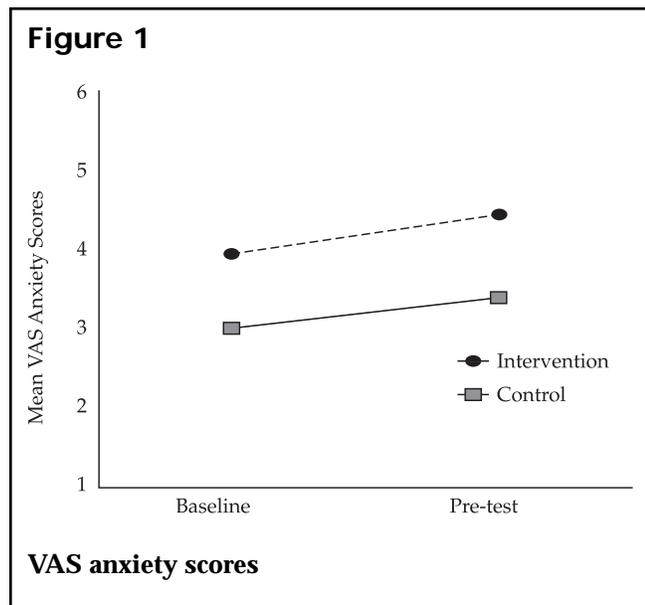
The relationship between education (high school or less versus more than high school), sex, and measures of anxiety were studied using t-tests. There was a numerical trend for all anxiety levels to be higher on all measures of anxiety with lower levels of education (Figure 2), but only the difference in cortisol level was statistically significant ($p=0.047$). Women had a higher anxiety score than men as measured by the VAS

anxiety score ($p=0.001$), but not as measured by cortisol level or HAD anxiety score. Bivariate correlations were done between the three measures of anxiety, age, and time to determine whether there was a relationship between these variables. There were no statistically significant associations between the measures of anxiety and either age or the days between the initial phone call and the PET scan.

Knowledge

On the knowledge test, intervention patients had a mean score of 4.7 ± 1.7 and control patients had a mean score of 3.9 ± 1.5 with no statistically significant difference between the scores of the two groups ($p=0.114$). The maximum attainable score was seven. Two weeks prior to the test, 30% of the patients said they knew what the test was, and there was no difference between the groups in the proportion that said they knew. Educational level did not influence the pre-test knowledge scores. Only two patients were unable to say why they were having the test, and most of the answers that were given were reasonable. Knowledge scores were not significantly correlated with any of the measures of anxiety.

Just prior to the scan, patients were asked to write down why the test was being done. The answers given by the patients were reasonable, similar to those provided at baseline, and included comments such as "I've been having some odd arrhythmias, sometimes tire easily and the cause is being investigated" and "To see if my heart is pumping blood properly". Patients were also asked to explain what would happen during the test and, again, most patients gave reasonably accurate explanations. Ten patients were either not able to



explain the reason for the test or gave explanations that were markedly inaccurate such as, “*Lying on an imaging bed, my brain will be scanned*” and “*My heart rate will be taken during a treadmill*”.

Discussion and Nursing Implications

Sending information pamphlets to patients scheduled for outpatient PET scans did not decrease pre-test levels of anxiety or result in increased knowledge about the test and better preparation for the test. The investigators planned to enlist 80 patients in the study but, due to time constraints, only 39 patients were recruited and standard deviations were similar to those anticipated in the sample size calculations, so the study was underpowered. Scores on all anxiety measures were slightly, but non-significantly, higher in the intervention than in the control group. Thus it is unlikely that the recruitment of 80 patients would have resulted in the discovery of a significant increase or reduction of anxiety or knowledge levels in the intervention group. These results are similar to those of Tamaino-Brunner, Freda, Damus & Sunowicz (1998) who found that mailing a one-page information sheet one week prior to colposcopy did not reduce patient anxiety. However, unlike the findings of this study, the study of Tomaino-Brunner et al. did document an

increase in knowledge about the procedure in the intervention group.

Patients with higher levels of education had somewhat lower levels of anxiety, but did not obtain higher scores on the knowledge questionnaire. As anxiety levels and knowledge scores were not significantly correlated, it seems that sending more information to patients before the test may not be an effective method of decreasing the moderate levels of anxiety reported by the patients who participated in this study. Mitchell (2000b) studied the impact of providing written information in the form of an information booklet to patients undergoing day surgery. She concluded that the effect of extensive pre-operative information on anxiety levels was dependent upon the patient's coping style. The coping styles of patients participating in the present study were not assessed or taken into account. Clements and Melby (1998) tried to determine the amount and type of information given to patients before, during, and after gastroscopy investigations and concluded that age also influenced the way in which patients wanted to receive information. Older patients felt nurses were the most important source of information and younger patients indicated a preference for pamphlets. The number of patients in the present study was too small to permit subgroup analyses.

C C C N

The site for Cardiovascular Nurses



- News • Annual Conference
- Standards • Members' Area
- Employment Opportunities • Links

... and lots more ...

www.cardiovascularnurse.com

The highest possible score on the knowledge test was seven and the mean score obtained was 4.2. Four of the questions related to test preparation and included the following true/false questions:

- I was *not* to eat and drink for 12 hours before this test
- I was allowed to drink coffee up until the test
- I was *not* to take nitrodur or isordil (isosorbide dinitrate) for 12 hours before the test
- I was *not* to take any of my medications this morning

In addition, there were five true/false questions about what the patient could expect to happen during the test:

- In preparation for the test, I will have an intravenous put in both arms
- In preparation for the test, I will have an intravenous put in only one arm
- I will be given a small amount of radioactive dye
- Taking of the first set of pictures lasts about one hour
- The entire test takes about 1.5 hours

These questions requested basic and important information about the test from the patient. If the

patient did not know the answers to the questions listed above, he or she may not have complied with test preparation procedures, understood the length of time required for the test, or understood the test procedure. The relatively low mean scores in combination with the inability of 10 (26%) of the patients to properly describe the test procedure suggests that neither the phone call nor the pamphlet were adequate teaching tools. There is a need to explore other approaches to information delivery that will help to ensure that patients fully understand preparation procedures and test procedures.

Limitations

Patients participating in this study often had prior knowledge about the test that was not assessed, i.e. use of the internet. This prior knowledge could have affected their anxiety levels. We found in multiple circumstances that patients were not as anxious about the test itself as with the diagnosis. Often, patients were depending on this test and its results to continue their livelihood. The information from the nurses or nuclear technologists given by phone prior to the test was noted to be very thorough, thus diminishing the differences between the standard teaching and the pamphlet intervention.

Respected
for our Excellence,
Known for our
care.



Explore nursing in one of the nation's most prestigious health care institutions! The University of Ottawa Heart Institute is a global leader in the fight against heart disease.

As a member of the Heart Institute staff, you will work independently in a team-oriented patient and family focused environment. You will gain from an individualized and needs-based orientation, clinical nurse support for in-service training and continuing professional development.

You will be challenged to use your critical thinking and problem solving skills to improve the quality of patient care and will be given the opportunity to develop advanced skills in cardiovascular nursing. You will participate in leading edge treatments and provide comprehensive, rewarding patient and family care.

We are looking for highly motivated Registered Nurses with strong clinical ability, excellent communication and interpersonal skills and a commitment to learning and teamwork. We have immediate openings for Registered Nurses in the following units:

**Cardiac Surgical Intensive Care Unit • Cardiac Operating Room
Coronary Care Unit • Cardiac Catheterization Laboratory**

For further information on these positions and other exciting opportunities, please visit us at www.ottawaheart.ca. To join our dynamic, rewarding, leading edge teaching and research environment send your resume to clinicalservices@ottawaheart.ca or to:

**The University of Ottawa Heart Institute
Clinical Services – H 2408
40 Ruskin Street
Ottawa, Ontario K1Y 4W7
Tel: 613.761.4826
Fax: 613.761.5323**

Our patients come first
www.ottawaheart.ca

Concluding Remarks

Delivery of medical information is a very important method of increasing patient knowledge and relieving patient anxiety. We were not able to demonstrate any significant advantage of pamphlet information over phone call information from the nurses or nuclear technologists. It appears from our data that it is difficult to improve upon personal interaction with the patient for preparation for testing such as PET. Sending information pamphlets prior to a PET rubidium test is not an optimal use of time and resources. However, the results of this study did not change our practice of mailing information to patients. Nurses and nuclear technologists still call patients to prepare them for the test and, if requested, information can be sent by mail or internet to patients.

Further studies have been done since this study was started (Coudeyere et al., 2002; Kindler, Harms, Amsler, Ihde-Scholl & Scheidegger, 2000; Mitchell, 2000a) and have demonstrated that patient anxiety can be reduced by information provided prior to procedure. The concern about the potential for needing further treatment upon receiving a diagnosis of cardiac disease can lead to severe anxiety while waiting for the procedure. Varying degrees of anxiety may be associated with other types of cardiac testing. Further studies that evaluate pre-test anxiety levels may be beneficial in establishing the educational needs of patients awaiting their procedures.

Acknowledgement

Special thanks to Natalie Ringuette, MRT (N) for data collection.

References

- Beanlands, R.S.B., Ruddy, T.D., & Maddahi, R. (2002). Myocardial Viability. In R.L. Wahl (Ed.) *Principles and Practices of Positron Emission Tomography* (p 350). Lippincott Williams and Wilkins.
- Beddows, J. (1997). Alleviating pre-operative anxiety in patients, a study. *Nursing Standard*, 11(37), 35-38.
- Choiniere, M., & Amsel, R. (1996). A visual analogue thermometer for measuring pain intensity. *Journal of Pain & Symptoms Management* 11(5), 299-311.
- Clements, H., & Melby, V. (1998). An investigation into the information obtained by patients undergoing gastroscopy investigations. *Journal of Clinical Nursing*, 74(4), 333-342.
- Coudeyere, E., Poiraudou, S., Revel, M., Kahan, A., Drape, J.L., & Ravaud, P. (2002). Beneficial effects of information leaflets before spinal steroid injection. *Joint Bone Spine*, 69(6), 597-603.
- Deane, K.A., & Degner, L.F. (1998). Information needs: Uncertainty and anxiety in women who had breast biopsy with benign outcome. *Cancer Nursing*, 21(2), 117-126.
- Elliott, D. (1993). Comparison of three instruments for measuring a patient's anxiety in a coronary unit. *Intensive Critical Nursing*, 9, 195-200.
- Field, T.M. (1998). Massage therapy effects. *American Psychologists*, 53(12), 1270-1281.
- Gift, A. (1989). Visual Analogue Scales: Measurements of subjective phenomena. *Nursing Research*, 38, 286-288.
- Ironside, G., Field, T., Scafidi, F., Hashimoto, M., Kumar, M., Price, A. et al. (1999). Massage therapy is associated with enhancement of immune system's cytotoxic capacity. *Journal of Neurosciences*, 84(1-4), 205-217.
- Kindler, C., Harms, C., Amsler, F., Ihde-Scholl, T., & Scheidegger, D. (2000). The visual analogue scale allows effective measurement of preoperative anxiety and detection of patients' anesthetic concerns. *Anesthetic Analog*, 90, 706-712.
- Leckie, J. (1994). The effect of informational intervention on state anxiety and satisfaction in patients undergoing bone scan. *Nuclear Medicine Commun*, 15(11), 921-927.
- Lee, K.A., & Kieckhefer, G.M. (1989). Measuring human responses using visual analogue scales. *Western Journal of Medicine*, 11, 128-132.
- Marteau, T.M., Kidd, J., & Cuddeford, L. (1996). Reducing anxiety in women referred for colonoscopy using an information booklet. *Health Psychol*, 1, 181-89.
- Mitchell, M. (2000a). Psychological preparation for patients undergoing day surgery. *Ambulatory Surgery*, 8(1), 19-29.
- Mitchell, M. (2000b). Anxiety management: a distinct nursing role in day surgery. *Ambulatory Surgery* 8(3), 119-127.
- Nelson, F.V., Zimmerman, L., Barnason, S., Nieven, J., & Schmaderer, M. (1998). The relationship and influence of anxiety on postoperative pain in coronary artery bypass graft patients. *Journal of pain & symptom management*, 15(2), 102-109.
- Nugent, L.S., Tamlyn-Leaman, K., Isa, N., Reardon, E., & Crumley, J. (1993). Anxiety and the colonoscopy experience. *Clinical Nursing Research*, 2(3), 267-277.
- Sherrard, H., & Lindsay, P. (1998). *Meeting cardiac surgery patients' preoperative educational needs* [Abstract]. Canadian Council of Cardiovascular Nurses Annual Scientific Sessions.
- Stephenson, N. (1994). A comparison of nurse and patient: Perceptions of post-surgical pain. *Journal of Pain & Symptom Management*, 17(5), 235-239.
- Tamaino-Brunner, C., Freda, M.C., Damus, K., & Sunowicz, C.D. (1998). Can pre-colposcopy education increase knowledge and decrease anxiety? *Journal of Obstetric, Gynecologic and Neonatal Nursing*, 27(6), 636-645.
- Tamaki, N., Ruddy, T.D., de Kemp, R., & Beanlands, R. (2002). Myocardial Perfusion. In R.L. Wahl (Ed.), *Principles and Practices of Positron Emission Tomography* (pp 334-350). Lippincott Williams and Wilkins.
- Wewers, M.E., & Lowe, N.K. (1990). A critical review of visual analogue scales in the measurement of clinical phenomena. *Research in Nursing and Health*, 13, 227-236.
- Wilkie, D., Lovejoy, J.N., Dodd, M., & Tesler, M. (1990). Cancer pain intensity measurement: Concurrent validity of three tools – finger dynamometer, pain intensity number scale, visual analogue scale. *Hospice Journal – Physical, Psychosocial & Pastoral Care of the Dying*, 6(1), 1-13.
- Zigmond, A.S., & Snaith, R. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scand*, 67, 361-370.

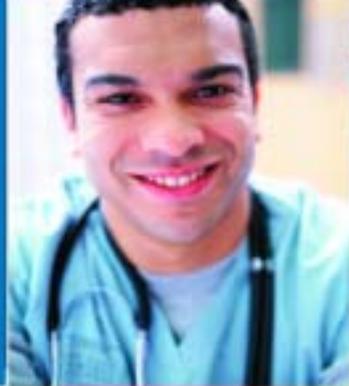
Subscription to the
Canadian Journal of Cardiovascular Nursing
is included with your CCCN membership.

L'abonnement la
Revue canadienne de nursing cardiovasculaire
est inclu avec votre adhésion au CCINC.



**The *Canadian Journal of Cardiovascular Nursing*
is available on line to CCCN members**

**La *Revue canadienne de nursing cardiovasculaire*
est disponible en ligne pour les membres de CCINC**



 **CRYTZER**
ENGLAND
GROUP INCORPORATED

formerly
HRS

**BRINGING CANADIAN RN'S
to the U.S. for FREE!**

**VISIT BOSTON, ORLANDO
& OTHER U.S. CITIES!**

**A
R
E
Y
O
U**

- A CANADIAN RN?
- INTERESTED IN RELOCATING TO THE U.S.?
- INTERESTED IN SPEAKING WITH MULTIPLE U.S. HOSPITALS AT A UNIQUE INTERVIEW EXPO?

*THEN CALL TODAY AND YOU
COULD BE ON YOUR WAY TO AN
INTERVIEW EXPO IN THE U.S. ...
WITH FREE AIRFARE & HOTEL!!*



Don't miss one of the following events:

June 5-8, Orlando, FL

September 25-28, Boston, MA



Call **877.722.SHOW**
or **405.722.SHOW**
or visit us at

www.interviewexpo.com