

The Official Journal of the Canadian Council of Cardiovascular Nurses  
La revue officielle du Conseil canadien des infirmières et infirmiers en soins cardiovasculaires

# Canadian Journal of Cardiovascular Nursing

## Revue canadienne de soins infirmiers cardiovasculaires

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VOLUME 24, ISSUE 1 • WINTER 2014  
ISSN: 0843-6096

Publication Mail Agreement #40051182

Canadian  
Council of  
Cardiovascular  
Nurses



Conseil canadien  
des infirmières et  
infirmiers en soins  
cardiovasculaires



# Vascular 2013 – Montreal, QC

The 2013 CCCN Annual General Meeting and Scientific Sessions took place in Montreal, as part of Vascular 2013. This event brought the Canadian Cardiovascular Society (CCS), Canadian Diabetes Association/Canadian Society of Endocrinology and Metabolism (CDA/CSEM), Canadian Stroke Network (CSN, Heart and Stroke Foundation (HSF) and Hypertension Canada (HTC) all under one roof. This was an unprecedented opportunity to connect with physicians, scientists, clinicians, nurses, educators, allied health professionals and policy makers from across the country for an unforgettable world-class meeting promoting vascular health and care, education and research.

Close to 350 CCCN members attended congress, which included a number of CCCN sessions showcasing a wide range of outstanding clinical and research work in the CV nursing field. Registration to congress also permitted nurses to attend a multitude of other sessions being offered through the other congress partners.



Susan Morris Introduces her  
Presidential Theme

CCCN held its Annual General Meeting on the evening of October 18 and with 75 members in attendance, Susan Morris was elected as President of CCCN. Susan followed outgoing President Jocelyn Reimer-Kent's lead and introduced a theme of "**COURAGE**" for her term in office. CCCN's Board of Directors each took a turn reporting on the activities that took place over the past year and the membership approved a set of new bylaws to meet the new Not-For-Profit Corporations Act.

Every year CCCN honours cardiovascular nurses with awards that celebrate nursing excellence. CCCN's 2013 Cardiovascular Nursing awards were presented to Carol Galte (Clinical Excellence), Annmarie Kaan (Leadership Excellence) and Dr. Davina Banner-Lukaris (Research Excellence) during the AGM. Nominations guidelines are available on CCCN's website at [www.cccn.ca](http://www.cccn.ca).

Following the AGM, a cocktail reception was held, which provided members with the opportunity to network with fellow members from across the country over drinks and hors d'oeuvres.



AGM 2013 Reception



AGM 2013 Reception



AGM 2013 Reception

CCCN's Opening Ceremonies took place on Saturday October 19 over a breakfast, once again sponsored by General Mills. Dr. Joan Tranmer RN, BScN (Queen's), MSc (Queen's), PhD (Toronto), followed the opening ceremonies and spoke on "**Healthcare Work Environment and Cardiovascular Risk**", an exploration of work-related factors (such as shift work, job stress, long hours etc.) that may be related to increased risk for cardiovascular disease and diabetes.

The next morning saw members attend the **Health Promotion Starts with Us Activity**, a Zumba lesson that was followed by Dr. Jacques Genest, MD, FRCP(C), Cardiologist, who spoke on the "**ABCs of Diabetes**".



General Mills Display 2013 Opening Plenary

CCCN would like to thank everyone who attended Vascular 2013 and hopes to see you all again in Vancouver for the 2014 Canadian Cardiovascular Congress – October 25–28, 2014.

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The *Canadian Journal of Cardiovascular Nursing* is published four times per year 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 published articles reflect those of the author(s) and do not necessarily reflect those of the Board of Directors of CCCN or the publisher. The information contained in this journal is believed to be accurate, but is not warranted to be so. The CCCN does not endorse any person or products advertised in this journal. Produced by Pappin Communications, Pembroke, Ontario.

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The *Canadian Journal of Cardiovascular Nursing* is indexed in EBSCO.

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ISSN: 0843-6096

Canadian Publications Sales  
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cardiovasculaires



## MESSAGE FROM THE PRESIDENT

Dear CCCN Members,

At the October 2013 Annual General Meeting I was elected as your CCCN president. The theme of my presidency is COURAGE. I have always believed or thought that nurses are very courageous. My mom was one of the most courageous women I have known, and likely the best nurse I have known! As your president, I challenge you to identify "YOUR FACE OF COURAGE". What do patients see in your face? Do they see a nurse who has the courage to advocate for them? Do they see the face of a nurse who has the courage to listen, or to speak on their behalf? I would like you to take a moment and study the picture below.



Do you see her "FACE OF COURAGE"? I am immediately filled with hope and inspiration when I look at this young lady's face. The courage she displays, as she stands on the edge of a diving board, is what I hope I display to my patients and my colleagues each and every day. Imagine yourself as "Mr. Smith" receiving word that he requires coronary artery bypass grafting and, as the physician leaves the room, Mr. Smith turns to you for answers, comfort and support ... what does your face of courage tell him? Is it filled with compassion, understanding and support? Do you have the courage to listen to his concerns and then act on them?

I challenge you to keep this young lady's face in your mental image bank and pull her forward when you are feeling vulnerable or feel you lack the courage to do what is right.

I call her "C" and she is my inspirational **FACE OF COURAGE**.

I would love to hear about your FACE OF COURAGE and how courage helps you in the practice of cardiovascular nursing. Email: [Susan.Morris@HorizonNB.ca](mailto:Susan.Morris@HorizonNB.ca)

With kind regard and COURAGE,  
**Susan Morris**

## Congratulations to our 2013 CCCN Award Winners

**Carol Galte**, Nurse Practitioner, Fraser Health Authority, New Westminster, BC  
Cardiovascular Nursing Clinical Excellence Award 2013

**Annmarie Kaan**, Clinical Nurse Specialist, St Paul's Hospital, Vancouver, BC  
Cardiovascular Nursing Leadership Excellence Award 2013

**Dr. Davina Banner-Lukaris**, Assistant Professor, University of Northern British Columbia, Prince George, BC  
Cardiovascular Nursing Research Excellence Award 2013

**Christina Sheppard**, Calgary, AB  
Canadian Cardiovascular Congress 2013 Student Oral Presenter Award

**Caroline Lemay**, Trois-Rivières, QC  
Canadian Cardiovascular Congress 2013 Student Poster Presenter Award

**Ping Zou**, Markham, ON  
CCCN 2013 Research Grant

Project title: Examination of a Culturally Sensitive Dietary Intervention to Treat Hypertension for Chinese Canadians (DASHNa-CC): A Pilot Randomized Controlled Trial in a Community Setting [\$5,000]

Every year, CCCN Honours cardiovascular nurses with awards that celebrate nursing excellence. Awards are presented at the CCCN Annual General Meeting & Scientific Sessions. Deadline for application is August 31, 2014. For nomination guidelines and additional information please visit our website at [www.cccn.ca](http://www.cccn.ca)

*Please consider nominating a nurse you think exemplifies the best in cardiovascular nursing*

# CCCN Scientific Session Call for Abstracts

in conjunction with the Canadian Cardiovascular Congress  
Vancouver, BC, October 25–28, 2014

CCCN is announcing a Call for Abstracts related to any aspect of cardiovascular and/or cerebrovascular nursing for presentation at the Scientific Sessions of the Canadian Council of Cardiovascular Nurses in Vancouver, BC, October 25–28, 2014.

Abstract submissions are invited for presentation in English or French. Please indicate on the abstract form the language in which you would like to present. Abstracts are invited as **four** presentation options:

**Workshop:** Workshop presenters will offer an interactive discussion and analysis of a clinical topic or practice issue in a forum lasting 50–60 minutes. The abstracts for workshop sessions must meet the same criteria as the other submissions, and must outline the educational objectives, proposed content area and method of presentation (i.e., case study, multiple choice questions) for attendees to interact with one another and the presenters.

**Oral:** Paper presentations will be 15 minutes in length with an additional five minutes allotted for questions.

**Poster:** Posters will be displayed over two days of the CCCN conference. Presenters must be available at their poster location for 30 minutes on one of the two days. Poster presenters **may** be selected by the abstract review committee to present their poster as a moderated oral poster session.

**Oral or poster:** Submitters are willing to have their abstract considered by the abstract review committee for an oral or poster presentation.

Submissions are peer reviewed in one of two categories: research and non-research. An abstract submission is reviewed in the “research” category if it describes some aspect of an original piece of research, either as “completed research” or “research in progress”.

The “non-research” category includes abstracts that do not describe an original piece of research (i.e., theoretical or clinical application).

Abstracts are considered under one of the following themes: ACS/AMI, stroke, paediatrics and congenital heart disease, dysarrhythmia management, health promotion, nursing education, health services, patient safety, heart failure/transplant, cardiac surgery and other.

The submission of an abstract constitutes a commitment by the author(s) to attend the meeting and to present. All presenting authors must register for the meeting and are responsible for their own transportation and accommodation. Abstract grading is performed by blind review and notification of acceptance or rejection of an abstract occurs by email in May/June 2014.

Students are invited to submit their abstract to be considered for an oral or poster presentation award at the CCCN

Scientific Annual Meeting. Each award recognizes excellence in a clinical or research presentation. Successful candidates are awarded a free one-year membership and certificate of achievement. To be eligible for an oral or a poster presentation award:

1. Presentation must be based on work completed as a student and related to the program of study.
2. Presentation must be made within a year of graduation.
3. Student must be the lead or co-author, and the presenting author at the CCCN National Scientific Session, and
4. Student must be a current member of CCCN.

Please note: CCCN has an online submission process and all abstracts **must** be submitted on the website at **www.cccn.ca**. The online submission process opens February 17 and closes April 1, 2014 at 2400 hours. For more information, visit **www.cccn.ca** or contact **info@cccn.ca**

## READ CAREFULLY

### FAILURE TO COMPLY WITH INSTRUCTIONS WILL LEAD TO DISQUALIFICATION OF AN ABSTRACT

#### SUBMISSION INSTRUCTIONS

##### A. GUIDELINES FOR ABSTRACT PREPARATION

1. Abstracts must be no longer than 250 words.
2. Abstracts can be submitted in French or English.
3. Abstracts will be published in the language of original submission unless provided in both official languages.
4. Abstracts must be submitted under only one of the following presentation categories, and will be considered **ONLY** for the selected category:
  - workshop
  - oral
  - poster
  - oral or poster presentation
5. **DO NOT** use headings. Abstracts must be submitted in narrative (paragraph) format.
6. Common abbreviations may be used (i.e., mm Hg), but all other abbreviations must be explained the first time that they are used (i.e., “...the Heart Health Survey (HHS) found that ...”).
7. **DO NOT** underline or use bold print within the body of an abstract to emphasize words or phrases.
8. It is recommended that abstracts be composed in a word processing program (e.g., Word) and then cut and pasted into the abstract template. **Please ensure that all spelling and/or grammatical errors are corrected before pasting into the abstract template.**

## B. SPECIAL ADDITIONAL GUIDELINES FOR RESEARCH ABSTRACTS

1. Authors must organize and present (do not use headings) the research abstract with the following information:
  - background or significance of the problem;
  - purpose of the investigation;
  - methods to collect and analyze the data;
  - results of the study; and
  - conclusions, including implications for practice.
2. If a study is in progress and results/conclusions are not available, it is necessary to include the potential implications for clinical practice.

## C. SPECIAL ADDITIONAL GUIDELINES FOR NON-RESEARCH ABSTRACTS

1. Organize and present the non-research project according to:
  - statement of purpose;
  - a description of the issue/program/technique that will be presented;
  - summary of major conclusions; and
  - description of the significance and implications for practice.

## D. POLICIES

1. Abstracts must conform to instructions and be submitted by April 1, 2014, at 2400 hrs.
2. The submission of an abstract constitutes a commitment by the author to present if accepted. Failure to present, if not justified, will jeopardize future acceptance of abstracts.
3. There is no limit on the number of abstracts that an author's name may appear on for submission.

**Please note:** Abstracts that have been previously presented at CCCN Scientific Sessions will not be accepted. Should an abstract be accepted for presentation at CCCN Scientific Sessions in Vancouver, it may not be presented in duplicate at another national conference before or within three months following presentation at CCCN.

## APPEL DE RÉSUMÉS POUR LES SÉANCES SCIENTIFIQUES DU CCIISC

en conjonction avec le Congrès canadien sur la santé cardiovasculaire à Vancouver, BC, du 25 au 28 octobre 2014

Vous pouvez vous procurer une copie de l'*Appel de résumés* de 2014 en français sur le site Web du Conseil canadien des infirmières et infirmiers en soins cardiovasculaires (CCIISC). ♥

## DID YOU KNOW? CCCN Membership has rewards!

If you have certification through the Canadian Nurses Association (CNA) being an active member of CCCN has its rewards.

If you join a committee related to your specialty like a CCCN provincial or national committee you can earn 5 credit hours per year—do that for 5 years and you have 25 credit hours.

But there is more... starting this year being a member of a specialty group like CCCN counts as 4 credit hours per year. Keep up your membership and in 5 years that will be 20 credit hours.

Add 25 and 20 and you would have accrued 45 out of the required 100 credit hours towards recertification.

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Conseil canadien  
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infirmiers en soins  
cardiovasculaires

## CLINICAL COLUMN

# Late Erosion of an Atrial Septal Occluder Device Presenting as Cardiac Tamponade

Melodie Cannon, RN (EC), MSc/FNP, BHScN, CEN, GNC(C), and Paul Galiwango, MD, FRCP(C)

A 41-year-old female presented to a community hospital emergency department after a sudden collapse at home. As per the patient's spouse, the paramedics reported the patient complained of left chest pain immediately before collapsing. There was a history of cardiac surgery for an atrial septal defect (ASD) with the surgical date not known at the time of presentation.

On arrival to the emergency department, the patient was lethargic and unable to provide a history. Her blood pressure was 70 systolic and she was tachycardic with a heart rate of 120 beats per minute with no murmurs. On physical examination, the patient was restless and moaning. The chest was clear. Palpation of the abdomen appeared to initiate a pain response; bowel sounds were present. Extremities were cold to touch. Volume resuscitation was initiated with normal saline and pentaspan. The 12-lead ECG showed sinus tachycardia with a rate of 120 BPM, a right axis deviation and diffuse non-specific T wave changes. Laboratory findings including a CBC, urea, creatinine, electrolytes, INR and troponin were within normal limits. A quantitative BHCG was zero. A stat portable abdominal ultrasound was done to assess for abdominal pathology. The ultrasound showed a trace of ascites and a dilated inferior vena cava with limited flow within the inferior vena cava and femoral veins. Chest x-ray showed possible left lower lobe pneumonia. There were no sternal wires to suggest previous cardiac surgery. A stat portable echocardiogram was done to assess the right ventricle due to concerns regarding a possible large pulmonary embolus. The echocardiogram revealed a large, circumferential pericardial effusion with a compressed right ventricle. The effusion measured four centimetres in its largest diameter anterior to the right ventricle. Left ventricular function was normal. An occluder device was seen straddling the interatrial septum. A bedside pericardiocentesis was performed with bright red hemorrhagic fluid returned. With the initial aspiration of 120 mls of fluid, the systolic blood pressure improved to 130 and the heart rate decreased to the 80s. Under echocardiographic guidance, a pericardial drain was inserted and approximately 800 mls of fluid was drained. Drain placement was confirmed by echocardiogram and agitated saline bubble test.

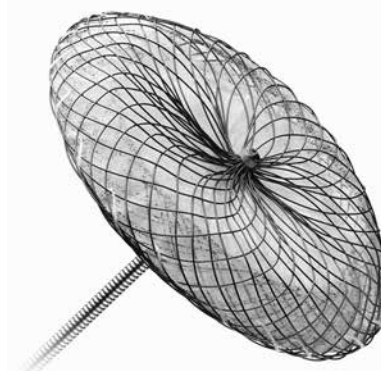
The case was reviewed with the congenital cardiac physician at the tertiary care facility where the ASD repair had been done. Further information was obtained. The patient had undergone an ASD device closure approximately 16

months previously. A follow-up echocardiogram three months post procedure showed normal left ventricular and right ventricular function with a trivial pericardial effusion. No further follow-up was planned.

Based on clinical findings and case review, the concern was that the device may have caused erosion resulting in a slow pericardial bleed. Arrangements were made to transfer the patient to the tertiary facility for an urgent cardiovascular surgical consult. The patient underwent a successful surgical repair and was discharged home without physical or neurological deficits.

## Discussion

Atrial septal occluder devices allow for closure of ASDs without an open, more invasive cardiac procedure. Due to the relatively simple technique involved, percutaneous closure of ASDs and patent foramen ovals have become the preferred treatment strategy (Yared et al., 2009). The AMPLATZER™ Atrial Septal Occluder (ASO) device consists of two retention discs and is available in a number of sizes to account for the variability in the anatomy of the defects (See Figure 1). Correct sizing is essential to optimize procedural results. The device is implanted by interventional cardiologists with fluoroscopic and echocardiographic imaging guidance. The size of the defect is determined by the insertion of a sizing balloon. After the defect size has been determined, the sizing balloon is removed and an appropriately sized occluder device is chosen. If an exact sizing match is not possible, a device one size



**Figure 1: AMPLATZER™ Septal Occluder**

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greater than the defect is used. The device is screwed onto a delivery cable and then loaded into a specialized delivery system. The delivery system is advanced into the left atrium where the distal disc is deployed and positioned against the left side of the atrial septum. The delivery system is then retracted and positioned in the right atrium for deployment of the proximal disc. Correct positioning of the device will demonstrate that the two discs are positioned together on opposing sides of the ASD. If adjustments are required, this can be accomplished through retraction and repositioning of the device. Once optimal positioning has been achieved, the device is released from the delivery cable (St. Jude Medical, 2012).

Erosion is an infrequent, yet serious complication of ASD closures with percutaneous occluder devices. The rate of erosion is estimated at approximately 0.1% (Amin et al., 2008, Taggart, Dearani, & Hagler, 2011). It is most common for erosions to occur within three months of device placement. However, there have been documented cases occurring out to three years post-procedure (Amin et al., 2004). In the case of the AMPLATZER™ Septal Occluder device, the roof of the left atrium is the most common site of erosion, which results in hemorrhagic pericardial effusion and frequently cardiac tamponade. The fact that the left atrial disk is larger than the right may explain the left atrium's vulnerability (Yared et al., 2009). ASD closure is associated with return to normal cardiac chamber dimensions, which may bring the free walls of the atria in closer proximity to occluder disks (Knott-Craig & Goldberg, 2008). The incidence of hemodynamic compromise from ASD occluder device erosion is reported at 0.11% (Hanzel, 2006).

ASDs that are located high on the septum, with insufficient antero-superior rims are associated with increased risk of erosion. This is believed to be due to increased mobility of the occluder device, with subsequent opportunity for friction with the atrial wall (Amin et al., 2004; Yared et al., 2009). Oversizing of an ASD device also increases the risk of erosion, as does excessive movement of the device before release from the delivery cable (Amin et al., 2004).

As transcatheter closure of ASD increases in popularity, physicians need to remain alert to the small, but not negligible

risk of life-threatening complications. In cases of late erosion, such as in our patient, symptoms may be completely absent until a sudden catastrophic presentation.

Health care providers need to take a thorough history and clearly document the assessment within the patient record. All patient care team members should be advised of the presence of the occluder device. This information is vital to guiding investigations and treatment in the event of respiratory or cardiac symptoms or a sudden deterioration in the patient's status.

Nursing interventions are many and are aimed at minimizing the patient's distress and supporting hemodynamic stability. Assistance with an emergency pericardiocentesis may be required and the nurse should be aware of the availability and location of the required equipment. Close monitoring of vital signs and clinical status are essential and significant changes should be reported immediately to the attending physician. Nurses must be prepared to respond quickly to requests for medication administration and IV fluids and possibly blood products. Providing support and information to the distressed patient and family is an important intervention.

While percutaneous device closure is safe and effective in the vast majority of cases, physicians (particularly cardiologists and emergency medicine specialists) and nurses need to have a high index of suspicion for structural complications when a patient with a history of ASD device closure presents with dyspnea, chest pain, or hemodynamic compromise. Early recognition and prompt interventions and treatments are critical. Rapid echocardiographic assessment and referral to cardiothoracic surgery were lifesaving in this case. ♥

## About the Authors

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## REFERENCES

- Amin, Z., Hijaz, Z.M., Bass, J.L., Cheatham, J.P., Hellenbrand, W.E., & Kleinman, C.S. (2004). Erosion of Amplatzer septal occluder device after closure of secundum atrial septal defects: Review of registry of complications and recommendations to minimize future risk. *Catheterization and Cardiovascular Interventions*, 63, 496–502.
- Amin, Z., Hijazi, Z., Bass, J.L., Cheatham, J.P., Hellenbrand, W., & Kleinman, C.S. (2008). PFO closure complications from the AGA registry. *Catheterization and Cardiovascular Interventions*, 72, 74–79.
- Hanzel, G.S. (2006). Complications of patent foramen ovale and atrial septal defect closure devices. *Journal of Interventional Cardiology*, 19, 160–162.
- Knott-Craig, C., & Goldberg, S. (2008). Emergent surgical retrieval of embolized atrial septal defect closure device. *The Annals of Thoracic Surgery*, 85, 319–321.
- St. Jude Medical. (2012). *AMPLATZER® Atrial Septal Occluder Executive Summary*. Retrieved from <http://www.fda.gov/downloads/Advisory-Committees/CommitteesMeetingMaterials/MedicalDevices/MedicalDevicesAdvisoryCommittee/CirculatorySystemDevicesPanel/UCM304944.pdf>
- Taggart, N., Dearani, J., & Hagler, D. (2011). Late erosion of an amplatzer septal occluder device 6 years after placement. *The Journal of Thoracic and Cardiovascular Surgery*, 142, 221–222.
- Yared, K., Baggish, A., Solis, J., Durst, R., Passeri, J., Palacios, I., & Picard, H. (2009). Echocardiographic assessment of percutaneous patent foramen ovale and atrial septal defect closure complications. *Circulation: Cardiovascular Imaging*, 2, 141–149.

# The Primary Prevention of Cardiovascular Disease: Nurse Practitioners Using Behaviour Modification Strategies

Todd Charles Farrell, RN, MN, FNP-C, NP-PHC, and Lisa Keeping-Burke, RN, PhD

## Abstract

*Cardiovascular disease (CVD) places great financial strain on the health care system and dramatically affects individual quality of life. As primary health care providers, nurse practitioners (NPs) are ideally positioned to advise clients on risk factor and lifestyle modifications that ameliorate the impact of CVD. While the lifestyle targets for CVD prevention are established, the most effective means of achieving these goals remain uncertain. Behaviour modification strategies, including motivational interviewing (MI)*

*and the transtheoretical model (TTM), have been suggested, but neither approach is established as being more efficacious than the other. In this paper, evidence on the effectiveness of the two approaches for modifying smoking, diet, and exercise behaviour are presented, and a recommendation for NP practice is made.*

**Key words:** cardiovascular diseases, nurse practitioners, preventive health care, motivational interviewing, transtheoretical stages of change model, lifestyle changes, behaviour changes

Farrell, T.C., & Keeping-Burke, L. (2014). The Primary Prevention of Cardiovascular Disease: Nurse Practitioners Using Behaviour Modification Strategies. *Canadian Journal of Cardiovascular Nursing*, 24(1), 8–15.

As the foremost economic burden of disease in Canada, cardiovascular disease (CVD) remains a leading cause of mortality and contributes dramatically to a decreased quality of life (QOL) for Canadians (Manuel, Leung, Nguyen, Tanuseputro, & Johansen, 2003). The modifiable nature of CVD risk factors, such as smoking, diet, and exercise, make it a largely preventable disease (Foss et al., 1996; Tanuseputro, Manuel, Leung, Nguyen, & Johansen, 2003). Consequently, to slow the formation of CVD, it is crucial to emphasize the early reduction of risk factors prior to disease onset—which may start as early as childhood (Chrysant, 2010). The onus is on health providers to counsel clients at risk for CVD on how to modify negative health behaviours (Berra, 2010). Therefore, providers should be vigilant in identifying and offering counsel for any identified CVD risk factor, regardless of age or risk profile. Bock, Diehl, Schneider, Diehm, and Litaker (2012) reaffirm the need for behavioural counselling in the primary care setting to reduce CVD risk factors and suggest that it not be reserved for clients considered to be at high-risk.

Behavioural change is a sustained process. Therefore, it necessitates a relationship between the provider and client characterized by trust and communication (Berra, 2010). Unfortunately, Canada has historically failed to adequately emphasize prevention within primary care settings, ranking second to last among five countries, with only 55% of adults receiving lifestyle counselling from their physician (Schoen et al., 2004). This failure could, in-part, be attributed to physicians' large volume of clients for whom they provide care, coupled with the multiple areas of preventive services needed by each client (Yarnall, Pollak, Ostbye, Krause, & Mitchener, 2003).

In Canada, nurse practitioners (NPs) therapeutically manage care by incorporating both pharmacological and non-pharmacological interventions, such as lifestyle modification, which aid in achieving optimal health (Canadian Nurses Association [CNA], 2010). In the nursing literature, recommendations have been extended to use cognitive behavioural counselling approaches in reducing CVD risk factors, which include motivational interviewing (MI) and the transtheoretical model (TTM) of behavioural change (Miller, 2010; Singer, 2007; Thompson et al., 2011). However, the recommendations do not suggest either model as “superior” for care providers to use in practice. NPs are well situated to respond to the need for CVD-risk factor reduction because of their placement within the primary care setting and holistic approach to care. A synthesis of the evidence will help identify which behaviour change strategy offers the stronger evidence to support clinical utility. Before synthesizing this evidence, however, a brief overview of CVD-associated costs, the practice environment, and support for the NP as an ideal health provider to implement behavioural change for CVD-risk factor reduction is provided. While registered nurses (RNs) working to their full scope can also play a role with risk factor modification—a fact that emerged during the synthesis process—the focus of this paper is on the role of the NP in providing holistic care by using behaviour modification strategies for the primary prevention of CVD.

## Cardiovascular Disease

### Cost of Cardiovascular Disease

The cost implications of CVD described in the literature emerge in three key forms. First, CVD is responsible for significant financial expense (Genest et al., 2009; Health Canada,

2002; Heidenreich et al., 2011). In Canada, the total costs of CVD account for \$22 billion in health care spending (Genest et al., 2009). CVD is the most expensive diagnostic category of illness, representing 11.6% of Canada's illness-related expenses (Health Canada, 2002). The picture is similar in the U.S. where CVD-related expenses rank disproportionately high and analysts project that over the next 20 years total costs will increase threefold, at which point the burden of CVD will affect 45% of the population (Heidenreich et al., 2011).

Secondly, CVD is responsible for significant personal cost in the form of CVD-related mortality (Filate, Johansen, Kennedy, & Tu, 2003; Statistics Canada, 2009). According to the World Health Organization (WHO) (2007), global estimates suggest that 30% of mortality is caused by CVD with a projected increase of 8.5% by 2015. Similarly, data from 2009 reflect that 29% of all mortality in Canada is caused by major cardiovascular disease, newly second to cancer-related deaths (Statistics Canada, 2009). Additionally, increased CVD-related losses may be observed provincially and/or regionally. For instance, 61% of Canadian provinces score higher than the national average, with the Atlantic provinces demonstrating the highest CVD-related mortality in the country (Filate et al., 2003).

Finally, personal costs are realized in decreased QOL due to CVD (Manuel et al., 2003). Canadians with CVD are at least five times more likely to have trouble walking, four times more likely to need assistance with instrumental activities (e.g., meal preparation, housework and shopping) of daily living (IADLs), more than twice as likely to need help with basic activities (e.g., washing, dressing, eating and ambulation) of daily living (ADLs) and twice as likely not to be working because of their illness, compared to counterparts without CVD (Manuel et al., 2003).

### Practice Environment

The literature is consistent on the importance of cardiovascular risk-factor reduction and acknowledges the magnitude of the task. While CVD-related mortality has been trending downwards, the reality remains that, due to lifestyle behaviours, the prevalence of CVD is expected to increase in Canada over the coming decades (Genest et al., 2009; Heidenreich et al., 2011). CVD burden can be reduced through primary prevention strategies that reduce behavioural risk factors including smoking, diet, and physical inactivity, which ultimately slows CVD development (Lee et al., 2009; Manuel et al., 2003). Despite agreement on the importance of CVD risk-factor reduction, modifiable risky behaviours such as smoking, consuming high-cholesterol diets, and physical inactivity are evident in Canadians 12 years of age and older (Statistics Canada, 2012a; Statistics Canada, 2012b; Tanuseputro et al., 2003).

A number of important messages emerge from the literature on the reduction of CVD through lifestyle modification. First, behavioural goals of smoking cessation, reduced dietary fat (saturated) intake, and regular exercise are recommended for all clients, regardless of the CVD-risk category (Genest

et al., 2009; Mosca et al., 2004; Pearson et al., 2002). Each of these behavioural goals has received Class I clinical recommendations, as they are backed by strong evidence and a general consensus as to their value in promoting cardiovascular health (Mosca et al., 2004; Perk et al., 2012). Regarding tobacco use, complete cessation of smoking is the overall goal (Genest et al., 2009; Mosca et al., 2004; Pearson et al., 2002). Dietary saturated fat intake should be reduced to less than 10% of daily caloric intake, with trans-saturated fats avoided altogether (Mosca et al., 2004; Pearson et al., 2002), and at least 30 minutes of moderately intense physical activity completed most days of the week (Genest et al., 2009; Mosca et al., 2004; Pearson et al., 2002).

A second message is that these modest goals should not be limited solely to the adult population; rather, primary prevention efforts for CVD should also include children (Chrysant, 2010; Kavey et al., 2003; Pearson et al., 2002). The WHO (2007) has affirmed these findings, stating, "Although cardiovascular events are less likely to occur in people with low levels of risk, no level of risk can be considered safe" (p. 7). Interestingly, guidelines for most children are nearly identical to those identified above, with the exception of an increase in the physical activity requirement from 30 to 60 minutes daily (Kavey et al., 2003).

Lastly, Class I recommendations support the use of cognitive-behavioural approaches for implementing behaviour modification in the primary prevention of CVD (Artinian et al., 2010; Perk et al., 2012). Artinian et al. (2010) specifically recommend MI as a particular intervention strategy. Perk et al. (2012) identify MI as one potential counselling strategy, but recommend all cognitive-behavioural methods without favouring a particular strategy. Ultimately, the support of healthy lifestyle habits by primary care providers is the foundation of primary prevention of CVD (Pearson et al., 2002). The desperate need for primary care providers to assist clients with modifying unhealthy behaviours such as smoking, consuming high-fat diets, and physical inactivity is clear, and cognitive behavioural methods are identified as a viable strategy. In light of the overwhelming challenges facing Canadian physicians (Yarnall et al., 2003), an alternate and practical solution for addressing prevention efforts is needed.

## The Primary Care NP

### NP as the Ideal Provider for CVD prevention

In Canada, the position of NPs within the health care system, along with their professional values, make them particularly well matched to the task of CVD prevention and risk reduction. The majority of NPs in Canada are Primary Healthcare Nurse Practitioners (PHCNPs), also known as family nurse practitioners, who provide holistic primary care for individuals and families across the lifespan (Donald et al., 2010). Collaboratively, NPs provide comprehensive care with an emphasis on health promotion, prevention, rehabilitation and supportive care (Worster, Sarco, Thrasher, Fernandes, &

Chemeris, 2005). They promote improving health and preventing illness in keeping with the four core competencies embodied in advanced nursing practice (CNA, 2010; Nurses Association of New Brunswick [NANB], 2010a). Moreover, as a standard of care, implementing interventions aimed at health promotion and disease prevention is an expected function of NP practice (NANB, 2010b).

In addition to optimal positioning, NPs have formidable strengths that can be used in delivering preventive care. Schoen et al. (2007) discuss the unfortunate pattern of poor communication between physicians and clients, highlighting the need for more client-centred care in order to improve outcomes. Care provided by NPs has led to increased satisfaction among clients (Bonsall & Cheater, 2008; DiCenso et al., 2010; Hayes, 2007; Naylor & Kurtzman, 2010; Thrasher & Purc-Stephenson, 2007; Wilson & Shifaza, 2008). The satisfaction with NP-delivered care correlates with increased communication (Hayes, 2007). High levels of client satisfaction are also associated with better health outcomes, increased compliance with treatments, less waste of health resources, and decreased litigation (Thrasher & Purc-Stephenson, 2007).

### Nursing Practice Recommendations

While cognitive behavioural strategies are identified as a way to mitigate risky behaviours for CVD prevention, it remains unclear as to which strategy offers the greater clinical utility. Two different recommendations have emerged from the health care literature. There is support for the use of MI for CVD risk factor reduction (Miller, 2010; Thompson et al., 2011). Thompson et al. (2011) found MI to be an effective strategy for nurses to employ in reducing CVD risk factors. However, they assert that more research is needed before fully implementing such practices. Miller (2010) also supports the efficacy of nurses using MI to reduce CVD risk factors, but espouses a more positive outlook on MI's clinical utility. Additionally, support exists for the TTM of behaviour change, as an alternate strategy for reducing CVD risk factors (Singer, 2007). Singer (2007) indicates the TTM has utility and "very significant implications" (p. 14) for NPs implementing lifestyle modification in primary care. While a third strategy, a combination of the MI and TTM approaches has also been suggested (Van Nes & Sawatzky, 2010), its utility is seriously questioned due to the unrelated theoretical and empirical connections between the two strategies (Wilson & Schlam, 2004). Despite both strategies sharing a common goal, MI focuses on the resolution of ambivalence over changing behaviour, compared the emphasis on individual choice central to TTM. Consequently, further discussions in this paper are focused on the utility of the MI and TTM as two separate behaviour strategies in order to address the question "Which strategy should an NP preferably use in practice—motivational interviewing (MI), or the transtheoretical model (TTM)?"

### Motivational Interviewing

Initially described for the treatment of alcohol abuse, motivational interviewing (MI) later evolved into a theoretical strategy for implementing behavioural change (Rollnick & Miller, 1995). MI is a directive counselling style where the interviewer intentionally elicits and resolves a client's ambivalence over behavioural change (Rollnick & Miller, 1995). Ambivalence is viewed as a normal reaction to behavioural change, since it is a demanding process that can require redefining one's beliefs about the behaviour and any role that it may fulfill (Rollnick & Allison, 2004). A therapeutic and non-confrontational relationship between client and provider allows for elicitation and resolution of the client's ambivalence and, ultimately, achieves a readiness to change (Rollnick & Miller, 1995).

Four fundamental principles are used to facilitate the MI process and include the expression of empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy (Rollnick & Allison, 2004; Rollnick & Miller, 2002). MI allows counsellors to maintain direction within the counselling session, escape hostility elicited in the confrontational methods, and remove themselves as targets of a client's defensive emotional reactions during times of high ambivalence (Rollnick & Allison, 2004). Vital to the process of MI is the counsellor evoking and facilitating the release of an individual's inner motivation and resources for change. Therefore, counsellors must believe the individual has such potential (Rollnick & Miller, 2002). Rollnick and Miller (2002) further describe the essence of MI: "It is a way of being with people, which is likely to be quite different from how others have treated them in the past" (p. 41).

To explore the effectiveness of MI in achieving behavioural change, a comprehensive review of the evidence-based literature was performed. The review aimed to examine the efficacy of MI-based interventions for modifying the lifestyle behaviours of smoking, diet (particularly fat intake) and exercise. The CINAHL, Google Scholar, Medline, PubMed, and Cochrane Library databases were searched from 1998 to present. Sources were limited to peer-reviewed studies published in English. Key word searches included "MI" or "motivational interviewing" in combination with "intervention," "diet," "physical activity," or "smoking." Abstracts were reviewed and 16 relevant studies were selected that examined the efficacy of MI-based interventions on modifying smoking, diet (particularly fat intake), and exercise behaviours. When the body of evidence allowed, high level evidence (level I and II) including meta-analyses (MAs), systematic reviews (SRs) and randomized control trials (RCTs) were synthesized and the findings of more recent works discussed (Fineout-Overholt, Melnyk, Stillwell, & Williamson, 2010). One recent controlled trial without randomization (level III evidence) was also included in the discussion (Fineout-Overholt et al., 2010).

The same databases and limits were used to examine the efficacy of TTM-based interventions for achieving behavioural change, which will be discussed later in the paper. Key words

included “TTM,” “transtheoretical model,” or “stage-based” in combination with “intervention,” “diet,” “physical activity,” or “smoking.” Abstracts were reviewed and nine relevant studies were selected that examined the efficacy of TTM-based interventions on modifying smoking, diet (particularly fat intake) and exercise behaviours. When the body of evidence allowed, the findings of level I and II evidence (SRs, MAs and RCTs) were synthesized and findings more recent to those works discussed (Fineout-Overholt et al., 2010).

## Effectiveness of MI as a Modifier of Diet and Exercise Behaviour

Two MAs were located that examined the efficacy of MI-based interventions for modifying diet and exercise behaviours, the results of which were reported as a combined effectiveness for dietary and exercise applications (Burke, Arkowitz, & Menchola, 2003; Martins & McNeil, 2009). Both level I studies identified positive implications for MI-based interventions in modifying diet and exercise behaviours, and suggested sustainability of the behavioural change over time. For example, Burke et al. (2003) explored the application of MI-based interventions across a multitude of problem areas and reported significant effects on diet and exercise behaviours that were sustained for up to four years ( $N = 30$ ). Similarly, Martins and McNeil’s (2009) analysis revealed MI-based interventions had positive effects on diet and exercise behaviours, sustainable for up to a two-year period ( $N = 37$ ).

While both Burke et al. (2003) and Martins and McNeil (2009) support the general utility of MI-based interventions for promoting changes in exercise and dietary behaviours combined, the effectiveness of MI-based interventions on specific CVD risk factors was also found. In such cases, the results of both level I and II research show MI-based interventions are effective for reducing lipid profile measurements (Kreman et al., 2006; Rubak, Sandboek, Lauritzen, & Christensen, 2005) and dietary fat intake (Brug et al., 2007; Koelewijn et al., 2009; Reinhardt, Van Der Ploeg, Grzegorzulka, & Timperley, 2012). In one RCT, it was found that dietitians were able to achieve as much as a 14% increased reduction in saturated fat intake of participants receiving MI-based interventions, compared to dietitians not using MI (Brug et al., 2007). Similarly, two more recent RCTs found that MI-based interventions led to significant reductions in measures of total fat and saturated fat over control groups who did not receive MI-based interventions (Koelewijn et al., 2009; Reinhardt et al., 2012).

Other high-level studies (level II evidence) that occurred in the primary care setting have further demonstrated that MI-based interventions can significantly help increase exercise behaviours (Carels et al., 2007; Kerse, Elley, Robinson, & Arroll, 2005). In one RCT, it was found that MI-based counselling significantly increased measures of moderate and vigorous activity and that the behavioural change was

sustained at 12 months post intervention. Likewise, a recent controlled trial (level III evidence) found that MI-based interventions significantly increased all measures of physical activity including total physical activity, walking, and moderate to vigorous activity in sedentary and insufficiently active individuals ( $N = 204$ ) (Hardcastle, Blake, & Hagger, 2012). The aim of these one-on-one counselling interventions was not to dictate why behavioural change was necessary, but rather to explore ambivalence and elicit self-directed motivation using agenda setting, decisional balance and change talk (Hardcastle et al., 2012).

## Effectiveness of MI as a Modifier of Smoking Behaviour

Smoking abstinence is identified as a key behavioural target for preventing CVD. The evidence supports MI-based interventions as having a favourable impact on smoking cessation, which may be sustainable over time. Three high-level studies (level I evidence) support evidence that MI-based interventions can significantly increase smoking abstinence versus control or usual care (Heckman, Eggleston, & Hofmann, 2010; Hettema & Hendricks, 2010; Lai, Cahill, Qin, & Tang, 2011). Heckman et al.’s (2010) MA found that participants treated with MI-based interventions were 45% more likely to achieve abstinence, which they concluded was both statistically and clinically significant ( $N = 31$ ). Encouragingly, these effects may be sustainable for up to six months, as three studies (level I and II evidence) found abstinence rates remained significant throughout that time (Groeneveld, Proper, Van Der Beek, Hildebrandt, & Van Mechelen, 2011; Heckman et al., 2010; Hettema & Hendricks, 2010). However, the supporting evidence for MI to effectively promote sustainable smoking abstinence beyond six months is less convincing. While Hettema and Hendricks (2010) found that MI positively influenced smoking abstinence in both the short- and long-term (defined as lasting longer than six months), other researchers could not confirm similar results at 12 months after treatment (Groeneveld et al., 2011; Heckman et al., 2010).

## Transtheoretical Model

Prochaska and Velicer’s (1997) TTM integrates various theories concerning interventions for behavioural change and focuses on individual decision-making ability. It is postulated that behavioural change occurs over time, and can potentially involve a progression and regression through six sequential stages: precontemplation, contemplation, preparation, action, maintenance, and termination (Prochaska & Velicer, 1997). The earliest stages of precontemplation and contemplation involve intensive decision-making processes that can occur prior to the initiation of any behaviour change. However, once change is enacted, a person might only ever achieve the maintenance stage, as a lifelong battle



of consolidating gains and resisting temptation to regress can ensue. Likewise, the final stage of termination is not always realistic as some individuals struggle with temptation throughout their entire lifetime.

Essential to achieving stage progression for the TTM are 10 processes of change that can be used to prescriptively tailor interventions: consciousness raising, dramatic relief, environmental reevaluation, social liberation, self-reevaluation, stimulus control, helping relationships, counter conditioning, reinforcement management, and self-liberation (Prochaska & Velicer, 1997; Velicer et al., 2000). These stage-matched processes are covert and overt activities that are experienced by individuals as they advance through the stages (Velicer et al., 2000). Across various health behaviours, it is hypothesized that 40% of the population is in the precontemplative stage, 40% contemplative, and 20% preparation at any given time. Individualized, stage-based tailoring of interventions is necessary because most traditional health promotion interventions are action-oriented: according to the TTM, these traditional interventions would only be appropriate for 20% of the population in the preparation stage (Prochaska & Velicer, 1997; Velicer et al., 2000).

In line with the temporal dimension of behavioural change in the TTM, Velicer et al. (2000) postulate that traditional intervention programs, focusing on single outcome measures (like absolute smoking cessation), may potentially miss early covert progress. They felt this progress may be measured by stage progression. However, they admit that for an intervention to be considered effective, it should achieve the desired behavioural change. Similarly, authors examining TTM-based interventions have argued that stage movement should not be a primary outcome measure, but rather a secondary measure, as it does not actually reflect behavioural change (Bridle et al., 2005). For consistency with Bridle et al. (2005), studies were only included if they reported measures of actual behavioural change, as opposed to the proxy measure of stage progression. However, this limitation, and the tendency of studies only to explore stage progression as an outcome measure resulted in fewer high-level studies being identified.

### **Effectiveness of TTM as a Modifier of Diet and Exercise Behaviour**

The body of evidence for TTM-based interventions included studies that examined dietary and exercise applications together, and which extended generalized conclusions for utility (Bridle et al., 2005; Van Sluijs, Van Poppel, & Van Mechelen, 2004). Two high-level studies (level I evidence) examined the efficacy of TTM-based interventions for modifying various behaviours, and found the application of diet and exercise limited, or lacking altogether (Bridle et al., 2005; Van Sluijs et al., 2004). Bridle et al.'s (2005) SR found very few studies that supported TTM-based interventions for modifying diet and exercise behaviours and

suggested caution when using TTM-based interventions; approximately 75% of the studies reviewed demonstrated no positive effect. While one high-level study (level I evidence) noted the positive effects of TTM-based interventions on diet and exercise behaviours, the results need to be cautiously interpreted (Tuah et al., 2012). The authors of this Cochrane Review questioned the validity of findings, as the conclusions stemmed from five key trials, four of which were considered high-risk for bias (Tuah et al., 2012).

While consensus about the utility of TTM-based interventions for modifying exercise and diet behaviours combined was mixed, the evidence supporting the effectiveness of TTM-based interventions on specific CVD risk factors was no more convincing. Two high-level studies (level I and II evidence) did not support TTM-based interventions for achieving sustainable reductions in dietary fat intake (Greene & Rossi, 1998; Salmela, Poskiparta, Kasila, Vahasarja, & Vanhala, 2009). One MA identified that TTM-based interventions had favourable short- and longer-term effects on fat intake. However, conclusions were hampered by a small number of included studies ( $N = 4$ ) (Van Sluijs et al., 2004). The authors recommended caution, as their findings were informed by very few studies. Salmela et al. (2009) expressed similar concerns over the validity of Van Sluijs et al.'s (2004) findings and suggested that any use of TTM-based interventions in primary care be evidence-based.

Similarly, the evidence is not convincing for TTM-based intervention as a modifier of exercise behaviours (Bridle et al., 2005; Hutchison, Breckon, & Johnston, 2009; Van Sluijs et al., 2004). While Van Sluijs et al. (2004) found that TTM-based interventions did not increase physical activity measures at short-, medium- or long-term follow-ups, Bridle et al. (2005) identified that only one trial in six favoured stage-based interventions over usual care. More recently, Hutchison et al. (2009) performed an SR (level I evidence) and found it impossible to accurately draw conclusions over the efficacy of TTM-based interventions for exercise behaviours, as only a small portion of studies used the TTM construct properly.

### **Effectiveness of TTM as a Modifier of Smoking Behaviour**

Multiple high-level studies (level I evidence) found limited evidence to support TTM-based interventions for modifying smoking behaviours (Bridle et al., 2005; Cahill, Lancaster, & Green, 2010; Riemsma et al., 2003; Van Sluijs et al., 2004). Three SRs found that TTM-based interventions were inferior, or only equivalent, to usual care, no care, and other interventions in achieving smoking cessation or abstinence (Bridle et al., 2005; Cahill et al., 2010; Riemsma et al., 2003). Moreover, Van Sluijs et al. (2004) found no evidence to support the positive effects of TTM-based intervention on smoking cessation at short-, medium- and long-term follow-ups. More recently, Chan et al.'s (2011) RCT (level II evidence) reaffirmed that

TTM-based interventions have no sustainable effects on smoking cessation, as there were no differences between intervention and control groups on self-reported or biochemical measures of abstinence at 12 months post-intervention.

Doubt emerges as the evidence fails to demonstrate the effectiveness of TTM-based interventions to help modify smoking behaviours. Bridle et al. (2005) advised that there is little evidence that TTM-based intervention supersedes usual care, other interventions, or no treatment. Similarly, Cahill et al. (2010) suggested the value of such strategies remains unclear, as TTM-based interventions were found no more effective in achieving smoking cessation than other treatments.

## Practice Implications

The personal and financial burdens stemming from CVD are immense. As discussed, agreement exists in the CVD literature on goals for modifying behaviours including the complete cessation of smoking, 30 minutes of physical activity daily, and reducing the consumption of saturated fats to less than 10% of daily caloric intake while avoiding trans fats altogether. National organizations including the American Heart Association and European Society of Cardiology, have extended Class I recommendations supporting the use of cognitive behavioural methods for behaviour modification in the primary prevention of CVD (Artinian et al., 2010; Perk et al., 2012).

The NP emerges as a care provider within the primary care setting who emphasizes health promotion and aims to supplement rather than replace other care providers (Donald et al., 2010). Moreover, the promotion of health and prevention of illness epitomizes advanced practice nursing (CNA, 2010; NANB, 2010a). As competent care providers with a strong role in preventative care, the value of NPs in the battle against CVD is clear, especially in light of their clinical success with clients.

The main aim of this paper was to review multidisciplinary evidence with a view towards extending a practice recommendation to NPs that would support MI or the TTM as a superior strategy for promoting behaviour modification in the prevention of CVD. The specific focus of the review was geared towards the utility of MI or the TTM for modifying the CVD risk behaviours of smoking, diet (particularly fat intake), and exercise. An examination of the evidence revealed scant support for adoption of the TTM to implement behavioural change. In the areas of diet and exercise, most researchers found the use of TTM-based interventions limited (Bridle et al., 2005; Van Sluijs et al., 2004). The few positive implications that were found for TTM in the areas of diet and exercise were simultaneously undermined by researchers' concerns that their conclusions were drawn from studies at high risk for bias (Tuah et al., 2012). Positive effects in the areas of diet and physical activity behavioural change were generally not observed, not sustainable, or interpreted with caution. The evidence to support the use of TTM-based interventions for implementing smoking cessation

was limited (Bridle et al., 2005; Riemsma et al., 2003; Van Sluijs et al., 2004). In comparison to usual care, no care, and other interventions, stage-based interventions are considered inferior or equivalent at best (Bridle et al., 2005; Cahill et al., 2010; Riemsma et al., 2003; Van Sluijs et al., 2004).

Alternatively, MI emerged as a superior strategy supported by research, as a means of modifying CVD-related behaviours. With regard to diet and physical activity, the literature revealed that MI-based interventions led to behavioural change that was sustainable over time (Burke et al., 2003; Martins & McNeil, 2009). This review also identified positive implications for MI-based interventions for altering lipid profiles, decreasing saturated fat intake, and increasing regular exercise. Additionally, MI demonstrated promise in the area of smoking cessation, with much of the research agreeing that MI-based interventions significantly increased abstinence over controls or usual care (Heckman et al., 2010; Hettema & Hendricks, 2010; Lai et al., 2011; Lundahl & Burke, 2009). Encouragingly, these effects demonstrated that they were also sustainable over time (Hettema & Hendricks, 2010).

Primary health care NPs are ideally positioned to address the ever-present and forthcoming threat of CVD, and to alleviate the vast burdens that result. Lifestyle recommendations are clear and the NP performs a crucial role in assisting clients with the modification of risky behaviours. NPs are responsible for appraising and summarizing available information to formulate best practice decisions (Thompson, 2012). Consequently, as primary care providers, they are responsible for decisions about which cognitive behavioural methods to employ for reducing risk factors associated with CVD. This examination and synthesis of the literature has indicated that MI offers more clinical utility than the TTM in modifying the CVD-related behaviours of smoking, diet, and exercise, and offers direction as to which behavioural strategy to best use to direct CVD risk factor modification in NP practice. Because time constraints within the primary care setting may not always allow for lengthy counselling sessions with clients, it is further recommended that future research determine an optimal length and frequency of MI-based counselling that allows for effective and sustainable modification of CVD risk behaviours. Such insights will further optimize the effectiveness for using MI and helping effect behavioural change for CVD risk reduction. ♥

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## REFERENCES

- Artinian, N.T., Fletcher, G.F., Mozaffarian, D., Kris-Etherton, P., Van Horn, L., Lichtenstein, A.H., ... Burke, L.E. (2010). Interventions to promote physical activity and dietary lifestyle changes for cardiovascular risk factor reduction in adults: A scientific statement from the American Heart Association. *Circulation*, 122, 406–441. doi:10.1161/CIR.0b013e3181e8edf1
- Berra, K. (2010). Challenges of changing lifestyle to reduce risk for cardiovascular disease. *Journal of Cardiovascular Nursing*, 25, 223–227. Retrieved from <http://journals.lww.com/jcnjournal/pages/default.aspx>
- Bock, C., Diehl, K., Schneider, S., Diehm, C., & Litaker, D. (2012). Behavioral counseling for cardiovascular disease prevention in primary care settings: A systematic review of practice and associated factors. *Medical Care Research and Review*, 69, 495–518. doi:10.1177/1077558712441084
- Bonsall, K., & Cheater, F.M. (2008). What is the impact of advanced primary care nursing roles on patients, nurses and their colleagues? A literature review. *International Journal of Nursing Studies*, 45, 1090–1102. doi:10.1016/j.ijnurstu.2007.07.013
- Bridle, C., Riemsma, R.P., Pattenden, J., Sowden, A.J., Mather, L., Watt, I.S., & Walker, A. (2005). Systematic review of the effectiveness of health behavior interventions based on the transtheoretical model. *Psychology and Health*, 20, 283–301. doi:10.1080/08870440512331333997
- Brug, J., Spikmans, F., Aartsen, C., Breedveld, B., Bes, R., & Fereira, I. (2007). Training dieticians in basic motivational interviewing skills results in changes in their counseling style and in lower saturated fat intakes in their patients. *Journal of Nutritional Education and Behavior*, 39, 8–12. doi:10.1016/j.jneb.2006.08.010
- Burke, B.L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. *Journal of Consulting & Clinical Psychology*, 71, 843–861. doi:10.1037/0022-006X.71.5.843
- Cahill, K., Lancaster, T., & Green, N. (2010). Stage-based interventions for smoking cessation. *Cochrane Database of Systematic Reviews* 2010, 11, CD004492. doi:10.1002/14651858.CD004492.pub2
- Canadian Nurses Association. (2010). *Core competency framework*. Retrieved from [http://nntnu.ca/Portals/0/Competency\\_Framework\\_2010\\_e.pdf](http://nntnu.ca/Portals/0/Competency_Framework_2010_e.pdf)
- Carels, R.A., Darby, L., Cacciapaglia, H.M., Konrad, K., Coit, C., Harper, J., ... Versland, A. (2007). Using motivational interviewing as a supplement to obesity treatment: A stepped-care approach. *Health Psychology*, 26, 369–374. doi:10.1037/0278-6133.26.3.369
- Chan, S.S. C., Leung, D.Y.P., Wong, D.C.N., Lau, C., Wong, V.T., & Lam, T. (2011). A randomized controlled trial of stage-matched intervention for smoking cessation in cardiac out-patients. *Addiction*, 107, 829–837. doi:10.1111/j.1360-0443.2011.03733.x
- Chrysant, S.G. (2010). Stopping the cardiovascular disease continuum: Focus on prevention. *World Journal of Cardiology*, 2, 43–49. doi:10.4330/wjcv.2.13.43
- Donald, F., Martin-Misener, R., Bryant-Lukosius, D., Kilpatrick, K., Kaasalainen, S., Carter, N., & Bourgeault, I. (2010). The primary healthcare nurse practitioner role in Canada. *Nursing Leadership*, 23, 88–113. Retrieved from <http://www.longwoods.com/publications/nursing-leadership>
- DiCenso, A., Bourgeault, I., Abelson, J., Martin-Misener, R., Kaasalainen, S., Carter, N., ... Kilpatrick, K. (2010). Utilization of nurse practitioners to increase patient access to primary healthcare in Canada – thinking outside the box. *Canadian Journal of Nursing Leadership*, 23, 239–259. Retrieved from <http://www.longwoods.com/home.php?cat=252>
- Filate, W.A., Johansen, H.L., Kennedy, C.C., & Tu, J.V. (2003). Regional variations in cardiovascular mortality in Canada. *Canadian Journal of Cardiology*, 19, 1241–1248. Retrieved from <http://www.onlinecjc.ca/>
- Fineout-Overholt, E., Melnyk, B.M., Stillwell, S.B., & Williamson, K.M. (2010). Critical appraisal of the evidence: Part 1. *American Journal of Nursing*, 110 (7), 47–52. Retrieved from <http://journals.lww.com/ajnonline/pages/default.aspx>
- Foss, F.A., Dickinson, E., Hills, M., Thomson, A., Wilson, V., & Ebrahim, S. (1996). Missed opportunities for the prevention of cardiovascular disease among British hypertensives in primary care. *British Journal of General Practice*, 46, 571–575. Retrieved from <http://www.rcgp.org.uk/Publications/BJGP.aspx>
- Genest, J., McPherson, R., Frohlich, J., Anderson, T., Campbell, N., Carpentier, A., ... Ur, E. (2009). 2009 Canadian Cardiovascular Society/Canadian guidelines for the diagnosis and treatment of dyslipidemia and prevention of cardiovascular disease in the adult: 2009 recommendations. *Canadian Journal of Cardiology*, 25, 567–579. Retrieved from <http://www.onlinecjc.ca>
- Greene, G.W., & Rossi, S.R. (1998). Stages of change for dietary fat intake over 18 months. *Journal of The American Dietetic Association*, 98, 529–534. Retrieved from <http://www.adajournal.org/>
- Groeneveld, I.F., Proper, K.L., Van Der Beek, A.J., Hildebrandt, V.H., & Van Mechelen, W. (2011). Short and long term effects of a lifestyle intervention for construction workers at risk for cardiovascular disease: A randomized controlled trial. *BMC Public Health*, 11, 836–845. doi:10.1186/1471-2458-11-836
- Hayes, E. (2007). Nurse practitioners and managed care: Patient satisfaction and intention to adhere to nurse practitioner plan of care. *Journal of the American Academy of Nurse Practitioners*, 19, 418–426. doi:10.1111/j.1745-7599.2007.00245.x
- Hardcastle, S., Blake, N., & Hagger, M.S. (2012). The effectiveness of a motivational interviewing primary-care based intervention on physical activity and predictors of change in a disadvantaged community. *Journal of Behavioral Medicine*, 35, 318–333. doi:10.1007/s10865-012-9417-1
- Health Canada. (2002). *Economic burden of illness in Canada, 1998*. Retrieved from <http://www.phac-aspc.gc.ca/ebic-femc/ebic-femc98/index-eng.php>
- Heckman, C.J., Egleston, B.L., & Hofmann, M.T. (2010). Efficacy of motivational interviewing for smoking cessation: A systematic review and meta-analysis. *Tobacco Control*, 19, 410–416. doi:10.1136/tc.2009.033175
- Heidenreich, P.A., Trogon, J.G., Khavjou, O.A., Butler, J., Dracup, K., Ezekowitz, M.D., ... Woo, Y.J. (2011). Forecasting the future of cardiovascular disease in the United States: A policy statement from the American Heart Association. *Circulation*, 123, 933–944. doi:10.1161/CIR.0b013e31820a55f5
- Hettema, J.E., & Hendricks, P.S. (2010). Motivational interviewing for smoking cessation: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78, 868–884. doi:10.1037/a0021498
- Hutchison, A.J., Breckon, J.D., & Johnston, L.H. (2009). Physical activity behavior change interventions based on the transtheoretical model: A systematic review. *Health Education and Behavior*, 36, 829–845. doi:10.1177/109019810831891
- Kavey, R.W., Daniels, S.R., Lauer, R.M., Atkins, D.L., Hayman, L.L., & Taubert, K. (2003). American Heart Association guidelines for primary prevention of atherosclerotic cardiovascular disease beginning in childhood. *Circulation*, 107, 1562–1566. doi:10.1161/01.CIR.0000061521.15730.6E
- Kerse, N., Elley, C.R., Robinson, E., & Arroll, B. (2005). Is physical activity counseling effective for older people? A cluster randomized, controlled trial in primary care. *Journal of The American Geriatrics Society*, 53, 1951–1956. Retrieved from <http://ca.wiley.com/WileyCDA/WileyTitle/productCd-JGS.html>
- Koelewijn-Van-Loon, M. S., Van Der Weijden, T., Van-Steenkiste, B., Ronda, G., Winkens, B., Severens, J.L., ... Grol, R. (2009). Involving patients in cardiovascular risk management with nurse-led clinics: A cluster randomized control trial. *Canadian Medical Association Journal*, 181, 267–274. doi:10.1503/cmaj.081591
- Kreman, R., Yates, B.C., Angrawal, S., Fiandt, K., Briner, W., & Shurmer, S. (2006). The effects of motivational interviewing on physiological outcomes. *Applied Nursing Research*, 19, 167–170. doi:10.1016/j.apnr.2005.10.004
- Lai, D.T.C., Cahill, K., Qin, Y., & Tang, J.L. (2011). Motivational interviewing for smoking cessation. *Cochrane Database of Systematic Reviews* 2010, 1, CD006936. doi:10.1002/14651858.CD006936.pub2
- Lee, D.S., Chiu, M., Manuel, D.G., Tu, K., Xuesong, W., Austin, P.C., ... Tu, J.V. (2009). Trends in risk factors for cardiovascular disease in Canada: Temporal, socio-demographic and geographic factors. *Canadian Medical Association Journal*, 181, 55–66. doi:10.1503/cmaj.081629

- Lundahl, B., & Burke, B.L. (2009). The effectiveness and applicability of motivational interviewing: A practice friendly review of four meta-analyses. *Journal of Clinical Psychology*, 65, 1232–1245. doi:10.1002/jclp.20638
- Manuel, D.G., Leung, M., Nguyen, K., Tanuseputro, P., & Johansen, H. (2003). Burden of cardiovascular disease in Canada. *Canadian Journal of Cardiology*, 19, 997–1004. Retrieved from <http://www.onlinecjc.ca/>
- Martins, R.K., & McNeil, D.W. (2009). Review of motivational interviewing in promoting health behaviors. *Clinical Psychology Review*, 29, 283–293. doi:10.1016/j.cpr.2009.02.001
- Miller, N. H. (2010). Motivational interviewing as a prelude to coaching in healthcare settings. *Journal of Cardiovascular Nursing*, 25, 247–251. Retrieved from <http://journals.lww.com/jcnjournal/pages/default.aspx>
- Mosca, L., Appel, L.J., Benjamin, E.J., Berra, K., Chandra-Strobos, N., Fabunmi, R. P., ... Williams, C. L. (2004). Evidence-based guidelines for cardiovascular disease prevention in women. *Journal of the American College of Cardiology*, 43, 900–921. doi:10.1016/j.jacc.2004.02.001
- Naylor, M.D., & Kurtzman, E.T. (2010). The role of nurse practitioners in reinventing primary care. *Health Affairs*, 29, 893–899. doi:10.1377/hlthaff.2010.0440
- Nurses Association of New Brunswick. (2010a). *Nurse practitioner core competencies*. Retrieved from <http://www.nanb.nb.ca/>
- Nurses Association of New Brunswick. (2010b). *Standards of practice for primary health care nurse practitioners*. Retrieved from <http://www.nanb.nb.ca/>
- Pearson, T.A., Blair, S.N., Daniels, S.R., Eckel, R.H., Fair, J.M., Fortmann, S.P., ... Taubert, K.A. (2002). AHA guidelines for primary prevention of cardiovascular disease and stroke: 2002 update: Consensus panel guide to comprehensive risk reduction for adult patients without coronary or other atherosclerotic vascular diseases. *Circulation*, 106, 388–391. doi:10.1161/01.CIR.0000020190.45892.75
- Perk, J., De Backer, G., Gohlke, H., Graham, I., Reiner, Z., Monique-Verschuren, W.M., ... Zannad, F. (2012). European guidelines on cardiovascular disease prevention in clinical practice: The fifth joint task force of the European Society of Cardiology and other societies on cardiovascular disease prevention in clinical practice. *European Heart Journal*, 33, 1635–1701. doi:10.1093/eurheart/ehs092
- Prochaska, J.O., & Velicer, W.F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion*, 12, 38–48. doi:10.4278/0890-1171-12.1.38
- Reinhardt, J.A., Van Der Ploeg, H.P., Grzegorzulka, R., & Timperley, J.G. (2012). Implementing lifestyle change through phone-based motivational interviewing in rural-based women with previous gestational diabetes mellitus. *Health Promotion Journal of Australia*, 23, 5–9. Retrieved from <http://www.healthpromotion.org.au/journal/journal-downloads/list/1-hpia?start=20>
- Riemsma, R.P., Pattenden, J., Bridle, C., Sowden, A.J., Mather, L., Watt, I.S., & Walker, A. (2003). Systematic review of the effectiveness of stage based interventions to promote smoking cessation. *British Medical Journal*, 326, 1175–1182. doi:10.1136/bmj.326.7400.1175
- Rollnick, S., & Allison, J. (2004). Motivational interviewing. In N. Heather, & T. Stockwell (Eds.), *The essential handbook of treatment and prevention of alcohol problems* (pp. 105–115). West Sussex, England: John Wiley & Sons Ltd.
- Rollnick, S., & Miller, W.R. (1995). What is motivational interviewing? *Behavioral and Cognitive Psychotherapy*, 23, 325–334. doi:10.1017/S135246580001643X
- Rollnick, S., & Miller, W.R. (2002). What is motivational interviewing. In S. Rollnick, & W.R. Miller (Eds.), *Motivation interviewing: Preparing people for change* (pp. 33–42). New York, NY: The Guilford Press.
- Rubak, S., Sandboek, A., Lauritzen, T., & Christensen, B. (2005). Motivational interviewing: A systematic review and meta-analysis. *British Journal of General Practice*, 55, 305–312. Retrieved from [http://www.rcgp.org.uk/brjgenpract/information/about\\_the\\_bjgp.aspx](http://www.rcgp.org.uk/brjgenpract/information/about_the_bjgp.aspx)
- Salmela, S., Poskiparta, M., Kasila, K., Vahasarja, K., & Vanhala, M. (2009). Transtheoretical model-based dietary interventions in primary care: A review of the evidence in diabetes. *Health Education Research*, 24, 237–252. doi:10.1093/her/cyn015
- Schoen, C., Osborn, R., Doty, M.M., Bishop, M., Peugh, J., & Nandita, M. (2007). Toward higher-performance health systems: Adults' health care experiences in seven countries, 2007. *Health Affairs*, 26, 717–734. doi:10.1377/hlthaff.26.6.w717
- Schoen, C., Osborn, R., Trang Huynh, P., Doty, M., Davis, K., Zapert, K., & Peugh, J. (2004). Primary care and health system performance: Adults' experiences in five countries. *Health Affairs*, 24, 487–503. doi:10.1377/hlthaff.w4.487
- Singer, E.A. (2007). The transtheoretical model and primary care: "The times they are a changing". *Journal of the American Academy of Nurse Practitioners*, 19, 11–14. doi:10.1111/j.1745-7599.2006.00189.x
- Statistics Canada. (2012a). *Health trends, Canada*. Retrieved from [http://www12.statcan.gc.ca/health-sante/82-213/Op1.cfm?Lang=ENG&TABID=0&PROFILE\\_ID=0&PRCODE=01&IND=ASR&SX=TOTAL&change=no](http://www12.statcan.gc.ca/health-sante/82-213/Op1.cfm?Lang=ENG&TABID=0&PROFILE_ID=0&PRCODE=01&IND=ASR&SX=TOTAL&change=no)
- Statistics Canada. (2012b). *Health trends, New Brunswick*. Retrieved from [http://www12.statcan.gc.ca/health-sante/82-213/Op1.cfm?Lang=ENG&TABID=0&PROFILE\\_ID=0&PRCODE=13&IND=ASR&SX=TOTAL&change=no](http://www12.statcan.gc.ca/health-sante/82-213/Op1.cfm?Lang=ENG&TABID=0&PROFILE_ID=0&PRCODE=13&IND=ASR&SX=TOTAL&change=no)
- Statistics Canada. (2009). *Mortality, summary list of causes*. Retrieved from <http://www.statcan.gc.ca/pub/84f0209x/84f0209x2009000-eng.pdf>
- Tanuseputro, P., Manuel, D. G., Leung, M., Nguyen, K., & Johansen, H. (2003). Risk factors for cardiovascular disease in Canada. *Canadian Journal of Cardiology*, 19, 1249–1259. Retrieved from <http://www.onlinecjc.ca/>
- Thompson, T.L. (2012). The use of evidence in clinical practice decision making. *Clinical Nurse Specialist*, 26, 237–238. Doi:10.1097/NUR.0b013e31825e609c
- Thompson, D.R., Chair, S.Y., Chan, S.W., Astin, F., Davidson, P.M., & Ski, C.F. (2011). Motivational interviewing: A useful approach to improving cardiovascular health. *Journal of Clinical Nursing*, 20, 1236–1244. doi:10.1111/j.1365-2702.2010.03558.x
- Thrasher, C., & Purc-Stephenson, R. (2007). Patient satisfaction with nurse practitioner care in emergency departments in Canada. *Journal of the American Academy of Nurse Practitioners*, 20, 231–237. doi:10.1111/j.1745-7599.2008.00312.x
- Tuah, N., Amiel, C., Qureshi, S., Car, J., Kaur, B., & Majeed, A. (2012). Transtheoretical model for dietary and physical exercise modification in weight loss management for overweight and obese adults. *Cochrane Database of Systematic Reviews* 2011, 10, CD008066. doi:10.1002/14651858.CD008066.pub2
- Van Nes, M., & Sawatzky, J.V. (2010). Improving cardiovascular health with motivational interviewing: A nurse practitioner perspective. *Journal of the American Academy of Nurse Practitioners*, 22, 654–660. doi:10.1111/j.1745-7599.2010.00561.x
- Van Sluijs, E.M.F., Van Poppel, M.N.M., & Van Mechelen, W. (2004). Stage-based lifestyle interventions in primary care: Are they effective? *American Journal of Preventive Medicine*, 26, 330–343. doi:10.2105/AJPH.2004.044537
- Velicer, W.F., Prochaska, J.O., Fava, J.L., Rossi, J.S., Redding, C.A., LaForge, R.G., & Robbins, M.L. (2000). Using the transtheoretical model for population-based approaches to health promotion and disease prevention. *Homeostasis In Health and Disease*, 40, 174–188. Retrieved from <http://www.activitas.org/index.php/nervosa>
- Wilson, G. T., & Schlam T. R. (2004). The transtheoretical model and motivational interviewing in the treatment of eating and weight disorders. *Clinical Psychology Review*, 24, 361–387. doi:10.1016/j.cpr.2004.03.003
- Wilson, A., & Shifaza, F. (2008). An evaluation of the effectiveness and acceptability of nurse practitioners in an adult emergency department. *International Journal of Nursing Practice*, 14, 149–156. doi:10.1111/j.1140-172x.2008.00678.x
- World Health Organization. (2007). *Prevention of cardiovascular disease: Guidelines for assessment and management of cardiovascular risk*. Retrieved from [http://www.who.int/cardiovascular\\_diseases/guidelines/Prevention\\_of\\_Cardiovascular\\_Disease/en/index.html](http://www.who.int/cardiovascular_diseases/guidelines/Prevention_of_Cardiovascular_Disease/en/index.html)
- Worster, A., Sarco, A., Thrasher, C., Fernandes, C., & Chemeris, E. (2005). Understanding the role of nurse practitioners in Canada. *Canadian Journal of Rural Medicine*, 10, 89–94. Retrieved from <http://www.cma.ca/publications/cjrm>
- Yarnall, K.S.H., Pollak, K.L., Ostbye, T., Krause, K.M., & Michener, J.L. (2003). Primary care: Is there enough time for prevention? *American Journal of Public Health*, 93, 635–641. Retrieved from <http://ajph.aphapublications.org/>

## RESEARCH COLUMN

# Focus Group Research: What Is It and How Can It Be Used?

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## Abstract

*The focus group research method has been used in a variety of settings over the years. The method of using group interviews was described as long ago as 1926. Focus groups have been used by large corporations to gather the public's opinions regarding their products. In the past 20 years the focus group method has been increasingly used in health care research in a variety of settings. Researchers use the focus group method in order to obtain*

*in-depth knowledge concerning attitudes, perceptions, beliefs and opinions of individuals regarding a specific health issue. The purpose of this article is to provide a review of the focus group research method. The authors discuss the process, analysis, advantages and disadvantages of this qualitative method.*

**Key words:** research, qualitative research, mixed methods, focus group

Then, K.L., Rankin, J.A. & Ali, E. (2014). Focus Group Research: What Is It and How Can It Be Used? *Canadian Journal of Cardiovascular Nursing*, 24(1), 16–22.

Focus groups involve blending techniques from group process theory and qualitative research (Dilorio, Hockenberry-Eaton, Maiback, & Rivero, 1994; Morgan & Krueger, 1993; Then, 2000). Focus groups are considered to be a qualitative research method (Kress & Shoffner, 2007; Then, 1996). The terms *focus group* and *group interview* have often been used interchangeably throughout the literature. The purpose of this research column is to provide an overview of the focus group method of research. The authors also discuss process and analysis techniques that should be considered.

## History

The method of group interviews was first described by Bogardus (1926) and was predominantly used for social media and market research. The first focus groups were created by Associate Director and Sociologist, Robert Merton (Merton, 1987). This work was developed at the Bureau of Applied Social Research in the U.S. However, the term “focus group research” was initially used by Dr. Ernest Dichter, who was a psychologist and marketing expert. Dichter is considered to be the “Father of Motivational Research” (Boyle, 1961).

Currently, focus groups continue to be used by companies to gather consumer opinions regarding products and to understand consumer buying habits, attitudes and perceptions (Dilorio et al., 1994; Greenbaum, 1988; Then, 1996). Over the past 20 years, focus groups have been used in health care research as a stand-alone method or within other methods such as ethnography (Mkandawire-Vallmu & Stevens, 2010; Vaughn, 2012), grounded theory (Bateman, Allen, Samani, Kidd, & Davies, 2013), and phenomenology (Bradbury-Jones, Sambrook, & Irvine, 2009).

Focus group research is not only used in a variety of settings, but with a variety of populations in health care. It is important to understand the reason for conducting focus

group research and to be aware of ways in which this research method can contribute to the knowledge already known around a certain area. As with any other research, the question drives the method.

## Types of Focus Groups

Focus group research is used in a variety of areas such as market research, social research, counselling, policy development, needs assessments and health care (Krueger & Casey, 2000). Within health care systems it has been used in a variety of settings including home care, hospitals, educational facilities, rural areas and with a variety of populations including HIV, youth, cardiac, spinal cord injury, cardiac, sensitive topics, chronic disease, distance nursing education, attitudes regarding assessment, student nurses, and registered nurses (DesRosier & Zellers, 1989; Dilorio et al., 1994; Kingry, Tiedje & Friedman, 1990; Lankshear, 1993; MacIntosh, 1993; Ndumele, Ableman, Russell, Gurrola, & Hicks, 2011; Nyamathi & Shuler, 1990; Ripat & Woodgate, 2012).

Focus groups are generally used to gather in-depth knowledge about attitudes, perceptions, beliefs and opinions of individuals regarding a specific topic. In understanding what people think about a topic, their views and experience help inform health care providers in general but, more specifically, can inform practice. Focus groups can also be used to generate constructs and hypotheses; in-depth understanding of phenomena of interest and clarifying the meaning of certain behaviours. In addition, the focus group researcher can obtain data that can be used in quantitative research such as questionnaire development (Dilorio et al., 1994; Kingry et al., 1990; Then, 2000).

Focus groups, however, are not meant to be a forum for debate, therapy, or an opportunity for an educational session. The focus is on the individuals in the group, to see how they



interact, to allow them to develop their own ideas and questions and to do so using their words within the context of the event, disease or other incident they have experienced (Liamputtong, 2011). The information obtained in the focus group is not only concerned with the actual words that are said, but the non-verbal communication as well. Discussion among the group members allows for observation about individual views, as the views relate to others in the group. It is important for the observer to note what changes occur as the group progresses and what remains the same. It is as important to note whether the opinions of some participants change the opinions of others, as it is to note the opinions themselves (Then, 2000).

## Advantages

When focus group research is well planned it has many advantages over individual interviews and other methods. Focus group research can be used as a stand-alone method or can be an instrument used within other qualitative methods (e.g., ethnography, phenomenology, grounded theory) or part of a mixed method study including both qualitative and quantitative methods (e.g., focus groups and survey research) (Doody, Slevin, & Taggart, 2013a; Then, 2000). The focus group method differs from individual interviews in that it can facilitate greater anonymity and help individuals disclose more freely (Beck, Trombetta, & Share, 1986) allowing for much richer and fuller data (Lederman, 1990). The focus group method may also decrease the bias of individual interviews, as subjects may try to impress the interviewer or say what they believe is the socially acceptable response (Vaughn, Schumm, & Sinagub, 1996).

Some of the benefits of the focus group method include having the opportunity to have direct, intensive contact with individuals; collect rich, in-depth data, ability of the moderator to encourage interaction with other participants;

**Table 1: Advantages of focus groups**

- Opportunity to have direct intensive contact with individuals
- Ability to collect rich, in-depth data
- Ability of the moderator to encourage interaction with other participants
- Allows for individuals to give opinions or change opinions following discussion with other participants
- Relaxed group setting
- Individual opinions valued
- Do not discriminate against people who cannot read or write
- Individuals feel listened to
- Less intense environment
- Dynamic process
- Group promotes security and a "safe" environment
- Discussion is more spontaneous and honest
- Group dynamics and peer influences can be observed during the discussion
- Behaviours and beliefs can be validated and clarified during the discussion
- Relatively cost effective

(Doody et al., 2013a; Greenbaum, 1988; Kitzinger, 1995; Morgan & Krueger, 1998; Vaughn et al., 1996)

less-intense environment; group promotes security and a "safe" environment for individuals to express opinions and beliefs; does not discriminate against individuals who are unable to read or write; group dynamics and peer influences can be observed during the discussion; and behaviours and beliefs can be validated and clarified during the discussion, which, in turn, provides a rich understanding of the issue and it is relatively cost effective. A more comprehensive list of benefits can be found in Table 1.

Individuals are influenced by events and people and live in a social environment. Focus groups encourage a range of opinions (Byers & Wilcox, 1988) and exchange of different perceptions that may either strengthen individuals' previous convictions or challenge them to form new opinions (Hillebrandt, 1979; Krueger, 1994). Individual interviews provide for direct responses to the interviewer; focus groups allow for direct responses, foster discussion and allow individuals to adjust their opinions (Krueger, 1994; Then, 1996).

## Disadvantages

Disadvantages need to be carefully considered when deciding whether or not focus groups are the best research method to use for the question that is being asked (Table 2). In giving consideration to the use of the focus group method, it is important to be clear on what it is not. It is not an opportunity to debate, a forum for group therapy, conflict resolution, consensus/decision making or collaboration. It is not used for a promotional opportunity or as an educational session or a method to gather statistical information. Focus groups are not the avenue to discuss confidential information that should not be shared. Focus groups may also not be appropriate if the issue at hand is extremely sensitive in nature, which may illicit extreme emotion or distress in the individuals participating.

The focus group method is meant to facilitate rich, in-depth discussions. However, not all focus groups are the same. Some participants might be lethargic and dull while others are dynamic and involved. Individuals may find it stressful and challenging to discuss an issue that is close to their heart (e.g., death of a loved one, diagnosis of HIV, infertility) or be reluctant to express their opinions if they do not

**Table 2: Disadvantages of focus groups**

- Some groups may be lethargic and dull
- Stressful or sensitive issues may limit group disclosure
- Reluctance to express their opinions if other group members not trusted
- Dominant or aggressive individuals may influence the group dynamics
- Lack of control may lead to discussion of irrelevant issues
- Poor organization can waste valuable time and energy
- Difficulty of assembly due to location and time constraints
- Data are also more difficult to analyze than individual interviews
- Comments from the group must be interpreted within the social and environmental context in which they were given

(Krueger, 1994; Liamputtong, 2011; Then, 1996)

trust others in the group (e.g., workplace colleagues) (Liamputtong, 2011). Dominant or aggressive individuals may influence the group dynamics and even spark debates, which, in turn, decreases the opportunity for interaction by other, less dominant, individuals (Krueger, 1994; Liamputtong, 2011). In the event that the moderator of the focus group does not have control of the group, the discussion may veer into irrelevant issues and waste valuable time.

Other limitations of the focus group method include challenges with assembly due to possible location issues or time conflicts. Focus group data are more difficult to analyze than individual interviews, as comments from the group must be interpreted within the environmental and social context in which they occur and within the context of the group dynamics (Then, 2000).

### Method/Process Issues

Focus groups are semi-structured interviews. Therefore, it is essential for the research team to establish a moderator's guide. This guide serves as a "map" for the group interview and should include a clear outline of what needs to be achieved from the beginning to the end of the session. Depending on the experience and wishes of the moderator conducting the focus group, the guide may be unique (Vaughn et al., 1996). Each focus group should begin with basic introductions, clarification of terms, completion of consent forms, issues of confidentiality, clearly defining the topic to be discussed and the process that will occur in the group.

Normally, individuals are asked to use name tags with their first name. In conducting adolescent groups or groups that are discussing very sensitive topics allowing individuals to put whatever name or character (e.g., Mickey Mouse, Superman) they want on the name tag actually serves as an ice breaker. It is important for the moderator to call individuals by the name on the name tag for documentation by the observer and for transcription purposes later. Having pseudo names may also give participants the feeling that they are more able to disclose important details that they might not have otherwise.

The development of a moderator guide includes three sections: engagement questions, exploration questions (to get at the topic at hand) and exit questions. Exit questions allow the moderator to check if what he/she understood was correct and if there was anything else that was missed that should be included.

The focus group questions are used as a guide and not viewed as being "set in stone" or like a recipe, as this will defeat the purpose of the focus group and the actual discussion (Morgan & Krueger, 1998). The questions developed should be broad in nature and it is the moderator's responsibility to maintain clear direction during the focus group.

Prior to beginning each interview the moderator needs to request permission to tape the session to ensure that parts of the conversation are not missed (Morgan & Krueger, 1998). Participants are provided information on maintenance of

confidentiality, storage of the tapes and how the recordings will be used. Digital recorders positioned in strategic areas in the group should be used to ensure a more even audio recording of all participants. Digital recording devices have the advantage over tapes by recording for the duration of the entire focus group, thereby decreasing unnecessary interruptions caused by frequent tape changes. Focus group sessions should be transcribed verbatim to facilitate analysis. Following the focus group session the moderator and the observer meet and debrief regarding the content and process that occurred. This is followed by a write-up from both the moderator and observer regarding salient findings and information from the session.

The focus group session should always end with thanking the participants for their assistance in gathering valid insight into the topic. Both the moderator and observer also need to ensure that they are available for questions or comments from the participants. This time often brings valuable data that needs to be included into field notes.

### Size and Group Composition

The size and composition of focus groups and how many focus groups are needed are very important factors that need to be considered when developing a research plan. The sample size is not determined based on power calculations; rather, it is determined based on the specific characteristics, age of the participants and the complexity of the question that is being asked. The aim is not to generalize or infer to the population, as is the case in quantitative research, but to understand and gain insight and perceptions (Krueger, 1994). Rigour in qualitative research is based on the criteria of credibility, dependability, confirmability and transferability (Houghton, Casey, Shaw, & Murphy, 2013; Lincoln & Guba, 1985).

The size of each of the ideal focus groups recommended in the literature varies from four to 14. Dilorio et al. (1994) suggest that there should be between four and 12 participants in each focus group, while Morgan (1997) and Bloor, Frankland, Thomas, and Robson (2001) suggest between six and 10. A group that is too large often prevents individuals from participating and sharing while a group too small may not provide enough diversity within the group to gather useful information. The number of participants required should be based on the topic under investigation. For example, with adolescents, it is preferable to have smaller groups, as youth are often hesitant to share opinions in larger group settings. Greenbaum (1988) suggests that smaller group sizes may encourage individuals who would normally be reluctant to share in larger settings, regardless of the topic.

Asbury (1995) and White and Thomson (1995) suggest that the group should be as homogeneous as possible. This, however, may not be the most appropriate choice for certain research questions and more information and understanding might be gathered by having female only, male only, and female and male groups. Males and females or culturally divergent populations may have dissimilar interest, values

and beliefs and, therefore, relate to focus group questions differently (Greenbaum, 1988; Krueger & Casey, 2000). Varying the characteristics of focus groups and conducting several groups on the same topic will achieve a broader and more comprehensive understanding of the issue. The age of the participants may also influence not only the willingness to participate, but also what is actually being said (e.g., influence of peer pressure in adolescent groups).

Clearly determining the actual size of the focus groups and the composition should be determined by the question that is being asked and the characteristics specific to the group participating. Krueger (1994) and Morgan (1997) suggest that generally it is better to over-recruit participants up to approximately 20%, as time commitments, last-minute changes, withdrawal and other issues may leave the group with inadequate numbers in which to conduct the session, resulting in cancellation of the session.

### Timing

The time allotted for focus groups can vary, but should never be greater than two hours in total (Doody, Slevin & Taggart, 2013b; Morgan & Krueger, 1993; Plummer-D'Amato, 2008). If time is limited to just an hour, there is often insufficient time for discussion, as the beginning of the focus group tends to be on developing rapport and discussing the role and other issues pertaining to the focus group procedure itself (Plummer-D'Amato, 2008).

Group composition must be considered when developing the focus group plan. The length of time may need to be shortened when working with underage youth or young children. The first and the last 10 minutes of the session should be used for introduction and summarization/conclusions respectively. Discussion with the moderator or observer and individuals after the official sessions are completed is common and is valuable time that should also be included when booking space to conduct the focus groups.

### Environment and Setting

The setting, time and location of focus groups must be determined in advance and are crucial to the focus group's success (Dilorio et al., 1994; Greenbaum, 1988; Krueger & Casey 2000; Then, 2000). The environment should be comfortable and easily found and accessible to the participants. Agreement between participants and the moderator regarding location and time for the focus group sessions allows the participants more control, and may increase individuals' willingness to participate (Morgan & Krueger, 1998). Although a library may be a quiet place in which to conduct a focus group, it is an open area in which others may be present and sharing of information may be stunted. The environment must be seen to be a "safe" place in which opinions and views can be expressed without fear of retribution (Dilorio et al., 1994; Smith, 1995). For example, a discussion in a health care environment or school regarding a specific issue may be hampered if conducted in

the administrative offices where the participants' boss or principal has an office. Consideration must also be given to the room characteristics such as size, light, temperature and seating arrangements (Dilorio et al., 1994). The room should match the group size; too large or too small rooms might be uncomfortable, and may detract from the group interaction. A room too dark may have individuals falling asleep, or too bright or stark may lead to irritation of some group members.

A focus group with adolescents, in a room with many distractions including windows, will challenge the moderator to keep people involved and active in the discussion. A group of chairs placed in a circle will allow full observation of group members and will discourage individuals from "hiding" in the back rows. It is important to allow participants to sit where they want and with whom they want. Observing where and with whom individuals sit is part of the role of the observer, as clear alliances or conflicts may be identified by such a simple thing as sitting in a particular area, or by a particular participant.

### Role of Moderator

The moderator (also known as the facilitator) in focus group research plays a key role in developing a rapport with participants and setting the stage for collecting rich and valid beliefs, experiences, and perceptions from the group participants (Doody et al., 2013b; Krueger & Casey, 2000). The moderator can be the researcher and, in many instances, is a skilled interviewer who knows the population. The moderator "sets the mood of the group by creating a non-threatening, warm, accepting, enthusiastic, and objective environment, which encourages all group members to share their views" (Reiskin, 1992, p. 200).

A good moderator is one who has an open, caring disposition, who listens, captures verbal insinuations, non-verbal cues and addresses issues as they arise in the focus group. Moderators must also have the skill to redirect the group to the purpose of the study in a manner that is non-defensive, to address potential conflicts that arise in the group and to validate what is being said. Table 3 highlights components of the moderator's role as discussed by Doody et al. (2013b), Greenbaum (1988), Kingry et al. (1990), and Reiskin (1992).

**Table 3: Moderator's role**

- Provides introduction
- Ensures consent forms are completed
- Discusses agreement regarding confidentiality
- Facilitated interaction
- Adds comments and probing questions to help focus the group
- Validates what was being said, acknowledges comments from individuals
- Encourages expansion and discussion
- Seeks participation from all participants
- Keeps the discussion on track
- Summarizes the discussion
- Thanks individuals for their participation

The questions developed as part of the moderator's guide are based on the general areas, but are not meant to be all-inclusive or restrictive. The focus group moderator should have a strong knowledge base about the topic and be able to pose questions to facilitate understanding of behaviours, while at the same time not controlling the group. The aim is to focus the discussion and encourage exploration of similarities and differences of participants within the group (Dilorio et al., 1994; Greenbaum, 1988). The idea is not for the moderator to speak, but to encourage participants to talk freely and openly. Reflective listening is a communication strategy that is used to fully understand what is being said and what is not being said, and sharing that with the participants. Four specific types of responses used in reflective listening include clarifying, paraphrasing, reflecting feelings and summarizing. Throughout the focus group session the moderator is continually trying to use these responses in order to gather the most rich and in-depth understanding from each of the participants.

At the end of the focus group session the participants should be thanked for their participation. Depending on the question or issue being discussed, the moderator may ask individuals to complete a form regarding what was valuable about participating in the project. Adolescents, in particular, when discussing issues that are very personal may also be asked what was the one thing that they liked and the one thing that they did not like about themselves. The responses to simple questions can be astounding and add further to the data what was actually said and what was not said (Then, 2000).

### Role of Observer

The observer of the focus group may be one of the researchers or a research assistant. This individual works with the moderator to arrange the environment and conduct the focus group. The observer should only observe and not be a participating member of the group. The observer monitors the discussion to identify verbal and nonverbal cues, behaviour, voice tone, eye contact, how individuals participate, and with whom they participate (Dilorio et al., 1994; Greenbaum, 1988). In order to be part of the group and not interfere with group activities the observer is part of the circle but seated slightly behind the participants.

The observer is able to identify group dynamics, such as who talked to whom, and whether or not the verbal statements matched the nonverbal behaviours. The observer should attempt to pick up innuendoes or interpretations of the discussion, but should not draw conclusions while listening to the group discussion (Greenbaum, 1988). In coming to an understanding of the opinions and perceptions of the individuals, the behaviours and non-verbal communication are just as important as what is actually said.

The information gathered by the observer is important in helping the researcher interpret data and develop themes. The observer takes notes throughout the session. However, it

is essential that time is spent observing and not just writing as glances, facial expressions and changes in body posture may be missed. Following the focus group it is important for the observer to document the specifics of the group interactions and the observed behaviours in a timely manner, prior to discussion of the session with the moderator. Once the observer has completed the documentation, then a discussion with the moderator regarding what occurred and the themes that emerged from the group can be teased out.

### Incentives

Incentives have been used in business and in advertising for years. They are also used in psychology and medical research. Individuals in business are awarded bonuses, while businesses may provide customers with deals or double airmiles to shop in their stores. Incentives have also been used to encourage participation in projects and research such as focus groups (Dilorio et al., 1994; Greenbaum, 1988). Incentives may include free services, tickets, movie passes or money. In the literature there have been conflicting reports regarding whether or not incentives are ethical when dealing with human science research (Grant & Sugarman, 2004). In addressing whether or not incentives are considered ethical, one must ask whether any of the guiding principles of beneficence, respect for persons and justice are violated. Incentives are used in focus groups to demonstrate to individuals that their opinions and willingness to share their time are valued.

For example, food is a way in which to break down some barriers and to put individuals at ease. Giving adolescents pizza, or others refreshments and cookies are meant to help establish a non-threatening, open and inviting atmosphere. The provision of small incentives should not be used to coerce participants; similarly the denial of incentives should not be used to be punitive to less enthusiastic participants. For example, at the conclusion of a session one would not say, "Johnny, you did not participate much, so I have decided not to give you the free movie passes". Johnny not saying anything is saying something and should be analyzed within the context of the focus group. His non-verbal behaviour within the group might have given the moderator and observer valuable insight into an issue. Participants should never be coerced or criticized.

### Ethics

Ethical standards and procedures should be followed in all research and focus group research is no exception. Informed consent should be obtained from all participants and parental/legal guardianship consent should be sought for under-age individuals. Even following parental consent, the under-age participants should also be asked for consent. "Being told" what to do by parents puts adolescents, in particular, on guard, while asking permission from them even when you have parental permission empowers them (Then, 2000).

At the beginning of any focus group interaction a discussion around confidentiality is essential. Participants need to know that they can say what they believe and feel without repercussions from bosses, teachers or anyone else. Acknowledging the confidentiality of what is said during the discussion is not only between the moderator and the group, but among the group members themselves. This open sharing approach will often alleviate fears and apprehensions that individuals have regarding what they might want to state (Greenbaum, 1988; Krueger & Casey, 2009; Smith, 1995).

## Analysis

Analysis of focus group data is based on the question that is being asked and the purpose of the focus group. For example, if the purpose is to develop a questionnaire, the process of how data are coded and recorded may be different than if the purpose is to develop an in-depth understanding of a particular issue or phenomenon. The process of analysis is complex and time consuming. There are many layers to data analysis and each provides greater depth and understanding to the phenomenon of interest (Doody, Slevin & Taggart, 2013c).

Analysis is a continuous process that begins prior to the focus group session and continues with reflection of the process and discussion with the moderator and observer (Greenbaum, 1988; Henderson, 1995; Krueger & Casey, 2009; Morgan & Krueger, 1998; Rothwell & Clark, 2010). Analysis is a longitudinal process in which the investigator proceeds cautiously one step at a time during data collection and until data analysis is complete. Specific analytical tools that can be used for data gathering and beginning interpretation of the data may include demographic data, focus group map and questions, audiotapes, verbatim transcription, and moderator and observer field notes written prior to, during and following the focus group. This “audit trail” provides a record of the study’s methods, procedures, results, analysis and interpretation (Miles & Huberman, 1994), which can be reflected on at any time during the analysis.

Analysis of the audiotapes and the field notes should include, but not be limited to the following criteria: the words, context, internal consistency (changing of individual’s ideas within the focus group session), frequency or extensiveness of the comments, intensity of the comments, specificity of the comments (for example, experience of an event often carries more weight than no experience), and the three most important or “big” ideas or findings (Krueger, 1994; Morgan & Krueger 1998).

Both the moderator and observer document their observations and interpretations and compare their findings. It is important to have an individual “external” to the process, such as a researcher who is not part of the research project, but who has qualitative analysis experience. This researcher who is not involved in the current study reviews the analysis and independently validates the themes that emerge from the data.

The analysis of the focus group data is done in relation to the questions being asked in the study. Several data analysis techniques may be used, such as constant comparison analysis (Glaser & Strauss, 1967), discourse analysis (Cowan & McLeod, 2004) and content analysis (Morgan, 1997). Miles and Huberman (1994) describe analysis as consisting of data reduction, data display, and drawing conclusions and verification. Analysis involves identifying, coding and restating by underlining key terms in the transcripts and observation and field notes. The next stage includes reducing and creating broad clusters, which helps set the stage for drawing conclusions (Miles & Huberman, 1994). As words, phrases and broad clusters emerge, it is essential that common themes are identified using the ideas, language, and vocabulary from the focus group sessions (Dilorio et al., 1994; Kingry et al., 1990), as this keeps the data authentic and related to the focus group participants themselves.

Ensuring scientific rigour of the data generated is important throughout the process. Miles and Huberman (1994) describe five standards on which to evaluate the quality of conclusions for qualitative analysis: objectivity/confirmability, reliability/dependability/auditability, internal validity/credibility/authenticity, external validity/transferability/fittingness, and utilization/application/action orientation. The concepts of reliability and confirmability are also maintained by having independent researchers, who have no vested interest in the study, review the transcriptions and develop their own themes.

## Conclusion

The focus group research method is a valuable way to increase knowledge and in-depth understanding of the topic being investigated. A major consideration for any sound investigation is that the research question determines the method to use. If used appropriately, focus group research can add tremendous value and uncover meaningful understanding of issues, beliefs, opinions and perceptions. Focus group research can be used as a stand-alone method or in mixed method research. Within the context of nursing research, focus groups can lead to the generation of clearer understanding and advanced knowledge of many complex situations and issues. ♥

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## REFERENCES

- Asbury, J.-E. (1995). Overview of focus group research. *Qualitative Health Research*, 5, 414–420.
- Bateman, J., Allen, M., Samani, D., Kidd, J., & Davies, D. (2013). Virtual patient design: Exploring what works and why. A grounded theory study. *Medical Education*, 47, 595–606.
- Beck, L.C., Trombetta, W.L., & Share, S. (1986). Using focus group sessions before decisions are made. *North Carolina Medical Journal*, 47(2), 73–74.
- Bloor, M., Frankland, J., Thomas, M., & Robson, K. (2001). *Focus group in social research*. Thousand Oaks: Sage.
- Bogardus, E.S. (1926). The group interview. *Journal of Applied Sociology*, 10, 372–281.
- Boyle, R.H. (1961, July 24). *Not-so-mad doctor and his living lab*. Retrieved from <http://sportsillustrated.cnn.com/vault/article/magazine/MAG1072805/>
- Bradbury-Jones, C., Sambrook, S., & Irvine, F. (2009). The phenomenological focus group: An oxymoron? *Journal of Advanced Nursing*, 65, 663–671.
- Byers, P.Y., & Wilcox, J.R. (1988). *Focus groups: An alternative method of gathering qualitative data in communication research* (Report No. C5-506-291). New Orleans, LA: Speech Communication Association.
- Cowan, S., & McLeod, J. (2004). Research methods: Discourse analysis. *Counseling and Psychotherapy Research*, 4(1), 102.
- DesRosier, M.B., & Zellers, K.C. (1989). Focus groups: A program planning technique. *Journal of Nursing Administration*, 19(3), 20–25.
- Dilorio, C., Hockenberry-Eaton, M., Maiback, E., & Rivero, T. (1994). Focus groups: An interview method for nursing research. *Journal of Neuroscience Nursing*, 26, 175–180.
- Doody, O., Slevin, E., & Taggart, L. (2013a). Focus group interviews in nursing research: Part 1. *British Journal of Nursing*, 22, 16–19.
- Doody, O., Slevin, E., & Taggart, L. (2013b). Preparing for and conducting focus groups in nursing research: Part 2. *British Journal of Nursing*, 22, 170–173.
- Doody, O., Slevin, E., & Taggart, L. (2013c). Focus group interviews. Part 3: Analysis. *British Journal of Nursing*, 22, 266–269.
- Glaser, B.G., & Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.
- Grant, R.W., & Sugarman, J. (2004). Ethics in human subjects research: Do incentives matter? *Journal of Medicine and Philosophy*, 29, 717–738.
- Greenbaum, T.L. (1988). *The practical handbook and guide to focus group research*. Lexington, MA: Lexington Books.
- Henderson, N.R. (1995). A practical approach to analyzing and reporting focus groups studies: Lessons from qualitative market research. *Qualitative Health Research*, 5, 463–477.
- Hillebrandt, I.S. (1979). Focus group research: Behind the one-way mirror. *Public Relations Journal*, 35(2), 17–33.
- Houghton, C., Casey, D., Shaw, D., & Murphy, K. (2013). Rigour in qualitative case-study research. *Nurse Researcher*, 20(4), 12–17.
- Kingry, M.J., Tiedje, L.B., & Friedman, L.L. (1990). Focus groups: A research technique for nursing. *Nursing Research*, 39, 124–145.
- Kitzinger, J. (1995). Qualitative research: Introducing focus group. *British Medical Journal*, 311, 182–184.
- Kress, V.E., & Shoffner, M.F. (2007). Focus groups: A practical and applied research approach for counselors. *Journal of Counseling & Development*, 85, 189–195.
- Krueger, R.A. (1994). *Focus groups: A practical guide for applied research* (2nd ed.). London: Sage.
- Krueger, R.A., & Casey, M.A. (2000). *Focus groups: A practical guide for applied research* (3rd ed.). London: Sage.
- Krueger, R.A., & Casey, M.A. (2009). *Focus groups: A practical guide for applied research* (4th ed.). London: Sage.
- Lankshear, A.J. (1993). The use of focus groups in a study of attitudes to student nurse assessment. *Journal of Advanced Nursing*, 18, 1986–1989.
- Lederman, L.C. (1990). Accessing educational effectiveness: The focus group interview as a technique for data collection. *Communication Education*, 38(2), 117–127.
- Liamputtong, P. (2011). *Focus group methodology: Principles and practice*. Thousand Oaks, CA: Sage.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- MacIntosh, J.A. (1993). Focus groups in distance nursing education. *Journal of Advanced Nursing*, 18, 1981–1985.
- Merton, R.K. (1987). The focused interview and focus groups: Continuities and discontinuities. *Public Opinion Quarterly*, 51, 550–556.
- Miles, M.B., & Huberman, A.M. (1994). *An expanded source book: Qualitative data analysis* (2nd ed.). London: Sage.
- Mkandawire-Vallhu, L., & Stevens, P.E. (2010). The critical value of focus group discussions in research with women living with HIV in Malawi. *Qualitative Health Research*, 20, 684–696.
- Morgan, D.L. (1997). *Focus groups as qualitative research* (2nd ed.). Thousand Oaks, CA: Sage.
- Morgan, D.L., & Krueger, R.A. (1993). When to use focus groups and why. In D.L. Morgan (Ed.), *Successful focus groups: Advancing the state of the art* (pp. 3–19). Newbury Park, CA: Sage.
- Morgan, D.L., & Krueger, R.A. (1998). *The focus group kit*. Thousand Oaks, CA: Sage.
- Ndumele, C.D., Ableman, G., Russell, B.E., Gurrola, E., & Hicks, L.S. (2011). Publication of recruitment methods in focus group research of minority populations with chronic disease: A systematic review. *Journal of Health Care for the Poor & Underserved*, 22(1), 5–23.
- Nyamathi, A., & Shuler, P. (1990). Focus group interview: A research technique for informed nursing practice. *Journal of Advanced Nursing*, 15, 1281–1288.
- Plummer-D'Amato, P. (2008). Focus group methodology, Part 1: Considerations for design. *International Journal of Therapeutic Rehabilitation*, 15(2), 69–73.
- Reiskin, H. (1992). Focus groups: A useful technique for research and practice in nursing. *Applied Nursing Research*, 5(4), 197–201.
- Ripat, J.D., & Woodgate, R.L. (2012). Self-perceived participation among adults with spinal cord injury: a grounded theory study. *Spinal Cord*, 50, 908–914.
- Rothwell, E., & Clark, L. (2010). Analyzing focus group data: Content and interaction. *Journal for Specialists in Pediatric Nursing*, 15, 176–180.
- Smith, M.W. (1995). Ethics in focus groups: A few concerns. *Qualitative Health Research*, 5, 478–486.
- Then, K.L. (1996). Focus group research. *Canadian Journal of Cardiovascular Nursing*, 7(4), 27–31.
- Then, K.L. (2000). *Cardiovascular risk factors in adolescents: An exploratory descriptive study* (Doctoral dissertation). University of Alberta, Edmonton, AB, Canada.
- Vaughn, S. (2012). Stroke and heart disease prevention education via telenovela: A focus group's evaluation. *Rehabilitation Nursing*, 37, 215–219.
- Vaughn, S., Schumm, J.S., & Sinagub, J. (1996). *Focus group interviews in education and psychology*. Thousand Oaks: Sage.
- White, G.E., & Thomson, A.N. (1995). Anonymized focus groups as a research tool for health professionals. *Qualitative Health Research*, 5, 256–261.

# Exploring Changes in Functional Status while Waiting for Transcatheter Aortic Valve Implantation

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## Abstract

As the body ages, there is a natural decline in physical and cognitive abilities. The presence of chronic disease can accelerate this process. Aortic stenosis (AS) is a structural heart disease primarily associated with aging. Untreated patients die within two to five years following the onset of symptoms. For individuals with multiple co-morbidities, surgical treatment is not an option because of the high risk for surgical complications. An innovative and minimally invasive procedure called transcatheter aortic valve implantation (TAVI) has emerged as a safe and viable treatment option for higher risk patients. Because of the rapid disease progression of severe AS and the varying wait times prior to procedure, it is important to understand changes in functional status while waiting for TAVI.

The purpose of this study was to examine the changes in functional status between time of eligibility, assessment and TAVI procedure date. This study was guided by the Wilson and Cleary (1995) conceptual model of health-related quality of life modified by Ferrans et al. (2005), which posits that biological function, symptoms and individual and environmental characteristics influence functional status. Changes in functional status including 5-Metre Gait Speed, Canadian Study of Health and Aging Clinical Frailty Scale and Mini Mental State Examination were evaluated using an exploratory prospective cohort design.

Thirty-two patients participated in the study with median age 81 (range 64 to 93). Functional status declined between time of assessment and time of TAVI: Gait speed increased by 0.53 seconds ( $p = 0.01$ ) and Clinical Frailty Scale increased by 0.31 (from 4.3 to 4.6,  $p = 0.01$ ). Patients who waited longer than six weeks for TAVI ( $n = 19$ ) had a larger decline in gait speed than patients who waited less than six weeks ( $n = 10$ ) (0.8 sec versus 0.0 sec,  $p = 0.04$ ). Patients who were living alone ( $n = 11$ ) had a larger increase in frailty scores compared to patients living with another adult ( $n = 21$ ) (0.6 vs 0.1,  $p = 0.05$ ).

This study has shown that changes in functional status may be an important assessment to monitor while patients are waiting for TAVI. Nursing care processes and educational initiatives for care providers, patients and families that are aimed at optimizing functional status while waiting for TAVI are imperative. Results may be used to facilitate individualized care and management strategies and inform health care policy to develop evidence-based benchmarks for safe wait times. Future research with larger samples could validate the exploratory findings of this study. ♥

*This study was funded by the Canadian Council of Cardiovascular Nurses.*

## REFERENCES

- Ferrans, C.E., Zerwic, J.J., Wilbur, J.E., & Larson, J.L. (2005). Conceptual model of health-related quality of life. *Journal of Nursing Scholarship*, 37, 336–342. doi:10.1111/j.1547-5069.2005.00058.x
- Wilson, I.B., & Cleary, P.D. (1995). Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. *Journal of the American Medical Association*, 273, 59–65. doi:10.1001/jama.1995.03520250075037

# Canadian Journal of Cardiovascular Nursing

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# Rethink the possibilities . . .

**New!  
Nouveau!**



¾ cup Gluten Free Bisquick® mix  
½ cup grated parmesan cheese  
1 tsp paprika  
3 boneless skinless chicken breasts  
(cut into ½ - inch strips)  
2 eggs, slightly beaten  
3 Tbsp butter/margarine, melted

Heat oven to 450°F. Line cookie sheet with foil, spray with nonstick spray. Stir Bisquick®, cheese, and paprika together in a shallow baking dish. Dip chicken strip in egg then coat in Bisquick mixture and place on baking sheet. Repeat with all chicken strips. Drizzle with butter. Bake 12-14 min turning after 6 min, until cooked through.

**Makes 5 servings**

## Gluten Free Ultimate Chicken Fingers

Celiac disease affects 1% of Canadians and an estimated 6% have gluten sensitivity.<sup>1,2</sup> The only treatment is a gluten-free diet, which can sometimes limit food choices for many patients since gluten is a natural part of wheat, barley, and rye.<sup>2</sup>

Betty Crocker® Gluten-Free Bisquick® gives patients the opportunity to recreate their favourite recipes, or whip up something completely different -

*One box — many possibilities!*



For nutrition educational resources visit [generalmillsnutrition.ca](http://generalmillsnutrition.ca)

<sup>1</sup> Health Canada. Health Canada's Position on Gluten-Free Claims; 2012 [cited 2014 Jan 24]. Available from: <http://www.hc-sc.gc.ca/fn-an/securit/allerg/col-coe/gluten-position-eng.php>

<sup>2</sup> Case Nutrition Counseling Inc. Celiac Disease, Gluten Sensitivity and the Gluten-Free Diet. Regina, SK: Case Nutrition Counseling Inc.; 2012.