

Cardiac Rehabilitation and Secondary Prevention Quality Indicators

Using the Pan-Canadian Cardiac Rehabilitation and Secondary Prevention Quality Indicators in Practice: What are we Learning?

Sherry L. Grace, PhD¹ & Deborah Somanader, BSc BHS²; York University School of Kinesiology and Health Science, Faculty of Health

Introduction

Cardiac care, including Cardiac Rehabilitation (CR), is most effective if it is high-quality care. Care quality refers to a multidimensional construct that, as articulated by the Institute of Medicine,¹ encompasses the concepts of safety, equity, evidence-based medicine, timeliness of care, efficiency, and patient-centeredness. "Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."¹

The ability to quantify the quality of CR care requires the translation of evidence-based recommendations into measurement of that care with well-defined, evidence-based Quality Indicators (QIs). The American Association of Cardiovascular and Pulmonary Rehabilitation has developed a subtype of QIs, namely performance measures, specifically suitable for public reporting, external comparisons, and pay-for-performance.^{2,3} The European Association of Cardiovascular Prevention and Rehabilitation has also recently developed a QI on CR referral.⁴

In Canada, the Canadian Cardiovascular Society (CCS) also embarked on a process to develop QIs⁵(i.e., the Data Definitions and Quality Indicators [DDQI] project, which is now known as Benchmarks, Research, Innovation and Data Generate Excellence for cardiac care [BRIDGE]; see: <http://bridge.ccs.ca/index.php/en/>; see acknowledgments for list of members). In 2011, the CR community was invited to develop CR QIs, with full representation of the Canadian Association of Cardiovascular Prevention and Rehabilitation (CACPR). The purpose of this article is to update the CACPR community on the QIs, by providing a summary of the development and testing processes that have been undertaken, and describing plans to further assess and improve the quality of CR in Canada.

in collaboration with



Inside This Issue

Feature Article:

Using the Pan-Canadian Cardiac Rehabilitation and Secondary Prevention Quality Indicators in Practice: What are we Learning? **PAGE 1**

Measuring Quality Indicators in New Brunswick. **PAGE 7**

Cardiac Rehabilitation Performance Measures in the United States: Implications for Patients and Professionals. **PAGE 9**

From The Editor:
What's in this issue. **PAGE 3**

Research in Progress:
Cardiovascular Rehabilitation in Ontario-Development of Provincial Standards – A Team Effort. **PAGE 14**

References & Reviews:
PAGE 15

Website Review:
Canadian Cardiovascular Society (CCS). **PAGE 16**

Buidling your Professional Profile:
CCS Cardiac Rehabilitation Quality Indicators – The Field-Testing Experience at St. Joseph's Health Care, London, Ontario **PAGE 16**
Cardiac Rehabilitation Quality Indicators in Practice: A Case Study. **PAGE 17**

Program Profile:
A Regional Approach to Cardiac Rehabilitation and Chronic Disease Prevention and Management. **PAGE 20**

ICCPUR UPDATE:
World Congress of Cardiology (WCC), Melbourne Australia 4-7 May, 2014. **PAGE 20**

National Office News:
President's Message. **PAGE 21**
Updates from the office. **PAGE 22**
From the Secretary's Desk: New CACPR Board of Directors. **PAGE 23**

DEVELOPMENT OF THE QUALITY INDICATORS

The CCS invited the first author (SG) to chair the CR QI working group. Dr. Neville Suskin was invited to co-chair, given his authorship of the performance measurement chapter of the 3rd edition of the CACPR guidelines⁶ and he graciously accepted. We then populated the chapter working group, with formal CACPR representation by Dr. Paul Oh who was vice-president of the association at the time. The full working group membership can be seen in the acknowledgments section. As you can see there were many members of CACPR represented.

A CCS Best Practices Methodology for QI development was created by Dr. Jack Tu, which consisted of 3 phases. The first phase involved creating sub-theme or domain groups. We created the following sub-groups: (1) Referral, access, and wait times; (2) Secondary prevention, assessment, risk stratification, and control; (3) Behavioral change, program adherence, psychosocial issues, education, and return-to-work; (4) CR model and structure; and (5) Discharge transition, linkage, and communication. Each sub-domain working group was chaired by a member of the larger CR QI chapter working group. The list of volunteer experts who served on each of these groups is also shown in the acknowledgments. Again, there were many members of CACPR represented. These members generated a list of candidate QIs in the structure, process and outcome dimensions of care. Moreover, each CR QI was initially drafted by these sub-theme groups.

The full process of developing the CR QIs was presented at the 2012 CACPR annual meeting⁷ and is described in a recent publication in the Canadian Journal of Cardiology, and the full list of 30 QIs is shown in the corresponding supplemental appendix.² In short, based on the results of rapid literature reviews, a long list of 37 QIs was generated. These went through external rating by 26 experts. Based on this exercise, 7 QIs were deleted and others were revised. In the final phase, external input was solicited from the CACPR community at large. The 30 QIs were posted for a one-month period on the CCS website. Members of the CCS and CACPR were invited via email to provide input on them. Comments were then fed-back to the sub-theme groups, who revised the wording of their QI specifications based on the input received.

Finally, in response to a request by the CCS Steering Committee, a short-list of 5 QIs was selected based on consensus of the working group (see: http://www.cacr.ca/documents/CCS_CR_QI_v10_Draft_E_forWeb.pdf). The list had to include a structure, process,

outcome and safety QI (these are denoted in²). The long list and top 5 were considered and approved by the CCS DDQI Steering Committee and CCS Council in Fall 2013. The CACPR also formally endorsed the “top 5” QIs in the Winter 2014.

TESTING THE QUALITY INDICATORS IN PRACTICE

Field Test

During March-April 2013, the QIs were field-tested. The 2 indicators chosen for initial field testing were QI-1 (in-patient referral %) and 2b (median wait time from CR referral receipt to enrollment). The field testing methodology was based on the framework and protocol developed for the UK Quality and Outcomes project.⁸ The approach consisted of 3 steps: (1) data extraction to test technical feasibility, (2) completing a workload diary, and (3) providing input through a semi-structured interview regarding acceptability and implementation issues. Cardiac Wellness Institute of Calgary, Alberta, St. Joseph's Health Care London, Ontario, and University Health Network, Toronto Rehabilitation Institute, Ontario agreed to participate in this pilot field-test.

Results, which are currently under review in our association journal, Journal of Cardiopulmonary Rehabilitation and Prevention, suggested that QI assessment was highly acceptable to the academic CR community. However, it was found that it was not feasible to assess a large number of individual charts for referral exclusions, particularly when programs have not set up their electronic or paper charts to ascertain the specific exclusions in the QIs. Some changes in practice would be needed at each site. Based on the findings overall, it was recommended that the QIs remain, but perhaps the referral exclusions for QI-1 be deleted and instead a benchmark of 85%⁹ be applied to account for the proportion of inpatients who would not be eligible.

Assessing the QIs in the CCRR

The Canadian Cardiac Rehabilitation Registry (CCRR; <http://www.cacr.ca/resources/registry.cfm>) is an excellent platform to test the QIs. Based on the current data elements and definitions, 15 of the 30 QIs can be assessed (see *Table 1*). These have been analyzed and presented at the CACPR annual meeting in 2012⁷ and the manuscript presenting these findings has been revised and re-submitted to the Canadian Journal of Cardiology.¹⁰

The CCRR formed a Task Force back in November 2013 to revise the current data elements and definitions

Table 1: Cardiac Rehabilitation and Secondary Prevention Quality Indicators assessed in the Canadian Cardiac Rehab Registry, by domain area

QI# (type†)	Quality Indicator Name	Quality Indicator Definition
Referral, access and wait times		
CR-1*§ (P)	Inpatients referred	The percentage of eligible inpatients referred to CR
CR-2a§ (P)	CR wait time from hospital discharge	Percentage of eligible in-patients who were referred to CR and who enroll in CR within 30 days after hospital discharge.
CR-2b* (P)	CR wait time from referral to enrollment	The median number of days between receipt of referral at the CR program to patient enrollment
CR-3 (P)	CR enrollment	Percentage of CR-eligible patients enrolled in a program post-hospital discharge.
Secondary prevention: assessment, risk stratification and control		
CR-4 (P)	Risk assessment for adverse cardiovascular events	Percentage of CR patients who received a comprehensive assessment of the risk for adverse cardiovascular events.
CR-5* § (P)	Patient self-management education	The percentage of patients in the CR program who received patient self-management education either individually or within a group prior to program discharge
CR-7 § (O)	Acetylsalicylic Acid (ASA)	Percentage of patients who were taking ASA at time of CR program discharge.
CR-8 § (O)	Anti-platelet agents other than ASA	Percentage of patients on anti-platelet agents other than ASA (i.e. Clopidogrel/Prasugrel/Ticagrelor) at time of CR program discharge.
CR-9 § (O)	Beta-blockers	Percentage of patients on a Beta-blocker at CR discharge.
CR-10 § (O)	Statins	Percentage of CR patients on statins at program discharge.
CR-12 § (O)	ACE/ARB	Percentage of patients at CR discharge on angiotensin-converting enzyme (ACE) inhibitors / Angiotensin Receptor Blockers (ARBs)
CR-13(P)	Assessment of blood pressure control	Percentage of patients in CR program who received individualized assessment of blood pressure control.
CR-14 (P)	Assessment of lipid control	Percentage of patients in CR who received individualized assessment of lipid control.
CR-15 (P)	Assessment of adiposity	Percentage of patients in CR program who received individualized assessment of adiposity
CR-16 (P)	Assessment of blood glucose control	Percentage of patients with diabetes in CR who received individualized assessment of blood glucose control.
Behavioural change, program adherence, psychosocial, education, return to work		
CR-17* (O)	Increase in exercise capacity	Percentage of CR patients who achieved a half metabolic equivalent (MET) increase in their exercise capacity from pre to post-program.
CR-18 (O)	Adherence to CR program	Percentage of prescribed CR exercise sessions completed by patient.
CR-20 § (O)	Meeting physical activity guideline Target	Percentage of CR patients meeting the target amount of 150 minutes of physical activity per week at program completion.



Dr Warner Mampuya, MD PhD FRCPC

From the Editor

In recent years, evidence-based medicine and costeffectiveness of health care have become the focus of healthcare providers, beneficiaries and regulators. Therefore, it is necessary to establish rigorous criteria to evaluate the delivery and the effectiveness of health care services. This can be achieved through the establishment of guidelines and quality indicators (QIs). Guidelines translate best evidence into best practice. Their goals are to improve the quality of care; decrease morbidity, mortality, and costs by reducing complications; improve the quality of life; and reduce the disease burden on society. However monitoring health care quality is impossible without the use of evidence-based clinical indicators. QIs are derived from guidelines and provide practitioners with tools to measure the quality of care they provide by defining specific, measurable elements used in quality improvement initiatives. QIs create the basis for quality improvement and prioritization in the health care system. To ensure the use of reliable and valid clinical indicators, QIs must be designed, defined, and implemented with scientific rigour.

In the case of cardiac rehabilitation (CR) and secondary prevention, establishing QIs is very important because, despite its well established and recognized effectiveness, not only its use is still sub-optimal with an average reference rate of around 30% in North-America, there is also discrepancy on how CR is

CR-21 § (P)	Promotion of post-CR physical activity	Percentage of CR patients who were provided an intervention to promote long-term physical activity post-CR.
CR-22 (P)	Assessment of depression	Percentage of CR patients with assessment for depression or depressive symptoms
CR-23 (O)	Referral of patients screening positive for possible depression	Percentage of CR patients with suspected clinical depression who were referred for mental health management.
CR-26 (P)	Smoking cessation support	Percentage of CR patients who are current or recent smokers and who were referred for smoking cessation
CR-27 (O)	Smoking cessation	Percentage of CR patients who were current or recent smokers at enrollment in the program who were not smoking at program completion
CR-30 (P)	Stress management	Percentage of CR patients who were referred to a stress management intervention
CR-37 (O)	CR program completion	Percentage of patients enrolled in CR who completed the program
Discharge transition, linkage and communication		
CR-34 § (P)	Communication with primary care	Percentage of CR patients with a documented communication between the CR program and primary health care practitioner.
CR-35 § (P)	Recommended elements in discharge summary	Percentage of CR discharge summaries that include the 4 recommended elements
CR-36 § (P)	Summative communication to patient	Percentage of patients with a documented summative communication from the CR program.

*denotes a "Top Five" QI; †P=process QI, O=outcome QI. Note: no structure QIs can be assessed in the Registry; §denotes a QI that will be assessable in the Registry with the launch of CCRR 2.0 this October 2014. CR=cardiovascular rehabilitation; BMI=body mass index; QI=quality indicator; MET=Metabolic Equivalent.

to enable greater and more accurate assessments of the QIs (also known as "CCRR 2.0). This working group is chaired by Dr. Todd Duhamel. Other members are listed in the acknowledgments section. The data dictionary has been revised to include 27 of the 30 QIs (Table 1). Three QIs cannot be assessed in the CCRR, as they are related to program structure rather than individual patients. The Task Force circulated the revised data dictionary to the CCRR Committee, CCRR Research Sub-Committee, and Program Liaison sub-committee in April soliciting feedback and approval. In May, the revised data dictionary was posted online for a one month

web-consultation (<http://cacprcacpr.wordpress.com/2014/04/25/data-dictionary-2-0/>). All members of the CACPR community were emailed on several occasions with the request to consider the revised data dictionary and provide input.

This June, the Task Force considered all the input and has finalized the CCRR 2.0 Data Dictionary. Over the summer, our CCRR information technology vendor Cissecc will integrate the changes, with funding we have secured from the Public Health Agency of Canada, through CCS. The funding may not be sufficient to make all our recommended changes, but we will

delivered in different centres.

The American Association of Cardiovascular and Pulmonary Rehabilitation was first to develop QIs for CR. The Canadian Cardiovascular Society has been working to develop QIs for CR and secondary prevention since 2010.

In this bulletin, we explore CR QIs. This is an effort to promote the use of the CR QIs which undoubtedly will help harmonize and improve the quality of CR delivery in Canada and around the world.

We hope that the articles presented in this bulletin will contribute to promote the uptake of the QIs in CR.

Our issue begins with Sherry L. Grace et al. describing the development of CR QIs in Canada. This article provides a summary of the CR QIs development process. Next, Cleo R. Cyr gives us an insight into the implementation of QIs in New Brunswick.

The third article by Marjorie King et al. discuss the rationale for developing and maintaining CR performance measures in the United States and the implications for patients and healthcare providers.

Our Case Study, Program Profile and Research in progress sections highlight practical aspects of integrating performance measures into clinical practice. Of mention is an article by Karen Unsworth outlining the field-testing of CR QIs. This is an important process that can identify potential problems to be considered prior to a wide implementation.

Please take the time to read these articles and please feel free to contact any of us on the editorial board if you would like to contribute, share any ideas or if you have any questions.

continue to seek funds until we can fulsomely update to CCRR 2.0. We would like to thank the CCRR Program Liaison sub-committee in advance for their commitment to user-testing and verification of the revised CCRR (see list of members in acknowledgments).

Next Steps

The CCRR data dictionary changes will be introduced to the CACPR community through a free webinar on September 26th (see: http://www.cacr.ca/professional_development/web_education.cfm to register). The new CCRR 2.0 will officially be launched at the October 2014 CACPR meeting in Vancouver by the CCRR Program Liaison sub-committee. In collaboration with our new CCRR database analyst Katelyn Balchin, the QIs will be integrated into the CCRR quarterly reports which are sent to contributing programs, so these programs can receive confidential, timely feedback on their quality. This will also include confidential comparison of QIs to the aggregate scores of other sites.

Finally, in accordance with the final steps in the QI Best Practices Methodology, CACPR has committed to leading the update of the QIs. The implementation activities outlined in this article will be used to inform future revisions. Once the CACPR perceives that fulsome “road tests” of the QIs has been completed, and as our evidence base of the QIs develop, CACPR will strike a committee to refine the QIs.

Conclusion

The Canadian CR QIs are arguably the most comprehensive and most rigorously developed set of QIs in this field. We anticipate the release of these QIs will facilitate greater quality assessment, and subsequently significant improvements in CR quality in Canada. Given previous research demonstrating the impact of better quality cardiac care in Canada and elsewhere¹¹, we anticipate this in turn will result in significant reductions in morbidity and mortality for Canadians with cardiovascular disease.

Acknowledgements

We would particularly like to acknowledge Drs. Neville Suskin, the founding scientific director of CCRR, and Paul Oh, the current chair of CCRR, for their registry leadership. We would also like to acknowledge members of the CCS CR QI chapter working group outlined below, as well as the CR QI field testers from Cardiac Wellness Institute of Calgary, St. Joseph's Health Care of London and University Health Network - Toronto Rehabilitation Institute. Finally, we would like

to acknowledge the Public Health Agency of Canada for financial support of the CCS BRIDGE project.

Cardiac Rehabilitation/Secondary Prevention QI Chapter Working Group

Sherry Grace (Chair), York University (Ontario)
Neville Suskin (Vice-Chair), London Health Sciences Centre (Ontario)
David Alter, Institute for Clinical Evaluative Sciences
Simon Bacon, Concordia University (Québec)
Sulan Dai, Public Health Agency of Canada
Yana Gurevich, Canadian Institute for Health Information
David Johnstone, Mazankowski Alberta Heart Institute and Chair, Quality Indicators Steering Committee
Andrea Lavoie, Mosaic Heart Centre (Saskatchewan)
Colleen Norris, Alberta Provincial Project for Outcome Assessment in Coronary Heart Disease
Paul Oh, Canadian Association of Cardiac Rehabilitation
Paul Poirier, Université Laval (Québec)
Garth Oakes, Cardiac Care Network of Ontario

SUB-DOMAIN WORKING GROUP MEMBERS:

Cardiac Rehabilitation /Secondary Prevention Sub-theme group for Referral, Access, Wait Times

Neville Suskin (Lead), London Health Sciences Centre (Ontario)
Sandeep Aggarwal, Cardiac Wellness Institute of Calgary (Alberta)
Blair O'Neill, Alberta Health Services and Past President, Canadian Cardiovascular Society
Christopher Simpson, Queens University (Ontario)
Randal J. Thomas, Mayo Clinic (Minnesota)

Cardiac Rehabilitation /Secondary Prevention Sub-theme group for Program Structure

Paul Oh (Lead), Canadian Association of Cardiac Rehabilitation
Cleo Cyr, Heart Centre Cardiovascular Health & Wellness Program (New Brunswick)
Scott Lear, St. Paul's Hospital (British Columbia)
Bob Reid, University of Ottawa Heart Institute (Ontario)

Cardiac Rehabilitation /Secondary Prevention Sub-theme group for Secondary Prevention

Paul Poirier (Lead), Université Laval (Québec)
David Alter, Institute for Clinical Evaluative Sciences
Caroline Chessex, University Health Network - Peter Munk Cardiac Centre, (Ontario)
Kenneth Melvin, University Health Network - Toronto General Hospital (Ontario)
Jim Stone, Libin Cardiovascular Institute (Alberta)

Darren Warburton, University of British Columbia

Cardiac Rehabilitation /Secondary Prevention Sub-theme group for Behavioural Change

Simon Bacon (Lead), Concordia University (Québec)

Chris Blanchard, Dalhousie University (Nova Scotia)

Adrienne Kovacs, University Health Network - Toronto Western Hospital (Ontario)

Peter Prior, University of Western Ontario

Shauna Ratner, St. Paul's Hospital (British Columbia)

Cardiac Rehabilitation /Secondary Prevention Sub-theme group for Discharge Transition

Andrea Lavoie (Lead), Mosaic Heart Centre (Saskatchewan)

David Alter, Institute for Clinical Evaluative Sciences

Robert Annis, Southwest LHIN Primary Care Lead (Ontario)

Nick Giacomantonio, Dalhousie University (Nova Scotia)

Karen Unsworth, London Health Science Center (Ontario)

CCS DDQI Project Support

Anne Ferguson, Chief Executive Officer, Canadian Cardiovascular Society

Nick Neuheimer, Project Director and Director, Health Policy, Advocacy and External Relations, Canadian Cardiovascular Society

Holly Fan, Project Manager (external)

CCRR 2.0 Task Force

Todd Duhamel (Chair), Graduate Program Chair & Associate Professor, Faculty of Kinesiology and Recreation Management, University of Manitoba

Sherry Grace, Full Professor, York University & Director of Research, GoodLife Fitness Cardiovascular Rehabilitation Unit, University Health Network

Marie Hawkins, Director of Cardiac Program at Fraser Health Authority

Monique Dufour, Program Coordinator, Cardiac Wellness Program, Université de Moncton

Jacqueline Gabelhouse, Team Leader, C.O.A.C.H Central Okanagan Association for Cardiac Health

Deborah Somanader (Secretary), MSc. Student Kinesiology and Health Sciences, York University

CCRR Program Liaison Sub-committee

Marie Hawkins (Chair), Director of Cardiac Program, Fraser Health Authority

Cleo Cyr, Manager, New Brunswick Heart Centre Cardiovascular Health & Wellness Program

Jacqueline Gabelhouse, Team Leader, C.O.A.C.H Central Okanagan Association for Cardiac Health

Monique Dufour, Program Coordinator, Cardiac Wellness

Program, Université de Moncton

Dylan Chipperfield, Chronic Disease Management Manager, Saskatoon Health Region

Terry Fair, Manager, Southlake Regional Health Centre

Mark Smilovitch, MD Division of Cardiology, McGill University Health Centre

Deborah Somanader, MSc. Student Kinesiology and Health Sciences, York University

References

1. Committee on Quality of Health Care in America Institute of Medicine. Crossing the Quality Chasm: A New Health System for the 21st Century. Washington D.C.: National Academy Press, 2001:337.

2. Grace SL, Poirier P, Norris CM, Oakes G, Somanader DS, Suskin N. Pan-Canadian development of cardiac rehabilitation and secondary prevention quality indicators.(in press). Can J Cardiol.

3. Thomas RJ, King M, Lui K, Oldridge N, Piña IL, Spertus J. AACVPR/ACC/AHA 2007 performance measures on cardiac rehabilitation for referral to and delivery of cardiac rehabilitation/secondary prevention services. J Cardiopulm Rehabil Prev. 2007;27(5):260-290.

4. Perk J, De Backer G, Gohlke H, et al. European Guidelines on cardiovascular disease prevention in clinical practice (version 2012) : the fifth joint task force of the European society of cardiology and other societies on cardiovascular disease prevention in clinical practice. Eur Heart J. 2012;19(4):403-88.

5. Johnstone DE, Buller CE. Pan-Canadian cardiovascular data definitions and quality indicators: a status update. Can J Cardiol. 2012;28(5):599-601.

6. Stone JA, Arthur HM, Suskin N. Canadian Association of Cardiac Rehabilitation. Canadian guidelines for cardiac rehabilitation and cardiovascular disease prevention: translating knowledge into action. 3rd edition. Winnipeg, Canada: Can Assoc Card Rehabil, 2009. Available at: <http://www.cacr.ca/resources/guidelines.cfm>. Accessed on March 3, 2014.

7. Grace SL & Oh P. Measuring performance and improving quality in cardiac rehabilitation. Canadian Association of Cardiac Rehabilitation Annual Symposium. 2012. Toronto, ON. October.

8. Campbell SM, Kontopantelis E, Hannon K, Burke M, Barber A, Lester HE. Framework and indicator testing protocol for developing and piloting quality indicators for the UK quality and outcomes framework. BMC Fam Pract. 2011;12(1):85.

9. Grace, SL, Arthur, HM, Chan, S, Cyr, C, Dafoe, W, Martin, J, Oh, P, Suskin, N, & Chessex, C. Systematizing Inpatient Referral to Cardiac Rehabilitation 2010: Canadian

Association of Cardiac Rehabilitation and Canadian Cardiovascular Society Joint Position Paper. *Can J Cardiol.* 2011; 27(2):192-199.

10. Grace, SL, Parsons, TL, Duhamel, T, Somanader, D & Suskin, N. (revision under consideration). The quality of

cardiac rehabilitation in Canada: Second annual report of the Canadian Cardiac Rehab Registry. *Can J Cardiol.*

11. Wijeyesundera, HC. et al. Achieving Quality Indicator Benchmarks and Potential Impact on Coronary Heart Disease Mortality. *Can J Cardiol.* 2011;27:756 –762.

Measuring Quality Indicators in New Brunswick

Cleo R. Cyr, RN, BN, MHS; New Brunswick Heart Centre Cardiovascular Health & Wellness Program, Saint John, N.B.; Monique Dufour Doiron, M.Sc., ACSM, CES, CSEP CEP; Cardiac Wellness Program, CEPS Université de Moncton, Moncton, N.B.

Background

The New Brunswick Heart Centre provides tertiary cardiac services for the province's two regional health authorities – Horizon Health Network and Vitalité Health Network. Over the past thirty years, cardiac rehabilitation in New Brunswick has grown to include 16 rural and urban programs delivered in both hospitals and community venues utilizing supervised exercise, home exercise and video conferencing modalities. Provincial funding for cardiac rehabilitation was received in 2007 with the intent that a 5 to 10% program growth would be realized. In 2012-2013, 62% of eligible patients were referred with 31% of those enrolled - an increase in growth of 21% since 2005.

Healthcare professionals involved in the delivery of cardiac rehabilitation have formed a provincial Cardiac Rehab New Brunswick (CRNB) network which, as a professional body, reports to a Cardiac Services Advisory Committee chaired by the New Brunswick Heart Centre. CRNB provides an annual report to the committee with yearly updates of cardiac rehab activities and outcomes as well as updates related to the development of provincial standards and quality improvement initiatives. In 2013, provincial standards were developed for cardiac rehab and are currently being reviewed for approval by regional health authorities. The standards model used was based on a Structure-Process-Outcome- Evaluation¹ framework with the document titled: Cardiac Rehabilitation Standards for Cardiovascular Chronic Disease Prevention and Management.² Quality indicators form an important part of the evaluation portion of the provincial standards.

Provincial initiatives to improve measurement of outcomes and standardization of quality outcome

data collection include 1) standardizing provincial data collection processes; 2) increasing provincial participation in the Canadian Cardiac Rehab Registry (CCRR); and, 3) adopting the Canadian Cardiovascular Society CR Quality Indicators.

Quality Indicator Development

Development of the provincial CR standards began in 2012 with CRNB following and adopting the core components of cardiac rehabilitation as outlined in the 3rd edition of the CACR Guidelines (2009)³, the British Association for Cardiovascular Prevention and Rehabilitation Standards (2012)⁴, and the draft Canadian Cardiovascular Society Quality Indicators for Cardiac Rehabilitation and Secondary Prevention (working document February 2013).⁵ When developing the evaluation and outcome portion of the standards, CRNB members referred to the February 2013 quality indicators draft which included indicators as noted in Table 1.

Collection of provincial data is limited in New Brunswick with only 3 regional sites (6 programs) participating in the national registry (CCRR) and 4 other programs collecting appreciable amounts of data in local databases. When developing the provincial standards, CRNB members identified indicators from Table 1 to include in the evaluation portion, recognizing that consensus regarding quality indicators had not been finalized nationally. The key criteria for selection were level of evidence, and what could consistently be reported based on provincial data currently being collected.

Of the quality indicators listed, CRNB chose 12 indicators to be included in the 2013 draft version of the provincial CR Standards document recognizing that

Table 1: Draft Canadian Cardiovascular Society Quality Indicators for Cardiac Rehabilitation and Secondary Prevention (working document Feb 2013)

Process Indicators	Outcome Indicators	Structure Indicators
<ul style="list-style-type: none"> • In-Patients Referred to a Cardiac Rehabilitation Program • Cardiac Rehabilitation Wait Time From Hospital Discharge • Cardiac Rehabilitation Wait Time from Referral to Enrollment • Cardiac Rehabilitation Enrollment • Risk Assessment for Adverse Cardiovascular Events • Patient Self-Management Education • Assessment of Blood Pressure Control • Assessment of Lipid Control • Assessment of Adiposity • Individual Assessment of Blood Glucose Control (HBA1C) • Assessment of Depression • Smoking Cessation Support • Stress Management • Recommended Elements in Discharge Summary 	<ul style="list-style-type: none"> • Secondary Prevention Medications: Acetylsalicylic Acid (ASA) • Secondary Prevention Medications: Anti-Platelet Agents Other than ASA • Secondary Prevention Medications: Beta Blockers • Secondary Prevention Medications: Statins • Secondary Prevention medications: ACE/ARB • Increase in Exercise Capacity • Adherence to Cardiac Rehabilitation Program • Meeting Physical Activity Guideline Target • Referral of Patients Screening Positive for Possible Depression • Smoking Cessation • Cardiac Rehabilitation Program Completion • Communication with the Primary Health Care Practitioner • Summative Communication with Patient 	<ul style="list-style-type: none"> • Medical Director Supervision • Emergency Response Strategy

revisions could be made as necessary over time. Slight changes to numerator and denominator definitions were made to reflect current provincial practice in NB. A Case Mixed Grouping (CMG) review had been previously completed to further refine eligibility definitions for patients entering CR programs. NB Heart Centre data was used for statistical accuracy for interventional, cardiac surgery, and ICD procedures, with Department of Health data used for all other CMG's related to the standard for entry to programs.

It was determined that as a trial project, CRNB would report on 12 quality indicators for fiscal year 2012-2013. In March 2013 an analysis of process, outcome and structure indicators was completed under the domains of: 1) Referral, Access & Wait Times; 2) Secondary Prevention: Assessment, Risk Stratification & Control; 3) Behaviour Change & Program Adherence; 4) CR Program Model & Structure; and 5) Discharge Transition, Linkage & Communication. Table 2 outlines the results of that analysis.

In September of 2013 The Canadian Cardiovascular Society Quality Indicators E-Catalogue Quality Indicators for Cardiac Rehabilitation/Secondary Prevention consensus document was released.⁶ Five of the original twenty-nine draft indicators were

selected as quality indicators by national consensus.

The five include:

- Inpatients Referred to a Cardiac Rehabilitation Program
- Cardiac Rehabilitation Wait Times From Referral to Enrollment
- Patient Self-Management Education
- Emergency Response Strategy
- Increase in Exercise Capacity

The CRNB steering committee is pleased that four of the five indicators selected are being analyzed in New Brunswick. An upcoming review to determine how consistent collection of data for the fifth indicator, Increase in Exercise Capacity, can be obtained and analyzed is pending as there are wide variations provincially in data collected for that particular indicator.

Summary

Cardiac Rehab New Brunswick (CRNB) is a professional body that reports to the NB Cardiac Advisory Committee and is comprised of health care professionals who deliver CR to 16 sites within Horizon Health and Vitalité Health Networks. Growth in CR programs in NB has increased 21% since 2005 with 62% of eligible patients referred to programs in 2012-

Table 2: Quality Indicator Results (FY 2012-2013) CRNB Annual Report Document

<p>Domain: Referral, Access & Wait Times (Process Indicators)</p> <p>1. Patient Eligibility for CR: Eligibility for CR is based on i) Dept. of Health data received for identified Case Mixed Groupings (CMG); ii) NBHC data; and iii) Statistics for NB patients transferred to Quebec. (Total 8972)</p> <p>2. Referrals, Enrollment & Case Management: 62% of eligible patients are referred; 31% of eligible patients are enrolled in programs or case managed; 50% of referred patients chose to be enrolled or case-managed.</p> <p>3. Wait Times: The provincial median wait time is 50 days with variances from 9 days to 147 days.</p>
<p>Domain: Secondary Prevention: Assessment, Risk Stratification & Control (Process Indicators)</p> <p>4. Assessment of Blood Pressure Control: 100% of patients received blood pressure analysis with average pre-program blood pressure of 123/70 (n=1562) and 6 month post blood pressure of 122/70 (n=1179)</p> <p>5. Assessment of Lipid Control: 97% of patients received analysis of cholesterol levels with average pre-program LDL levels (for CAD patients only) of 2.15 mmol/L and 6 month post program LDL levels of 1.92 mmol/L.</p>
<p>Domain: Behaviour Change & Program Adherence (Outcome Indicators)</p> <p>6. Smoking Cessation: 16.2% of patients had used a tobacco product within 6 months of entering the cardiac rehab program (n=1562). 10% had smoked within 6 months of the 6 month post program follow-up (6.2% reduction of those smokers who were smoking at the start of the program).</p> <p>7. Cardiac Rehabilitation Program Completion: Of those who were enrolled in CR programs provincially (n=1562) 75% completed programs (n=1179) and received self-management education and intervention.</p>
<p>Domain: CR Program Model & Structure (Structure Indicators)</p> <p>8. Medical Director Supervision: 100% of programs (n=14) have medical director supervision.</p> <p>9. Emergency Response Strategy: 100% of programs (n=14) have an emergency response strategy.</p>
<p>Domain: Discharge Transition, Linkage & Communication (Outcome Indicators)</p> <p>10. Communication with the Primary Health Care Practitioner: 100% of programs (n=14) have documented communication with the patient's care practitioner.</p> <p>11. Summative Communication with the Patient: 89.6% of patients were provided with a written summary of their progress.</p> <p>12. Promotion of Post Cardiac Rehab Physical Activity: 96.7% of patients received a report that promotes physical activity upon completion of CR programs.</p>

2013. Provincial initiatives to improve measurement of outcomes and standardization of quality outcome data collection include 1) increasing participation in CCRR; 2) adopting the Canadian Cardiovascular Society CR Quality Indicators; and 3) development of provincial CR Standards. Ongoing evaluation of these initiatives will continue to improve the delivery of CR programs in New Brunswick and optimize patient outcomes.

References

- Murray, D. Regional Standards Coordinator. Horizon Health Network Clinical Standards Model based on a Structure – Process – Outcome Framework. Available online at <http://skyline/standards/Pages/default.aspx>.
- Cardiac Rehab New Brunswick Cardiac Rehabilitation Standards for Cardiovascular Chronic Disease Prevention

and Management (Draft December 2013).

- Stone, J.A. and Arthur, H.M. (Eds). Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease prevention Translating Knowledge Into Action (3rd ed.) 1999. Winnipeg, MB, Canada: CACR.
- Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation, 2012. Available at <http://www.bacpr.com>.
- The Canadian Cardiovascular Society quality indicators e-catalogue: Quality indicators for Cardiac Rehabilitation and Secondary Prevention. A CCS Consensus Document February 2013.
- Canadian Cardiovascular Society. The Canadian Cardiovascular Society Quality Indicators E-Catalogue: Quality indicators for Cardiac Rehabilitation and secondary prevention- A CCS Consensus Document. September 2013:1–11.

Cardiac Rehabilitation Performance Measures in the United States: Implications for Patients and Professionals

Marjorie King, MD, FACC, MAACVPR, Steven Lichtman, EdD, FAACVPR; Helen Hayes Hospital, West Haverstraw, NY, USA

Background

Health care reform in the United States (US) did not have its genesis with what is now known colloquially as Obama Care. In 1854 one of the first incarnations of health care reform appeared in the form of a bill “For the Benefit of the Indigent Insane”.¹ More recent reforms included establishment of Medicare and Medicaid federal healthcare payment in 1965 for those over age 65, disabled individuals and the poor, and implementation of the inpatient prospective payment system in 1983.² Despite these payment reforms, healthcare outcomes remained relatively poor and costs increased compared to other industrialized nations, and it became obvious to healthcare policy experts that major changes were needed. After numerous failures to enact significant health care reform in the last three decades of the twenty-first century, the US finally enacted the “Patient Protection and Affordable Care Act” and the “Health Care and Education Reconciliation Act”, which were signed into law in 2010.³

One of the driving forces behind healthcare reform in the US is recognition of the need to replace fee-for-service payment with value-based payment models.⁴ Value in healthcare reflects not only quality, but also cost and satisfaction with the service provided. Current cardiovascular (CV) care includes high cost, high utilization services, with disparities among communities and populations, and it is not surprising that CV services have been under the spotlight for reform. Recognizing this, the American College of Cardiology (ACC) and the American Heart Association (AHA) took a combined leadership role in developing clinical practice guidelines, appropriateness criteria, disease registries, and performance measures related to CV care, in order to drive patient-centered, safe and effective care, rather than await governmental edicts about modifying services.⁵ The American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) has been working with the ACC and AHA since 2006 to assure that the importance of cardiac rehabilitation/secondary prevention (CR) as a low cost, highly effective (but currently underutilized) service⁶ is recognized and acknowledged as a necessary part of care for patients with cardiovascular diseases. This article will describe the rationale for developing and maintaining performance measures related to cardiac rehabilitation, including the implications for patients and healthcare providers.

Cycle of Therapeutic Effectiveness

Clinical practice evolves as scientific evidence related to diagnosis and treatment accumulates. In order to assure that clinical practice is based on reliable and valid evidence, most professional associations

develop clinical practice guidelines that distill evidence from research studies, rank the importance of recommendations, and are transparent to practicing clinicians so they know whether the recommendations are based on solid evidence or expert consensus. Based on evidence that CR positively impacts mortality, as well as function, risk factors, and quality of life, referral to CR carries a high level of recommendation for treatment of CV disease in many of the ACC/AHA clinical practice guidelines.⁷⁻¹⁰ ACC/AHA update their clinical practice guidelines every 5-7 years, depending on accumulating scientific research, and use their clinical practice guidelines as a major resource for writing appropriateness criteria (evidence-based guidelines that assist physicians in making the most appropriate treatment decisions for a specific condition) for potentially over-used services, and performance measures (a set of specifications that define an indicator of quality) for services with high impact on patient outcomes and disparity of use. For example, referral to CR performance measures are included in measure sets for treatment of coronary artery disease and following myocardial infarction or percutaneous intervention.⁵ Performance measures, along with volume and other quality indicators, are used in disease registries, and information from the disease registries is used to answer research questions about the real world impact of treatment patterns on patient outcomes. This “cycle of therapeutic effectiveness” is used by AACVPR for developing and updating its guidelines, registry, and program certification processes (see Figure 1).

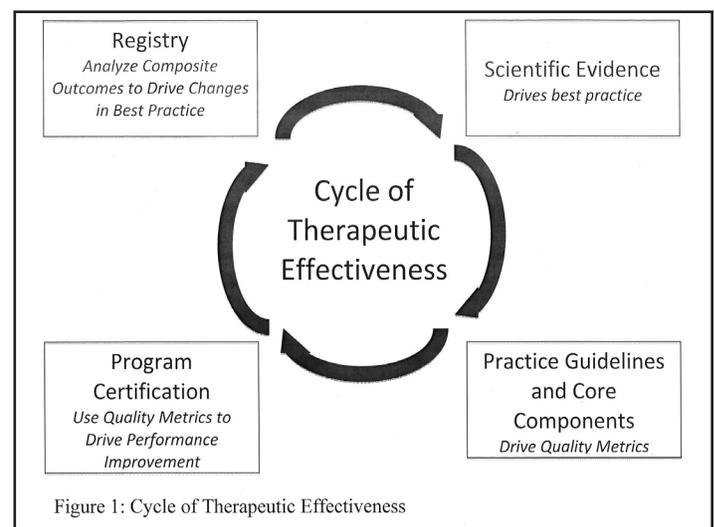


Figure 1: Cycle of Therapeutic Effectiveness

Value-Based Purchasing and Transparency about Costs of Care

Although a detailed discussion of issues related to value-based purchasing is outside the scope of this article, it is important to understand how and why this concept is emerging in the US, how it may impact

delivery of CR in the future, and how performance measures relate to value-based purchasing. Those who pay for healthcare (employers, insurance companies, the government, and patients) recognize that there are disparities in payment to providers, including physicians and hospitals. Insurance companies, including the Centers for Medicare and Medicaid Services (CMS), which is the US federal government agency that pays the bulk of healthcare costs for those over age 65, the poor and the disabled, are approaching this issue in several ways. First, they are beginning to compare cost among providers for caring for patients with specific diseases, using software programs called episode groupers to analyze the data.¹¹ Although this is a relatively new process for CMS, commercial companies have been using this information for several years to make decisions about contracts with providers. Recently, CMS released composite data about their payments to physicians, which sparked a national discussion about accuracy of data, disparities of payment among providers, and how information about payment to providers should be used.¹²

As awareness of the costs of care permeates the discussion about healthcare payment reform in the US, and as ways to measure and report cost continue to evolve, it will be increasingly important for CR to be recognized as a low cost, highly effective and integral part of the care of patients with CV disease.

Performance Measures and Quality Indicators

Payment reform also includes the requirement to track and reward quality, as a means to drive changes in the ways that clinicians and organizations provide care, and accurate metrics are needed to track aspects of care. Quality indicators are structured metrics used to report and track systems, processes, and outcomes of care. The outcome of these metrics are then used to encourage changes in processes of care that improve patient outcomes.

Performance measures are nearly identical to quality indicators, but in the US, the term performance measure is used for those metrics which can be used for public accountability, such as reporting a provider's results related to that measure in a publicly accessible forum, or to adjust payment to a provider. For example, measures developed by AACVPR and CACPR related to provision of CR services are quality measures, because they were developed to encourage quality improvement, not to compare programs in a public forum or to determine payment. However, in the US, some performance measures related to CV disease are being used to adjust payment and to compare providers. Performance measures related to 30-day readmission rate after hospitalization for myocardial

infarction¹³ are being used to adjust CMS payment to hospitals. In the Physician Quality Reporting System (PQRS)¹⁴, physicians can choose performance measures related to their specialties that will be used to adjust their payment for their outpatient services. The referral to CR performance measure from an outpatient setting¹⁵ is included in PQRS (see *Table 1*). Because performance measures are used for public reporting and payment, a fairly rigorous and elaborate system has been developed in the US to endorse and maintain performance measures that can be used for accountability purposes.

Endorsement and Maintenance of Performance Measures

The National Quality Forum (NQF)¹⁶ is a non-profit organization, supported by the federal government, which has been charged with reviewing and endorsing performance measures that can be used by CMS and others. Performance measures are developed by organizations (for example the referral to CR measures were developed by AACVPR, ACC, and AHA¹⁷), following a structured format to define the area of care being measured, along with the numerator, denominator, exclusion criteria, sources of data, and method for risk adjustment, if needed. The measure developers are also responsible to provide reasoning demonstrating the importance of the measure, based on disparities in care, the scientific evidence related to the measure, and the relationship of the measure to meaningful patient outcomes. After the measure is defined, the developers then test the measure for feasibility, usability, validity, and reliability. The process to test the referral to CR measure reliability is described in a recent article by Thomas et al.¹⁸ Currently, NQF only requires measures to be tested using paper medical records, but in the future, developers will most likely be expected to demonstrate that the measure results can be extracted from electronic medical records in a feasible and reliable manner.

The NQF solicits nominations for measure reviewers from its 52 member organizations for the work groups that review performance measures related to specific diseases. The work group is staffed by NQF professionals, but composed of volunteers with experience related to clinical practice and/or performance measurement in that disease, as well as individuals who can provide a payer and/or patient perspective. To illustrate the NQF review process related to CR, the AACVPR/ACC/AHA referral to CR workgroup submitted information about why it is important to hold providers responsible to refer patients to CR, that referral to CR can be reliably identified in a medical record, and that measuring and tracking

Table 1: Referral to Cardiac Rehabilitation Performance Measures

	Measure One Referral from an Inpatient Setting	Measure Two Referral from an Outpatient Setting
Measure	All patients hospitalized with a primary diagnosis of an acute myocardial infarction (MI) or chronic stable angina, or who during hospitalization have undergone coronary artery bypass graft surgery, a percutaneous coronary intervention, cardiac valve surgery, or cardiac transplantation are to be referred to an early outpatient cardiac rehabilitation/secondary prevention program.	Patients evaluated in an outpatient setting have experienced an acute myocardial infarction, coronary artery bypass graft surgery, a percutaneous coronary intervention, cardiac valve surgery, or cardiac transplantation, or who have chronic stable angina and have not already participated in an early outpatient cardiac rehabilitation/secondary prevention program for the qualifying event/diagnosis are to be referred to such a program.
Numerator	Number of eligible patients with a qualifying event/diagnosis who have been referred to an outpatient Cardiac Rehabilitation/Secondary Prevention program prior to hospital discharge or have a documented medical or patient centered reason why such a referral was not made.	Number of patients in an outpatient clinical practice who have had a qualifying event/diagnosis during the previous 12 months, who have been referred to an outpatient Cardiac Rehabilitation/Secondary Prevention program.
Denominator	Number of hospitalized patients in the reporting period hospitalized with a qualifying cardiovascular disease event/diagnosis who do not meet any of the criteria listed in the denominator exclusion section below.	Number of patients in an outpatient clinical practice who have had a qualifying cardiovascular event in the previous 12 months and who do not meet any of the criteria listed in the denominator exclusion section below, and who have not participated in an outpatient cardiac rehabilitation program since the qualifying event/diagnosis.
Denominator Exclusions	Patient factors (e.g., patient resides in a long-term nursing care facility). Medical factors (e.g., patient deemed by provider to have a medically unstable, life-threatening condition). Health care system factors (e.g., no cardiac rehabilitation/secondary prevention program available within 60 min of travel time from the patient's home). The only exclusion criterion for this measure is: Patients who expired before discharge.	Patient factors (e.g., patient resides in a long-term nursing care facility). Medical factors (e.g., patient deemed by provider to have a medically unstable, life-threatening condition). Health care system factors (e.g., no cardiac rehabilitation/secondary prevention program available within 60 min of travel time from the patient's home). The only exclusion criterion for this measure is: Patients already referred to CR from another provider/facility and/or was participating in CR prior to encounter with provider at the current office/facility. When the provider discusses CR/SP referral with the patient, if the patient indicates that he/she has already been referred to CR/SP, then that provider would not be expected to make another referral

referral to CR can drive performance improvement to decrease disparities and increase referral rates. The referral to CR measures were originally submitted during a call for care coordination measures in 2010, given time-limited endorsement pending testing data, and then received full NQF endorsement in 2012 after submission of data related to usability, reliability, and feasibility.

After a measure is endorsed by the NQF, it is reviewed again every three years by a volunteer steering committee, with submission of new test data by the measure developers, and final measure endorsement contingent upon NQF Board vote. The referral to CR measures are currently undergoing this process.

A higher level of review has been developed for measures that will be used in CMS accountability programs, led by the Measures Application Partnership¹⁹ which is a public-private partnership that reviews performance measures for potential use in federal public reporting and performance-based payment programs, and also works to align measures being used in public- and private-sector programs.

Implications for CR Programs and Patients

The referral to CR performance measures are included in ACC/AHA performance measure sets for treatment

of myocardial infarction or coronary artery disease and for patients with recent percutaneous intervention. As healthcare payment reform continues, payers will be looking for measures of quality to link with measures of cost, efficiency and patient satisfaction, as a way to promote that their payment system supports value of care. CR is a low cost, highly effective treatment that promotes patient-centric outcomes. However, it will be important for CR programs to work with providers to decrease the perceived burden of referral and to promote enrollment and participation, which are the outcomes that truly correlate with improvements in mortality, function, and quality of life.

The AACVPR clearly recognizes that the next step is to develop quality and performance measures about CR enrollment and completion, as well as measures that define quality CR programming. Information from the AACVPR CR Registry will be used to test potential quality metrics and the AACVPR certification process will be linked to both process measures and patient outcomes, stressing use of quality measures to drive quality improvement. Our patients deserve the most valuable care that we can provide.

References

1. *The Laws of Nature and Nature's God*. Available from: <http://www.lonang.com/exlibris/misc/1854-pvm.htm>

2. Centers for Medicare and Medicaid Services. (2013). History. Available from: <http://www.cms.gov/About-CMS/Agency-Information/History/index.html>
3. The Patient Protection and Affordable Care Act. Available from: <http://www.ncsl.org/documents/health/ppaca-consolidated.pdf>
4. King ML. Affordability, accountability and accessibility in health care reform: Implications for cardiac and pulmonary rehabilitation. *J Cardiopul Rehabil Prev* 2013; 33:144-52.
5. American College of Cardiology. (c2014). Guidelines and Quality Standards. Available from: <http://www.cardiosource.org/Science-And-Quality/Practice-Guidelines-and-Quality-Standards.aspx>
6. Balady GA, Ades PA, Bittner VA et al. Referral, enrollment, and delivery of cardiac rehabilitation/secondary prevention programs at clinical centers and beyond: a presidential advisory from the American Heart Association. *Circulation*. 2011;124:2951-60.
7. Hillis LD, Smith PK, Anderson JL, et al. 2011 ACCF/AHA guideline for coronary artery bypass graft surgery: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2011;124:e652– e735.
8. Levine GN, Bates ER, Blankenship JC, et al. 2011 ACCF/AHA/SCAI guideline for percutaneous coronary intervention: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Interventions. *J Am Coll Cardiol* 2011;58:e44–e122.
9. O’Gara PT, Kushner FG, Ascheim DD, et al. 2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2013;61:e78–e140, doi:10.1016/j.jacc.2012.11.019.
10. Fihn SD, Gardin JM, Abrams J, et al. 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease: A report of the American College of Cardiology Foundation/American Heart Association Task Force on American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *J Am Coll Cardiol* 2012;60:e44 –e164.
11. Tompkins CP, Higgins AR, Ritter GA. Measuring outcomes and efficiency in Medicare value-based purchasing. *Health Aff*. 2009;28:251-61.
12. Centers for Medicare and Medicaid Services. (2014). Medicare Provider Utilization and Payment Data: Physician and Other Supplier. Available from: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Physician-and-Other-Supplier.html>
13. The National Quality Forum. (n.d.). Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization. Available from: <http://www.qualityforum.org/QPS/QPSTool.aspx?m=690&e=1#qps>
14. Centers for Medicare and Medicaid Services. (2014). Physician Quality Reporting System. Available from: <http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/pqrs/index.html>
15. National Quality Measures Clearinghouse. (2010). Cardiac rehabilitation: percentage of eligible inpatients with a qualifying event/diagnosis who have been referred to an outpatient cardiac rehabilitation program prior to hospital discharge or have a documented medical or patient-centered reason why such a referral was not made. Available from: <http://www.qualitymeasures.ahrq.gov/content.aspx?id=34287>
16. The National Quality Forum. (c2014). Homepage. Available from: <http://www.qualityforum.org/Home.aspx>
17. Thomas RJ, King M, Lui K et al. AACVPR/ACCF/AHA 2010 Update: Performance measures on cardiac rehabilitation for referral to cardiac rehabilitation/secondary prevention services. A report of the American Association of Cardiovascular and Pulmonary Rehabilitation and the American College of Cardiology Foundation/American Heart Association Task Force on Performance Measures (Writing Committee to develop clinical performance measures for cardiac rehabilitation). *Circulation* 2010;122:1342-50.
18. Thomas RJ, Chiu JS, Goff DC, et al. Reliability of abstracting performance measures: Results of the Cardiac Rehabilitation Referral and Reliability (CR3) Project. *JCRP* 2014. 34(3):172-9.
19. The National Quality Forum. (c2014). Measure Applications Partnership. Available from: <http://www.qualityforum.org/map/>

Research in Progress

Cardiovascular Rehabilitation in Ontario-Development of Provincial Standards – A Team Effort

Karen Harkness RN, CCN(C), PhD; Clinical Lead Heart Failure and Cardiovascular Chronic Disease Management Cardiac Care Network of Ontario

There is overwhelming evidence indicating that participation in cardiovascular rehabilitation (CR) improves the quality of life and decreases morbidity and mortality in people with cardiovascular disease.^{1,2}

Although the Canadian Association of Cardiovascular Prevention and Rehabilitation (CACPR) has published clinical guidelines, to date, there are no published standards for the delivery of CR in Canada. Current service provision and enrolment varies considerably across jurisdictions.³ The Cardiac Care Network of Ontario (CCN) is a system support to the Ministry of Health and Long-Term Care, Local Health Integration Networks and service providers and is dedicated to improving quality, efficiency, access, and equality in the delivery of adult cardiovascular services in Ontario.

The CCN, in collaboration with key CR clinicians and stakeholders formed the 'CR Standards Committee' to outline standards for the provision of CR in Ontario. This committee is in the process of developing the document, 'Standards for provision of cardiovascular rehabilitation in Ontario' which will define the minimum requirements for the delivery of evidence-based CR health services. To ensure this document reflects the best possible evidence and input from key stakeholders, such as administrators and front-line clinicians and members of the CACPR executive, the CCN is engaging in following process for the development of this document:

1. Incorporate best available evidence: The 3rd edition of the CACR guidelines,¹ Canadian Cardiovascular Society-CR Quality Indicators,⁴ CR standards documents from Britain,⁵ Australia,⁶ Europe⁷ and the USA,⁸ and seminal articles related to the provision of CR in Canada and Ontario^{3,9,10} are being reviewed and will be used by the CCN-CR Standards Committee to guide development an initial draft of the CR Standards document for June 2014.

2. Host a Stakeholder engagement workshop: A workshop was being hosted by the CCN (June 13, 2014) to provide members of the Cardiac Rehabilitation Network of Ontario and CACPR, and CR clinicians and administrators (target n=100) to review and critically reflect on this initial draft. Small working groups will be led by the CCN clinical staff and CR standard committee members to engage feedback from stakeholders. Key findings from this workshop will be collated and shared with participants at the conclusion of the workshop.

3. Ensure ongoing stakeholder engagement: Members of the CCN-CR Standards Committee will guide the revision of the initial CR standard document as based on stakeholder feedback from the workshop. This revised CR standards document will be circulated for approval from each committee member. Secondary review will be solicited from key CR stakeholders, including members of the CCN and CACPR Board of Directors.

The final document, 'Standards for provision of cardiovascular rehabilitation in Ontario' will represent

the application of measurable core components of CR that are underpinned by service standards in a manner that blends the application of the current scientific evidence and the voices of over 100 key stakeholders. Ultimately the goal of this document is to represent a key resource that can be utilized to reduce variation in care whilst ensuring current and future CR programs are clinically effective and achieve sustainable health outcomes for patients. Please watch the CCN website (www.ccn.on.ca) for information regarding a Forum to officially launch the 'Standards for provision of cardiovascular rehabilitation in Ontario' this Fall.

References

1. Stone JA, Arthur HM, Suskin N, et al. *Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention: Translating Knowledge Into Action*. 3rd ed. Canadian Association of Cardiac Rehabilitation, Winnipeg, Manitoba 2009.
2. McDermott MM. *Functional Impairment in Peripheral Artery Disease and How to Improve It in 2013*. *Curr Cardiol Rep* 2013; 15 (4): 347.
3. Polyzotis PA, Tan Y, Prior PL, et al. *Cardiac rehabilitation services in Ontario: components, models and underserved groups*. *J Cardiovasc Med* 2012; 13(11): 727-34.
4. *The Canadian Cardiovascular Society- Quality Indicators for cardiac rehabilitation and secondary prevention*. September 2013. www.cacr.ca
5. *The BACPR Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation 2012 (2nd Edition)* www.bacpr.com
6. *Recommended framework for cardiac rehabilitation '04*. National Heart Foundation of Australia and Australian Cardiac Rehabilitation Association. www.heartfoundation.org.au
7. Piepoli MF, Corra U, Adamopoulos S, et al. *Secondary prevention in the clinical management of patients with cardiovascular diseases. Core components, standards and outcome measures for referral and delivery*. *Eur J Prev Cardiol* 2012; 21(6): 664-681.
8. Fletcher GF, Ades PA, Kligfield P, et al. *Exercise Standards for Testing and Training: A Scientific Statement From the American Heart Association*. *Circulation* 2013; 128 (8):873-934.
9. Grace SL, Bennett S, Ardern CL, & Clark AM. *Cardiac rehabilitation series: Canada*. *Prog Cardiovasc Disease* 2014; 56(5): 530-5.
10. Grace SL, Chessex C, Arthur H. et al. *Systematizing Inpatient Referral to Cardiac Rehabilitation 2010: CANADIAN ASSOCIATION OF CARDIAC REHABILITATION AND CANADIAN CARDIOVASCULAR SOCIETY JOINT POSITION PAPER*. *J Cardiopulm Rehabil Prev*. 2011; 31(3): E1-8.

References and Reviews

Kelly Angevaere, R.Kin., MSc, ACSM-RCEP; UHN Cardiovascular Prevention and Rehabilitation Program, Toronto, Ontario

Secondary prevention in the clinical management of patients with cardiovascular diseases. Core components, standards and outcome measures for referral and delivery.

Piepoli, M.F., et al. European Journal of Preventive Cardiology 2012, June; doi: 10.1177/2047487312449597.

Despite their established effectiveness, cardiovascular prevention and rehabilitation programs remain largely underutilized. This policy statement from The European Association of Cardiovascular Prevention and Rehabilitation (EACPR) sets the standards for improved access to and delivery of secondary prevention programs.

The EACPR advises that patients with cardiovascular disease should be referred to outpatient secondary prevention programs within 12 months of the event, but ideally as soon as possible after hospitalization. Ten core components of programming are outlined, including patient assessment, counselling on diet and exercise, blood pressure and lipid management, and smoking cessation. These core components assist programs in creating an environment conducive to a multidisciplinary team approach when assisting patients with improving clinical outcomes and self-management skills. Performance measures are also provided to guide ongoing program evaluation. Finally, primary care physicians are identified as key partners in the continuity of care for their patients before, during, and following participation in secondary prevention programs.

The responsibility of ensuring timely access to cardiovascular prevention and rehabilitation programs lies with all health care providers involved in the patient's care. This policy statement offers an opportunity to reflect on practice standards for facilitating referral to secondary prevention programs. Specific program standards and objectives that are outlined in this paper aim to produce program consistency and comparability, improve health care providers' understanding of secondary prevention programs, and consequently improve utilization.

Effect of patient education in the management of coronary heart disease: A systematic review and meta-analysis of randomized controlled trials.

Brown, J.P.R., et al. Eur J Prev Cardiol 2012; 20: 701-714.

Patient education plays a significant role in chronic disease prevention and rehabilitation programs. Although the delivery method may vary across programs, the intention of sharing usable health-related information to promote self-management behaviour is consistent. Specific to coronary heart disease management, Brown and his colleagues examined how patient education independently contributes to mortality, morbidity (revascularization and hospital readmission), health-related quality of life, and healthcare costs.

Data from 13 randomized controlled trials with a median follow-up period of 18 months were included in the systematic review. Adult participants had traditional diagnoses of either coronary artery disease, angina, myocardial infarction, angioplasty, or coronary artery bypass surgery. Other diagnoses such as heart failure or arrhythmia were excluded. The heterogeneity of the included studies made it difficult to comment on the most effective delivery methods for teaching. Overall, patient education was not found to have an effect on measures of mortality or morbidity, but results did suggest that patient education improved health-related quality of life and reduced healthcare utilization.

This review supports the inclusion of patient education in comprehensive cardiac rehabilitation programs as well as other health information delivery channels (e.g., family physician offices and community-based interventions). Self-management behaviour, a desired outcome of patient education, was not examined in this review paper. However, cardiac rehabilitation programs and the like provide the opportunity to practice new knowledge and problem solve, while receiving support from the program's interdisciplinary team. Such practice environments promote increased recognition of the relevance of shared health information among participants.

Website Review

Andrew Jeklin, Exercise Specialist, Symmetrix, Vancouver, B.C.

Canadian Cardiovascular Society (CCS)

<http://ddqi.ccs.ca/index.php/quality-indicators>

The CCS is a voice for cardiovascular physicians and scientists in an effort to build a national consensus of data definitions and quality indicators in order to improve cardiovascular health for Canadians. The CCS have created a Quality Indicators E-Catalogue which includes four chapters, atrial fibrillation, heart failure, cardiac rehabilitation/secondary prevention, and cardiac surgery. Each chapter contains contributions from leading experts in the field through comprehensive data, definitions, research studies, and analysis of

risk stratification. Of particular interest, the cardiac rehabilitation and secondary prevention chapter, highlights many quality indicators including emergency response strategy, increase in exercise capacity, patient self-management education, and cardiac rehabilitation wait time from referral to enrollment. Each of these quality indicators contains a well-defined and detailed description, source of data, exclusion criteria, rationale, clinical recommendations, method of reporting, and challenges of implementation/interpretation. This degree of organization allows for simple reading and comprehension for both the public and HCP which will certainly facilitate its clinical application.

Case Study

CCS Cardiac Rehabilitation Quality Indicators – The Field-Testing Experience at St. Joseph’s Health Care, London, Ontario

Karen Unsworth, MSc, Cardiac Rehabilitation & Secondary Prevention Program, St. Joseph’s Health Care, London, Ontario

In 2011, the Canadian Cardiovascular Society (CCS) initiated a pan-Canadian process for development and selection of quality indicators (QIs) for cardiac rehabilitation and secondary prevention (CR/SP). The draft quality indicators were completed in March, 2013. Subsequently, the Quality Indicators Cardiac Rehabilitation/Secondary Prevention (CR/SP QI) Committee conducted inaugural national field-testing to assess the experience of executing CR/SP QI performance measurement.

The St. Joseph’s Health Care (SJHC) CR/SP Program was asked to serve as a field-testing site. The two quality indicators selected for testing were:

- Process Indicator No: CR-1) The percentage of eligible inpatients referred to a cardiac rehabilitation program;
- Process Indicator No: CR-2b) The median number of days between receipt of referral at the cardiac rehabilitation program to patient enrollment.

Method

The indicator testing process involved a multi-step methodology based on the framework and protocol developed for the UK Quality and Outcomes

framework.¹ With a focus on evaluating key attributes of acceptability and feasibility, the testing consisted of: (1) data extraction to assess technical feasibility, (2) completion of a workload diary during the course of the assessment period, and (3) a semi-structured interview to obtain input from the “most responsible” field-tester about the overall perception of the testing experience. The field-testing was conducted between March-April, 2013 using data from July 1 to December 31, 2012.

Results

Importantly, at SJHC this field-test occurred in the context of a previously established initiative to implement the Guidelines Applied in Practice (GAP) model with the local acute coronary syndrome (ACS) population, a core CR eligible cohort 2. The GAP initiative greatly facilitated the field-testing. Requisite data collection and auditing processes linking inpatient units with cardiac rehabilitation had already been instituted and operationalized, relying upon a dedicated program evaluation module integrated within an advanced web-based clinical information management system (the London Cardiovascular Information System – LCVIS). Given the short time-frame specified by the CR/SP

QI Committee, the sample was restricted to local ACS inpatients, the population already under study for the GAP initiative, so that the QI field-testing could be accomplished in a rapid and economic manner.

Technical feasibility of data extraction

Overall, it was feasible to execute the field-test with a high degree of efficiency and accuracy.

QI-1 (% of eligible inpatients referred): We benefited from a well-established relationship with the Medical Records Department at London Health Sciences Centre (acute care site), such that only a phone call was required to obtain a report (similar data to current SJHC CR/SP Program QI activity reports) of ACS inpatients corresponding with the period being studied. Furthermore, the electronic patient management system, LCVIS, enabled extraction of outpatient cardiac rehabilitation referral data, linkage of that data to inpatient files, and export of linked data for analysis using SPSS statistical software. This methodology also allowed us to define a valid denominator of local ACS patients to be used in calculation of QI-1, consisting of the total number of all CR-eligible ACS inpatients. We did not consider potential exclusions such as comorbidities, referrals to long-term care, or death; consequently, this may have under-estimated the percentage of eligible inpatients referred.

QI-2b (median wait-time from CR referral receipt to enrollment): To obtain a wait-time count, we executed a cardiac rehabilitation wait-times report from the evaluation module of LCVIS, known as LCVIS Tools. This report calculated mean days to patients' first cardiac rehabilitation appointment. We calculated this interval on the basis of first appointment scheduled rather than attended, thereby eliminating any influence on wait-time that would be attributable to patient factors. Note that for this field-testing, due to time pressure we reported the mean number of days, a calculation of which had already been programmed into the reporting functionality of LCVIS Tools; as opposed to the median as requested. In future, we anticipate that we will be able to report the median, which will necessitate a small informatics programming change.

Workload

The workload associated with the field-testing was

very manageable. QI-1 required approximately 130 minutes, accounted for mostly by inpatient-outpatient data linkage and statistical analysis. We anticipate that time required for these tasks would be significantly shorter once routinely implemented. QI-2b required only two minutes, that is, the time required to execute a pre-programmed report. Notably, the ease of execution was highly dependent upon previously established processes and infrastructure related to data collection and informatics; and upon local availability of personnel able to conduct statistical analyses.

Acceptability

We recognize the importance of, and support field-testing of quality indicators. In fact, we anticipate aligning our dedicated performance indicator module in LCVIS with CCS measures. Field-testing is much like a necessary "reality check", as it stimulates a process that can identify potential problems or issues to be considered prior to implementation on a national level. When testing QI-1, for example, we identified an oversight in our chart abstraction methodology in that we did not account for exclusions from the denominator. Nevertheless, on reflection, although we are in a position to adjust the query for future QI evaluation, implementing exclusion criteria may be vulnerable to subjective interpretation, leaving the possibility that this approach might introduce "gaming".

Overall, a pan-Canadian approach to development, testing, and utilization of QIs is of considerable scientific and clinical importance. Having the CR QIs embedded within the clinical practice guidelines work of the CCS will make an important contribution to the national approach to understanding cardiovascular disease incidence, prevalence, patterns, and quality of care, as well as to surveillance and improvement of clinical outcomes.

References

1. Campbell SM, Kontopantelis E, Hannon K, et al. Framework and indicator testing protocol for developing and piloting quality indicators for the UK quality and outcomes framework. *BMC Fam Pract* 2011;12:85.
2. Montoye CK, Eagle KA, Michigan ACC-GAP Investigators, et al. An organizational framework for the AMI ACC-GAP Project. *J Am Coll Cardiol* 2005;46(10 Suppl):1-29.

Cardiac Rehabilitation Quality Indicators in Practice: A Case Study

Sandeep G. Aggarwal MD, FRCP(c), FACC, Medical Program Director; Brea Lamb, BScKin ACSM Certified Clinical Exercise Specialist®, CSEP Clinical Exercise Physiologist, TotalCardiology™ Rehabilitation and Risk Reduction; Calgary, Alberta

Mr. B, a 55 year old male, presented to hospital with chest pain and anterior ST elevation. He was

subsequently sent to the cardiac catheterization lab where a 90% blockage was found in his LAD and a bare metal stent was inserted. As a part of his admission order, a referral to cardiac rehabilitation (CR) was automatically generated. Mr. B was given information about the TotalCardiology™ Rehabilitation program while in hospital and was discharged three days post-angioplasty.

Quality Indicator: Inpatients Referred to a Cardiac Rehabilitation Program

Since 2008 patients admitted to a Calgary hospital with a cardiovascular diagnosis have an automatic referral to CR generated as part of their admission order. This has ensured that the referral is not missed and that all eligible inpatients are referred to CR in a timely fashion.

Mr. B was contacted by TotalCardiology™ Rehabilitation staff the day after he got home from hospital. An appointment was scheduled four days later with a program physician as part of the Early Cardiac Access Clinic (ECAC).

Quality Indicator: Cardiac Rehabilitation Wait Time from Referral to Enrollment

The ECAC was launched in Calgary in 2008 in an effort to enhance timely access to CR and to increase program enrollment. In the ECAC model, patients are scheduled for a medical assessment 4-10 days after hospital discharge. Patients are eligible for the ECAC if they have had an acute coronary syndrome that was medically managed or treated with angioplasty. The ECAC started as a pilot project in which all STEMI patients were automatically referred to an early access clinic where they were seen promptly after discharge. After being cleared at this appointment they started CR in an expedited fashion and were offered 12 weeks of medically supervised exercise. Patients seen sooner following hospital discharge are more likely to enroll in the program and are less likely to withdraw from the program prior to completion. During the pilot 87.8% of the patients who were referred to CR enrolled in the program, compared to 33.5% in the past. Of those patients 71% completed the program compared to only 29% who were seen more than 14 days after being discharged.¹ Due to the success of the pilot, the model was expanded to include all acute coronary syndrome patients.

At Mr. B's ECAC appointment, the physician identified that he was no longer taking his Ticagrelor. Mr. B had discontinued the medication after four days as he misunderstood the prescription. The physician explained the importance of taking the medication and encouraged him to restart it immediately. Before leaving the clinic Mr. B was booked to return two days

later. At that follow-up appointment, the supervising physician performed a cardiovascular exam which was unremarkable. Mr. B was cleared to perform an exercise stress test in order to optimize exercise and medical therapy recommendations. He completed 7 minutes on a Bruce protocol with handrail support, corresponding to a functional capacity of 7 Metabolic Equivalent (METS). The peak MET value was calculated from treadmill speed and grade during the final stage of the exercise protocol using an established equation.² During his test he was free of cardiac symptoms and had no abnormal ECG changes. At peak, Mr. B had a heart rate of 130 beats per minute and blood pressure of 162/74 mmHg.

Based on the results of his cardiovascular exam and stress test, the physician provided Mr. B some lifestyle recommendations and encouraged him to join the onsite CR program. He started the program the following week attending a self-management education series which covered cardiac risk factor management and goal-setting. One of Mr. B's goals was to improve his fitness level so that he would have increased stamina for his travel plans later in the year.

Quality Indicator: Patient Self-Management Education

All patients who join the TotalCardiology™ Rehabilitation program are encouraged to attend a two-part education series prior to starting their exercise sessions. The objective of these classes is to help answer some common questions patients have about heart disease, give the patients the knowledge and skills to make heart health decisions, and set lifestyle goals around managing their risk factors. The patients are instructed on the benefits of tracking their behaviours and how to use that information to evaluate their goals. A heart health manual created by TotalCardiology™ Rehabilitation staff in 2013 is also provided, which includes information and tools on a variety of topics to aid patients with their self-management. Patients are given the option to track behaviours using simple tracking forms or by using the MyHealthAlberta Personal Health Portal. This is a secure online tracking program that allows users to keep track of information related to their health and goals.

After completing the education series Mr. B started his medically supervised exercise program. He attended 1-hour exercise sessions twice a week where he also received health coaching around his risk factors from the supervising program nurses and dietitians. Together with his clinical exercise specialist, he was able to develop weekly exercise plans that allowed him to gradually work towards 150 minutes of moderate exercise each week through a combination

of exercise done both onsite and independently. During his 12-week program, Mr. B did not experience any adverse responses to exercise and was symptom free. He received counselling on symptom management and the appropriate use of his nitroglycerin spray.

Quality Indicator: Emergency Response Strategy

Patients that attend exercise sessions are screened for safety by checking in with program staff prior to starting each session. Through an assessment including heart rate, blood pressure, blood glucose, and patient reported symptoms, staff are able to identify possible contraindications to exercise. Patients are counselled on abnormal responses to exercise, symptom management, and the appropriate use of nitroglycerin spray. They are instructed to inform staff of any symptoms or concerns while exercising. In the event of a medical emergency, the program nurses and physician would attend to the patient and only if required transport the patient to the emergency department. Emergency equipment, including a defibrillator and emergency medications, are kept on-site. Having emergency protocols, mock codes, and necessary equipment ensures staff are able to manage medical emergencies while waiting for hospital transfer when required.

Near the conclusion of his exercise program, Mr. B had a follow-up stress test with a program physician. He completed 9 minutes on the test which corresponds to a functional capacity of 8.3 METS and a 19% increase from his initial assessment. After his stress test, Mr. B attended his last two exercise sessions where his health coaching team gave him updated guidelines to continue with his exercise program and counselled him

on his future heart health goals.

Quality Indicator: Increase in Exercise Capacity

A functional capacity of <5, 5-8, and >8 METs has been used as a 3-level classification scheme to stratify patients as having a high, intermediate and low risk of future cardiovascular events³. At TotalCardiologyTM Rehabilitation, 16%, 45%, and 39% of patients have a functional capacity <5, 5-8, or >8 METs at their initial assessment, respectively. When reassessed after program participation, 60% of patients are able to surpass >8 METs. After increasing their fitness levels during the 12-week CR program, patients are encouraged to continue with a regular exercise program in order to maintain their improvements. Of those patients who return for their one- and two-year assessments, 65% of them are able to maintain/achieve 8 METS or higher.

Mr. B returned to the clinic for one- and two-year assessments where he completed 8 minutes (7.7 METS) on both of his stress tests, demonstrating his commitment to healthy exercise and lifestyle habits.

References

1. Parker K, Stone JA, Arena R, et al. An early cardiac access clinic significantly improves cardiac rehabilitation participation and completion rates in low-risk ST-elevation myocardial infarction patients. *Can J Cardiol.* 2011;27(5):619-27.
2. McConnell TR, & Clark BA. Prediction of maximal oxygen consumption during handrail-supported treadmill exercise. *J Cardiopulm Rehabil.* 1987;7(7):455-63.
3. Martin BJ, Arena R, Haykowsky M, et al. Cardiovascular fitness and mortality after contemporary cardiac rehabilitation. *Mayo Clin Proc.* 2013;88(5):455-63.

Program Profile

A Regional Approach to Cardiac Rehabilitation and Chronic Disease Prevention and Management

Cleo R. Cyr, RN, BN, MHS; David J. Bewick, MD, FRCPC; Robert S. Stevenson, MD, FRCPC; J. Stephen Mundle BScPT, B.PE, MS; Debbie Blais BSc, RD, CDE; Karen Crane, RN, CSEP, RYT; Trena Galbraith RN, CCN (C); Patricia Boyle, RN, BNSc, MEd; Darren Johnston, RN; New Brunswick (NB) Heart Centre Cardiovascular Health & Wellness Program, Saint John, N.B

Introduction

Under the umbrella of the NB Heart Centre Cardiovascular Health and Wellness Program (CHWP) located at the Saint John Regional Hospital (SJRH), a unique array of programs provide a chronic disease management approach to cardiac rehabilitation (CR), pulmonary rehabilitation, smoking cessation and heart failure. Supervised and home exercise CR programs are offered in both hospital and community settings as well as by videoconference. All programs provide transitional care to a population of approximately 200,000 in the urban center of Saint John and surrounding rural areas which comprises one of four health zones within Horizon Health Network -one of two regional health authorities in New Brunswick.

Alternative Models of Cardiac Rehabilitation

One of the NB Heart Centre goals, as the provincial tertiary centre for cardiovascular surgery and interventional cardiology, is to facilitate CR growth provincially. This goal also includes a local mandate to increase both urban and rural programming. Funding for the CR program is provided through the NB Heart Centre and Horizon Health Network. Since inception in 1995 the Saint John area program has grown from a small hospital based program at the SJRH with a referral rate of 60 participants per year to receiving

up to 1000 referrals per year with 500 participants in programs.

To manage the increase in participation, traditional programming has evolved to include on-site exercise and home exercise programs. Partnership with the YMCA in Saint John and a fitness studio in the town of Hampton has facilitated this process. Home exercise programs that include a videoconferencing component have also evolved at two community hospital/health centres in St. Stephen and Grand Manan (*Table 1*).

All programs are 12 weeks long with 6 month follow-up and include exercise and self- management/ education components. As well, all programs follow the Cardiac Rehab New Brunswick (CRNB) Cardiac Rehabilitation Standards for Cardiovascular Chronic Disease Prevention and Management¹ and include a multidisciplinary team of nurses, a program manager, medical director and assistant medical director as well as a physiotherapist, dietitian, psychologist and administrative assistant staff. Members of the clinical staff have advanced training in behaviour change, motivational interviewing and coaching processes.

Program Evaluation & Quality Improvement

Development of local program evaluation and quality improvement measures have followed the development and implementation of the Canadian Association of

Table 1 Programs are a hybrid model including 12 weeks of intensive case management, education and exercise followed by 6 months of home exercise. Case management and outcome assessment begins on intake assessment with follow-up to 6 months post program.

Program Name	SJRH – High Risk	YMCA	Hampton Community Program	Charlotte County Hospital (St. Stephen) and Grand Manan Hospital Videoconference/ Home Exercise
Program duration	12 weeks	12 weeks	12 weeks	12 weeks
Number of Exercise Sessions offered	24	12 + home exercise	12 + home exercise	Home exercise only
Number of education classes offered per session	24	12	12	24

Cardiovascular Rehabilitation (CACR) guidelines² and Canadian Cardiovascular Society (CCS) consensus publications on quality indicators.³

With respect to receiving patient referrals, one quality improvement initiative includes the development of an automatic provincial referral process in 2010 administered through the Saint John program. As a result the program has realized a 24% increase in total referrals.

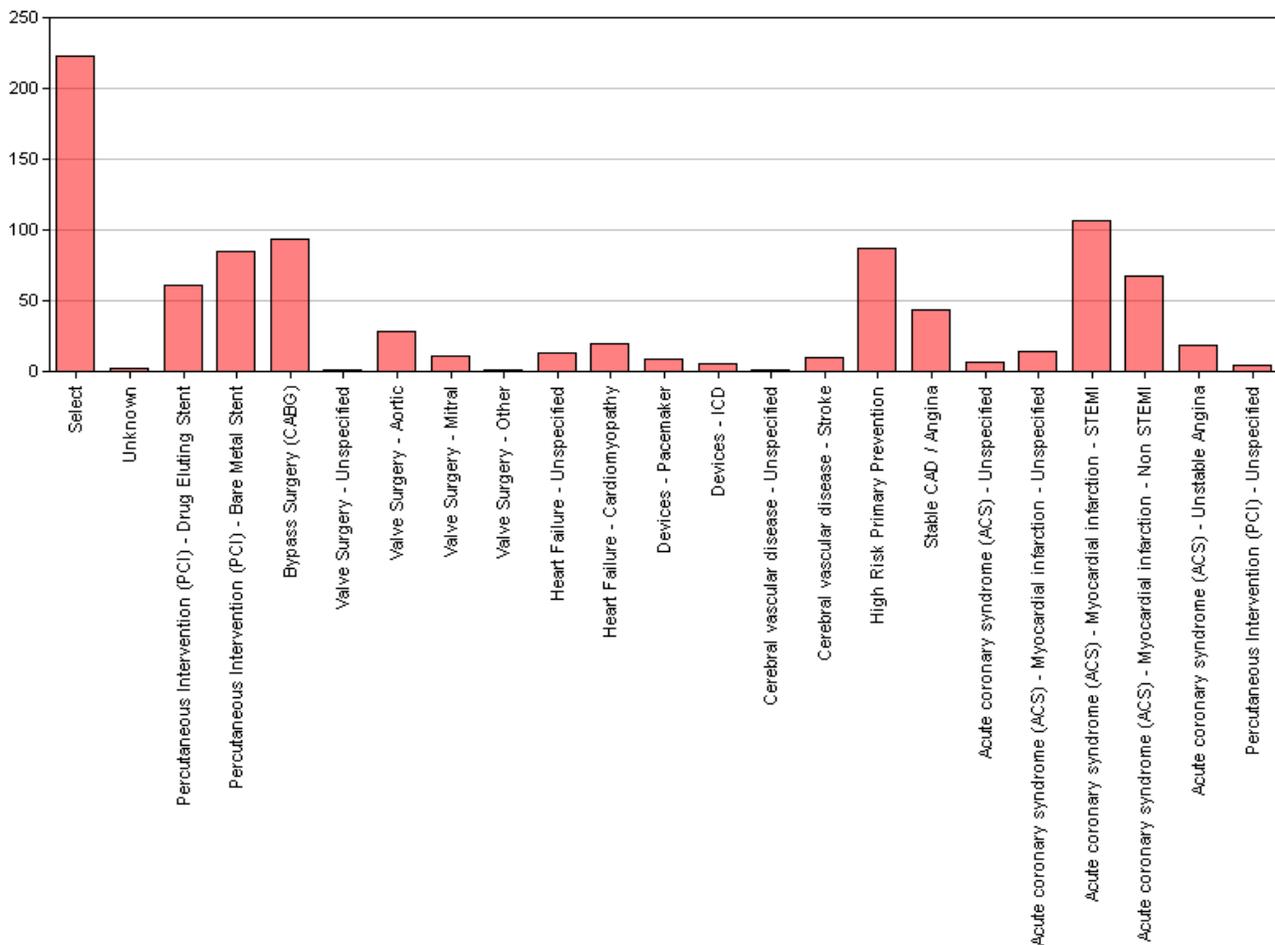
Patient access to programs is another quality

improvement indicator that is measured with a median wait time from referral to initial intake assessment of 30 days. From intake assessment to entry into programs the median wait time is 40 days (35 to 60 days) with a process in place that enhances the systematic referral and intake of discharged patients.⁴

Of those enrolled in 2013, 78% had documented coronary disease (MI/ACS 38%; PCI 43%; Valve/Arrhythmia 19%; CABG 24%; Angina 16%). An

Table 2 Aggregate Referral Event data from the Canadian Cardiac Rehab Registry (CCRR) from 2009 to 2013.

Referral Event Breakdown [Baseline]



additional 22% were entered into programs as very high risk primary prevention patients. One-third (33%) of participants were diabetic.

There were 933 referrals in 2013 from combined automatic referral of inpatients; physician offices; and self-referrals. Of those referred, 34% declined and 66% entered programs with 77% completing programs. Total visits to the programs were 8,775 for the year. The average age of patient's attending programs was

63 years with 34% female and 66% male. The urban/rural split for participants attending was 60/40 percent.

Additional process, structure and outcome indicators follow those outlined in the CCS Quality Indicators document. As well, the program participates in the Canadian Cardiac Rehab Registry (CCRR) which is designed to compare cardiac rehab performance measures against evidence based standards and provides the ability to benchmark program efficiency

against other programs across Canada. Table 2 provides referral event data from the registry and Table 3 travel time to programs.

Walk of Life and NB Heart Centre Symposium Participants

Two yearly events that facilitate enhancing both the public and professional profile of the program include partnering with the Cardiac Health Foundation Walk of Life initiative and the NB Heart Centre Annual Symposium. In 2013 the CR program celebrated its 14th annual Walk of Life as well as 18 years of being part of the NB Heart Centre Annual Symposium. The symposium is dedicated to providing cardiovascular education and networking opportunities to health care professionals. Both events promote the many benefits of cardiac rehabilitation.

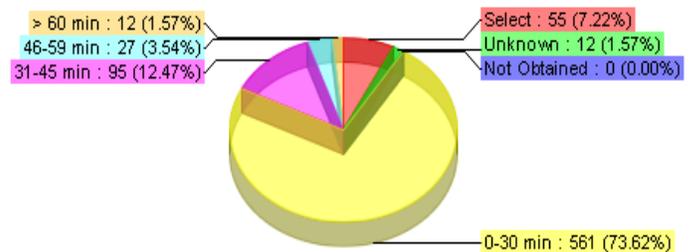
Summary and Conclusion

The Cardiovascular Health & Wellness Program: Cardiac Rehabilitation component provides innovative programming to the urban area of Saint John and surrounding rural areas. Initiatives that have helped the program grow and remain sustainable include developing CR Standards based on Canadian guidelines and initiating alternative models of providing CR including automatic referral and quality indicator processes as well as having the opportunity to be part of the CCRR. None of these initiatives would be possible without the outstanding leadership of the Canadian Association of Cardiovascular Prevention and Rehabilitation and the many individuals involved in promoting cardiac rehabilitation in Canada.

References

1. *Cardiac Rehab New Brunswick Cardiac Rehabilitation Standards for Cardiovascular Chronic Disease Prevention and Management (Draft December 2013).*
2. Stone, J.A. and Arthur, H.M. (Eds). *Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease prevention Translating Knowledge Into Action (3rd ed.) 1999. Winnipeg, MB, Canada: CACR.*
3. *The Canadian Cardiovascular Society quality indicators e-catalogue: Quality indicators for Cardiac Rehabilitation and Secondary Prevention. A CCS Consensus Document February 2013.*
4. Grace, S. L., Chessex, C., Arthur, H., Chan, S., Cyr, C., Dafoe, W. & Suskin, N. (2011). *Systematizing Inpatient Referral to Cardiac Rehabilitation 2010: Canadian Association of Cardiac Rehabilitation and Canadian Cardiovascular Society Joint Position Paper: Endorsed by the Cardiac Care Network of Ontario. Canadian Journal of Cardiology, 27(2), 192-199.*

Travel Time To Rehab [Baseline]



World Congress of Cardiology (WCC), Melbourne Australia 4-7 May, 2014

John Buckley (BACPR International Rep' and ICCPR Chair) and Sherry Grace (CACPR Rep' and ICCPR Secretary-Treasurer)

Canada and the UK working together to lead the world in CVD prevention and rehabilitation

A report of the International Council of Cardiovascular Prevention and Rehabilitation

The ICCPR's first biennial Council meeting was held

at the 2014 World Congress of Cardiology (WCC) in Melbourne. CACPR and BACPR are among 20 other ICCPR member associations, spanning six continents of the globe (please see our website www.globalcardiacrehab.com).

The ICCPR was directly involved as an official

participant in seven formal activities at the WCC:

1. On Sunday morning the 4th May, Professor Sherry Grace (CACPR) and Dr John Buckley (BACPR) were involved in a special World Heart Federation strategy development workshop on solutions for reducing the burden of CVD in secondary prevention and risk reduction. The “roadmap” should be released this Fall, followed by implementation, to reach the United Nations 25 x 25 goal.
2. On Sunday afternoon, we participated in a workshop on the ‘Global Alliance for CVD prevention in clinical practice’. The concept of this alliance was originally developed by the European Association of Cardiovascular Prevention and Rehabilitation (EACPR), but will move to the World Heart Federation umbrella. The ICCPR continues to be recognised as a significant player in this initiative and we were pleased to participate in this session on exploring and proposing goals, aims and structures of this initiative.
3. Monday 5th May, the ICCPR Council had three meetings:
 - a. An executive Council Officers meeting;
 - b. A full Council meeting of the 23 associations; and
 - c. A writing panel meeting, co-chaired by Sherry Grace and Nizal Sarrafzadegan (Iranian

Heart Federation and visiting Professor UBC, Vancouver), for our consensus statement on cardiac rehabilitation delivery in low-resource settings. The panel will produce a publication, invited by the high-impact journal *Nature Reviews: Cardiology*. This publication will delve into any and all available evidence for the value of cardiac rehabilitation in low resource settings. Not only will this be of value for assisting low-and middle-income countries to develop cardiac rehabilitation services, but it will be helpful for many low-resourced settings in higher-income countries like the UK, Canada (e.g., remote northern regions).

d. Minutes of these meetings are available through Sherry Grace at sgrace@yorku.ca

4. Tuesday 6th May, John Buckley presented a talk on it’s development, aims and achievements at a symposium held by the long-established World Heart Federation Group known as Heart Friends Around the World.
5. Wednesday 7th May, we held our inaugural ICCPR Symposium. The topic was on developing and delivering cardiac rehabilitation in low-resource settings. It was co-chaired by John Buckley (BACPR, ICCPR Chair) and Steve Woodruffe (President of the Australian Cardiovascular Health and Rehabilitation Association and ICCPR



member). Sherry Grace provided an update on the development of the ICCPR Consensus statement to support low-and-income countries develop cardiac rehabilitation as an integral component of developing cardiology services.

6. Our final formal involvement on Wednesday 7th May, was participating in a symposium on developing the Global Alliance for CVD prevention and rehabilitation in clinical practice. Sherry Grace (Canada) highlighted how research could be

performed into assessing and contributing to the effectiveness of cardiac rehabilitation offered in low-and-middle-income countries. BACPR Past-President Jenni Jones highlighted how the BACPR Standards and Core Components could be used as a model for developing education and training frameworks for health care professionals around the world.

All member groups from ICCPR had ample time to discuss and share experiences in many of the informal and social opportunities throughout the four days of the

WCC.

Finally the ICCPR would also like to congratulate a longstanding BACPR member and advocate, Professor David Wood, on his election to President-Elect of the World Heart Federation. This position, which links directly with the W.H.O. is one of the highest-esteemed positions in the World in relation to preventing and treating cardiovascular disease. David Wood will be working closely with Salim Yusuf of Canada, who is the incumbent President of WHF. Canada and the UK are thus working closely at many levels on a global scale to prevent and manage the growing burden of CVD.

From the President

Simon Bacon, CACPR President

As we head towards summer many of us are starting to think of our well earned vacations which we have planned. It seems that every year things get a little more hectic and that break seems a little more welcoming. From the feedback I have received from program administrators, medical directors, and research colleagues I know that this has been another great year of activity for the members of our society. A great example of this has been the work that many of our members have been doing on the Canadian Cardiac Rehabilitation Quality Indicators. Most of the details about the indicators can be found in this issue, so I won't go into many details, but it is an impressive feat and all who have been involved should be congratulated on the work that has been completed. Of note, we owe a great thanks to Drs. Sherry Grace and Neville Suskin, who spearheaded this initiative. From a CACPR Board perspective we are optimistically hopeful that these indicators will provide the background upon which

our Cardiac Rehabilitation programmes can grow. Being able to demonstrate how effective our work is to patients, hospitals, and health care funders is key in moving our field forward. However, it is important to remember that this is version 1.0 of the indicators and just the beginning of the process. We are now at the stage where we must field test the 5 key indicators and ensure that they meet our needs in demonstrating our quality and are feasible to capture in the systems that we have in place. As we pilot this process obtaining feedback from our programmes, patients, and funders will be critical so that we can refine the Indicators and optimise the reporting process. CACPR is committed to ensuring that these indicators provide all stakeholders with the best available evidence and that they are a true reflection of the quality of our practices. We are at the start of a great journey and I congratulate those that got us here and wish those that take us to the next level all the best.

From the Office

Stacey Grocholski, CACPR Executive Director

Summer is here and it's a great time to re-charge and spend time with family and friends or perhaps pick up that book that you have been meaning to read all year and take some time for yourself. At CACPR, we'll be doing some of the same and enjoying the summer! When you do get back to work and start thinking about your Fall schedule, I hope that you

will consider registering for the CACPR Annual Symposium and Conference, October 25 - 26th in Vancouver. As always, we have some great speakers and topics lined up, mixed with networking opportunities and a few surprises along the way!

This year's recipient of the prestigious Terry Kavanagh

lecture, is Dr. Andrew Pipe. "Dr. Pipe is an outstanding and internationally recognized speaker, leader and role model. He has addressed audiences in over 30 nations and is frequently consulted on issues related to tobacco use and smoking cessation, drug use in sport, and physical activity and health. He has been a visible and vocal leader in cardiac rehabilitation and many other national and international organizations devoted to cardiovascular health for many years." This will be one lecture you don't want to miss!



Dr. Andrew Pipe,
C.M., B.A., M.S.,
LL.D.(Hon), D.SC. (Hon)

If you haven't renewed your CACPR annual membership, now is the time. By renewing your membership, you receive a reduced conference rate and presentations post-conference. We recognize you have options and we encourage you to register under CACPR - by doing so, your support ensures the sustainability of future conferences.

Kind Regards,
Stacey Grocholski
Executive Director

From the Secretary's Desk: New CACPR Board of Directors

Jennifer Harris, CACPR Secretary

As our association continues to evolve in terms of scope (to a broader cardiovascular disease group, as well as to prevention) so do our by-laws and practices evolve. In 2013, the Association approved a change to the by-laws that allows for electronic voting for our annual Board of Director election. According to the By-Laws of the Association, four (4) Directors are elected annually, to serve a three-year term on the Board of Directors. This year, we had total of (4) nominations for the 4 positions. In the CACPR by-laws, it states "if the number of nominees equals the number of available positions, those nominated are automatically elected by acclamation." Given this, there was no reason to implement our new on-line voting mechanism. Stay tuned for the 2015 election.

The current Board welcomes back 2 existing members, Simon Bacon and Kerri Anne Mullen, as well as 2 new members, Sue Boreskie, Dylan Chipperfield.

Simon Bacon, our current president, is beginning his 4th year on the Board and comes to us from Montreal, Quebec where he works as a researcher at Concordia University. Involved in many of the changes our board has been undergoing in the past year, Simon has been heavily involved in the development of a new business plan for the organization, meticulously researching new products and services that the association can deliver, thereby looking to improve our current offering. He believes that expanded offerings will enhance the desirability of the organization for new members, provide added benefit to our current members, and create additional income streams to increase the long-term sustainability of the organization. With a renewed 3 year term, he will be able to continue this work

with the goal of seeing a notable shift in the position of the association, in his words "making great greater!"

Kerri-Anne Mullen, also currently on the Board of Directors, is from Ottawa, Ontario. Having just completed her Ph.D in Population Health at the University of Ottawa, Kerri-Anne's expertise greatly enhances the Board's current business planning processes. In particular she brings experience in change management strategy, systematic reviews, statistical analysis, business case development, and group facilitation. Kerri currently manages the Ottawa Model for Smoking Cessation Network, assisting healthcare organizations across Canada to implement and evaluate clinical approaches to the treatment of tobacco addiction. She specializes in health services research, program design, and knowledge translation and her most recent research has examined the health and healthcare impacts of clinical tobacco cessation interventions. She chaired the very successful Vascular 2013 CACR conference and now chairs the conference planning committee as our conference too must evolve with the rest of the association.

Sue Boreskie, new to the CACPR Board, comes to us from Winnipeg, Manitoba where she is a Fitness, Recreation, and Wellness specialist with over 30 years of experience involving a wide range of projects, facilities, and organizations. She brings to this board experience from participation on many other boards including numerous community and sport organizations, Commonwealth Games Canada, Exercise is Medicine Canada Advisory Council, the Organizing Committee for the 2nd Cardiovascular Forum for Promoting Centres of Excellence and Young Investigators, Manitoba Heart Health Think Tank, and the Advisory Board

of the Health, Leisure, & Human Performance Research Institute at the University of Manitoba. She currently serves as CEO at the Reh-Fit Centre, where she ensures the Centre has a wide variety of chronic disease management programs, health screening clinics, education sessions, and health and fitness assessments in addition to the traditional fitness programs. She also plays an active role in the marketing and communication strategies of this center. We look forward to the wealth of experience she will bring to the Board.

Dylan Chipperfield, an exercise therapist, ACSM exercise specialist and certified respiratory educator Saskatoon, Saskatchewan, is also new to the board. Currently, Dylan is the Manager of the exercise based programming in the department of Chronic Disease Management for the Saskatoon Health Region. His career has been focused on providing exercise services in several different chronic disease management programs, including pulmonary, stroke and Parkinson's exercise programs, as well as both primary and secondary cardiovascular disease prevention programs. In addition to this, Dylan works with a multi-disciplinary heart failure clinic and cardiac rehabilitation programs. His work with the University of Saskatchewan has focused, over the last three years, on researching team-based skills and strategies to improve collaborative competencies of health care providers. Already active within VACPR on the conference planning and registry committees, we are looking forward to his expanded role as a Director on our Board.

In summary, I would like to both congratulate these successful candidates, as well as highlight their diversity – not only in the skill sets they bring to the Board, but also their geographic diversity, each representing a different province, helping truly round out our National Board of Directors for the CACPR.

I hope you will join us for the 2014 Annual General Meeting in Vancouver, BC, in conjunction with the CACPR Annual Symposium & Conference, October 25th at 12:00pm at the Vancouver Convention Centre.

What's New at CACPR

- CACPR is hiring a Project Administrator - view posting and job description by visiting www.cacpr.ca - closes July 18th
- CV Edge: Telecommunications and Technology, Fall 2014 edition spoiler; In a world increasingly dominated by electronic technology, interventions for cardiac rehabilitation and prevention can be delivered using innovative technology tools to promote a better uptake, adherence, communication and coordination between multidisciplinary professionals. Recent developments in physiological monitoring, information processing, and communication technologies have shown that these new technologies (internet, phone and other communication tools) can improve healthcare providers' ability to give multimodal feedback to the patients regularly and enable the use of other multimedia formats. This offers interesting prospects for the delivery and expansion of cardiac rehabilitation programs beyond the setting of supervised, structured, and group-based rehabilitation, and will help increase enrolment, reduce risk factors and improve benefit-cost ratio. This edition of CV Edge will explore different aspects of these new technologies and their impacts in cardiac rehabilitation and prevention.

Have you Participated yet?



International Council of
Cardiovascular Prevention
and Rehabilitation (ICCP)

Calling All CACPR Members!

Did you complete our annual member survey yet? This year we have the opportunity to learn how our Canadian programs compare to those in other countries!

Through CACPR's role in the International Council of Cardiovascular Prevention and Rehabilitation (ICCP; www.globalcardiacrehab.com), we are collaborating in their efforts to understand the provision of cardiac rehabilitation globally. This year, our member survey items are consistent with questionnaires previously administered in other regions of the world, such as in Europe and South America. In addition, this survey will not only be administered in Canada (English language only), but in countries where Arabic is an official language as well.

As a CACPR member, we request your voluntary completion of our important survey. If you are willing to participate, please click on the link below. This will take you to a consent form in SurveyMonkey. This outlines that all information supplied will be held in confidence, and your name and your organization's name will not appear in any report or publication of the research. <https://www.surveymonkey.com/s/VM9B6LW>. If you are agreeable and click to consent, the survey will appear. The survey takes approximately 40 minutes to complete. You can go back and finish the survey at another time if required, as long as you are on the same computer.

As a small thank you for your time, the results of the study will be shared when they are available. Should you have any questions or comments, please do not hesitate to contact the principal investigator of the study Sherry Grace, PhD at sgrace@yorku.ca.



OCTOBER 25 & 26

VANCOUVER, BC

CACPR ANNUAL CONFERENCE & SYMPOSIUM

In conjunction with Canadian Cardiovascular Congress (CCC), the CACPR annual conference provides an opportunity to network with other cardiac rehab professionals, learn critical information that will enhanced program performance and delivery and meet leading experts sharing the latest research and best practices. Be sure to register under CACPR – June 2nd registration opens.

Exhibitors

The CACPR Showcase is divided into 4 categories of exhibitors: Cardiac Rehab Programs, Conference Sponsors, For-Profit Organization/Business and Non-profit organizations. A chance to showcase your program or perhaps a project you are working on. Don't delay, apply today as spaces are limited - visit: http://cacr.ca/professional_development/Symposium.cfm

Leadership Awards

Recognize a fellow member for a leadership award in the area of Clinical Practice, Research, Education/Knowledge Transfer and Advocacy.

Nominate someone today:

<http://cacr.ca/awards/LeadershipAwardApplication.cfm>



John Stanton

Plenary Speaker

Cardiovascular Prevention...
Together we can do it!

Canada is treated with innovative success in Cardiovascular care manifested in diagnosis, treatment and recovery and now it's time for a collective and pro-active approach to prevention. We know the problems and many of the solutions. John Stanton has influenced 100's of thousands of North Americans to overcome the fear of embarrassment and lace up to a more athletic and healthy lifestyle. He will motivate you to take charge with some innovative ideas on improving your personal, professional and community approach to health care. Don't miss this session *Sunday, October 26 at 3PM.*



Social Evening

Saturday, October 25

Steamworks Brew Pub - 375 Water St.
Limited seats available

Publication Editor and Associate Editors

Warner Mampuya, Editor
Kelly Angevaare, Associate Editor
John Buckley, Associate Editor
Andrew Jeklin, Associate Editor
Holly Wykes, Associate Editor
Stacey Grocholski, CACPR Executive Director
Leanne Lemieux, Formatting Editor



1390 Taylor Avenue
Winnipeg, Manitoba R3M 3V8 Canada
Telephone: (204) 928-7870
Web: www.cacr.ca
Email: admin@cacpr.ca



Disclaimer: The materials contained in this publication are the views/findings of the author(s) and do not represent the views/findings of CACPR. The information is of a general nature and should not be used for any purpose other than to provide readers with current research in the area.