

Published in final edited form as:

*J Cardiopulm Rehabil Prev.* 2013 ; 33(2): 128–131. doi:10.1097/HCR.0b013e318284ec82.

## International Charter on Cardiovascular Prevention and Rehabilitation: A Call for Action

Sherry L Grace, PhD<sup>1,\*</sup>, Darren R Warburton, PhD<sup>2</sup>, James A Stone, MD, PhD<sup>3</sup>, Bonnie K Sanderson, RN, PhD<sup>4</sup>, Neil Oldridge, PhD<sup>5</sup>, Jennifer Jones, MSc., MCSP<sup>6</sup>, Nathan Wong, PhD<sup>7</sup>, and John P Buckley, BPE, MSc, PhD<sup>8</sup>

<sup>1</sup>York University and University Health Network, Toronto, Canada

<sup>2</sup>Physical Activity Promotion and Chronic Disease Prevention Unit, University of British Columbia, Canada

<sup>3</sup>Libin Cardiovascular Institute of Alberta & University of Calgary, Canada

<sup>4</sup>School of Nursing, Auburn University, United States

<sup>5</sup>University of Wisconsin School of Medicine & Public Health and Aurora Cardiovascular Services, Aurora Medical Center, Milwaukee, Wisconsin, USA

<sup>6</sup>Imperial College London, United Kingdom

<sup>7</sup>University of California, Irvine, United States

<sup>8</sup>Department of Clinical Sciences, University of Chester, United Kingdom

### Abstract

**Purpose**—Cardiovascular disease remains the leading cause of death in both women and men globally, and is a growing epidemic in low-to-middle income countries (LMIC). Without systematic access to cardiac rehabilitation (CR), these individuals may suffer multiple recurrent acute care events and unnecessarily premature death. The two aims of this Charter are: (1) to bring together national associations from around the world, to harmonize efforts in promoting cardiovascular prevention and rehabilitation; and (2) to document consensus among national associations globally, regarding the internationally-common core elements and benefits of cardiovascular disease prevention and rehabilitation.

**Methods and Results**—The Global Charter on CR ultimately calls to action those responsible for administering patient care to: (a) establish CR as an obligatory, not optional service, and (b) to support countries to establish and augment programs of CR to ensure broad access to these proven services. Additionally, the charter calls for CR organizations and associations in high-income countries to collaborate with those in LMICs, to support capacity-building and provide tangible toolkits for program development and maintenance.

---

\*Corresponding Author: Dr. Sherry L. Grace, York University, Faculty of Health, 368 Bethune, 4700 Keele St, Toronto, ON M3J 1P3; sgrace@yorku.ca; Phone: +1 416-736-2100 x.22364, Fax: +1-416-736-5774.

**Disclosures**  
None.

**Conclusion**—The aim of this Charter is to maintain and grow this global consortium through partnerships with international organizations, and to consider and communicate on-going consensus of evidence-based standards for CR world-wide.

### Keywords

cardiac rehabilitation; prevention; health care access; outcome and process assessment

---

## INTRODUCTION

### Rationale

Cardiovascular disease remains the leading killer of adult women and men globally. However, as substantial gains in reducing acute cardiovascular mortality have been realized, the prevalence of persons living with cardiovascular disease has increased significantly. Without systematic access to formal and informal programs of chronic cardiovascular disease prevention such as cardiac rehabilitation, these individuals may suffer multiple recurrent acute care events and/or unnecessarily premature death.

### Aims and Focus

The two aims of this Charter are:

- i. to bring together national associations from around the world, to harmonize efforts in promoting cardiovascular prevention and rehabilitation; and
- ii. to document consensus among national associations globally, regarding the internationally-common core elements and benefits of cardiovascular disease prevention and rehabilitation.

The focus of this Charter is on secondary prevention, which has well-established models supported by a robust evidence base. This Charter is visualised to fit at the latter end of a continuum from primary prevention, which is also recognized as valuable.

### Definition

The World Health Organization<sup>1</sup> has defined cardiac rehabilitation as, “*The sum of activities required to influence favourably the underlying cause of the disease, as well as to provide the best possible physical, mental and social conditions, so that the patients may, by their own efforts, preserve or resume when lost as normal a place as possible in the community.*” This process includes the facilitation and delivery of prevention strategies.

### Benefits

Cardiovascular prevention and rehabilitation programs are shown to significantly reduce mortality and repeat hospitalizations.<sup>2,3,4</sup> These benefits are demonstrated in patients with acute coronary syndromes, stable chronic angina, stable chronic heart failure, and post-percutaneous coronary intervention, coronary artery bypass surgery, cardiac valve surgery, cardiac transplantation and cardiac resynchronization therapy.<sup>12</sup> There is a growing evidence base on the same benefits of cardiovascular prevention and rehabilitation principles being applied to individuals at high risk, yet not diagnosed with cardiovascular disease.<sup>5</sup>

In addition to these improved clinical outcomes, cardiovascular prevention and rehabilitation is also cost effective.<sup>6,7</sup> Furthermore, comprehensive programs of cardiovascular prevention and rehabilitation reach across the continuum of patient care between acute disease and chronic disease care, thus easing the transition of patients from life-threatening illness to lifelong productivity and well-being.

### Access

The only proven model that significantly and substantially reduces the mortality and morbidity (both physical and psychological) associated with cardiovascular disease is cardiac rehabilitation. Despite the proven clinical and economic benefits of cardiovascular prevention and rehabilitation, it remains a chronically-underutilized resource.<sup>8,9</sup> The strong evidence base for cardiovascular prevention and rehabilitation is such that any person diagnosed with cardiovascular disease should be offered a comprehensive program, which is in equal importance with respect to the medical or surgical interventions they receive following such a diagnosis. For these reasons, proven mechanisms to facilitate universal access for indicated and eligible patients across sexes, age, ethnocultural and socioeconomic diversity should be instituted, such as systematic referral strategies.<sup>10</sup> Referral to cardiovascular prevention and rehabilitation as a performance measure provides a major step to help facilitate accountability for implementing this quality indicator within processes of care.<sup>11</sup>

### Structure

Cardiac rehabilitation programs facilitate chronic cardiovascular disease care by specifically targeting patients' cardio-metabolic health and psychosocial well-being. The core components of contemporary cardiovascular prevention and rehabilitation programs are intended to mitigate the atherosclerotic disease processes that drive cardiovascular disease progression and the related effects this has on psychosocial health. These components include individualized programs of cardio-protective pharmacological therapies in conjunction with health behaviour and education interventions of physical activity and exercise, nutrition, psychological health, and smoking cessation, that are sensitive to and reflective of the socio-economic and cultural mosaic in which they are offered.<sup>12,13,14</sup> Secondary prevention, including blood pressure and cholesterol management and the prescription of cardioprotective medication also forms an integral part of effective cardiovascular prevention and rehabilitation.<sup>15</sup> Likewise, defining the core competencies of professionals providing these core components help align health care providers, educators, students, and administrators with defined expectations for knowledge and skills in providing cardiovascular prevention and rehabilitation services.<sup>16</sup>

Cardiovascular prevention and rehabilitation programmes may be offered and are equally effective in institution-based, community-based and home-based settings.<sup>2,5,17,18,19</sup> The Secondary Prevention of coronary heart disease for All in Need (SPAN) framework forwards a flexible model that can be adapted to diverse settings while ensuring a minimum care standard.<sup>20</sup> These parameters, if appropriate, can be applied to primary prevention.

## Actions

Both government and private organizations responsible for the provision of patient care services can no longer deny patients with cardiovascular disease access to cardiovascular prevention and rehabilitation.

The aim of this Charter is to be a call to action to cardiovascular prevention and rehabilitation organizations and established associations around the world to partner and collaborate with those responsible for administering patient care:

1. to establish cardiovascular prevention and rehabilitation as an essential, not optional service
2. to support countries to establish and augment programs of cardiovascular prevention and rehabilitation, adapted to local needs and conditions, to ensure broader access to these proven services.

The aim of this Charter is to call to action these associations to maintain and grow this consortium through partnership with international organizations, to consider and communicate on-going consensus on evidence-based standards for cardiac rehabilitation.

## Acknowledgments

T Briffa (AUS), M Benetti (Brazil), S Bredin (CA), L Carlyle (CA), J Chang (US), C Chessex (CA), A Clark (CA), A Contractor (India), C Cyr (CA), P Doherty (UK), G Melo-Ghisi (Brazil), J Harris (CA), S Hinton (UK), R Humphrey (US), N Jaha (SA), A Jones (China), AC Kentner (CA), R Munoz-Sandoval (Mexico), N Oldridge (US), P Oh (CA), B O'Neill (CA), J Redfern (AUS), B Reid (CA), N Sarrafzadegan (Iran), S Shanmugasagaram (CA), N Suskin (CA), C Terzic (US), R Thomas (US), L Wilson (CA).

*Endorsed by the Following Organizations:* American Association of Cardiovascular and Pulmonary Rehabilitation, American Society for Preventive Cardiology, Australian Cardiovascular Health and Rehabilitation Association, Brazilian Group of Cardiopulmonary and Metabolic Rehabilitation of the Brazilian Society of Cardiology, British Association for Cardiovascular Prevention and Rehabilitation, the Canadian Association of Cardiac Rehabilitation, the Canadian Cardiovascular Society, the Cardiac Rehabilitation Association of New Zealand, the Centre for East-meets-West in Rehabilitation Sciences, Department of Rehabilitation Sciences, the Hong Kong Polytechnic University, the Cuban Society of Cardiology, the Iranian Heart Foundation, the Irish Association of Cardiac Rehabilitation, the National Society for Prevention of Heart Disease and Rehabilitation, India, and the Saudi Group for Cardiovascular Prevention and Rehabilitation of the Saudi Heart Association.

### Funding Source

Canadian Institutes of Health Research.

## References

1. World Health Organization. Needs and Action Priorities in Cardiac Rehabilitation and Secondary Prevention in Patients with Coronary Heart Disease. WHO Regional Office for Europe; Geneva: 1993.
2. Clark AM, Haykowsky M, Kryworuchko J, MacClure T, Scott J, DesMeules M, Luo W, Liang Y, McAlister FA. A meta-analysis of randomized control trials of home-based secondary prevention programs for coronary artery disease. *Eur J Cardiovasc Prev Rehabil.* 2010; 17(3):261–270. [PubMed: 20560165]
3. Davies EJ, Moxham T, Rees K, Singh S, Coats AJ, Ebrahim S, Lough F, Taylor RS. Exercise training for systolic heart failure: Cochrane systematic review and meta-analysis. *Eur J Heart Fail.* 2010; 12(7):706–715. [PubMed: 20494922]

4. Heran BS, Chen JM, Ebrahim S, Moxham T, Oldridge N, Rees K, Thompson DR, Taylor RS. Exercise-based cardiac rehabilitation for coronary heart disease. *Cochrane Database Syst Rev* (Online). 2011; (7):CD001800.doi: 10.1002/14651858.CD001800.pub2
5. Wood DA, Kotseva K, Connolly S, Jennings C, Mead A, Jones J, Holden A, De Bacquer D, Collier T, De Backer G, Faergeman O. EUROACTION Study Group. Nurse-coordinated multidisciplinary, family-based cardiovascular disease prevention programme (EUROACTION) for patients with coronary heart disease and asymptomatic individuals at high risk of cardiovascular disease: a paired, cluster-randomised controlled trial. *Lancet*. 2008; 371:1999–2012. [PubMed: 18555911]
6. Brown, A., Taylor, R., Noorani, H., Stone, J., Skidmore, B. Exercise-based cardiac rehabilitation programs for coronary artery disease: A systematic clinical and economic review (Vol Technology). Canadian Coordinating Office of Health Technology Assessment (CCOHTA); Ottawa: 2003.
7. Papadakis S, Oldridge NB, Coyle D, Mayhew A, Reid RD, Beaton L, Dafeo WA, Angus D. Economic evaluation of cardiac rehabilitation: a systematic review. *Eur J Cardiovasc Prev Rehabil*. 2005; 12(6):513–520. [PubMed: 16319539]
8. Candido E, Richards JA, Oh P, Suskin N, Arthur HM, Fair T, Alter DA. The relationship between need and capacity for multidisciplinary cardiovascular risk-reduction programs in Ontario. *Can J Cardio*. 2011; 27(2):200–207.
9. Suaya JA, Shepard DS, Normand SL, Ades PA, Prottas J, Stason WB. Use of cardiac rehabilitation by Medicare beneficiaries after myocardial infarction or coronary bypass surgery. *Circulation*. 2007; 116(15):1653–1662. [PubMed: 17893274]
10. Grace SL, Chessex C, Arthur H, Chan S, Cyr C, Dafeo W, Juneau M, Oh P, Suskin N. 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. *Can J Cardio*. 2011; 27(2):192–199.
11. Thomas RJ, King M, Lui K, Oldridge N, Pina IL, Spertus J. AACVPR/ACCF/AHA 2010 Update: Performance measures on cardiac rehabilitation for referral to cardiac rehabilitation/secondary prevention services. *J Cardiopulm Rehabil Prev*. 2010; 30:279–288. [PubMed: 20808157]
12. Stone, JA., Arthur, HM., Suskin, N., Austford, L., Carlson, J., Cupper, L., Cyr, C., Haennel, RG., Lewanczuk, R., Oh, P., Prior, P., Grace, SL., Arena, R., Audelin, MC., Brassard, CP., Campbell, N., Clark, AM., Dafeo, W., Foisy, C., Francis, J., Genest, J., Harris, S., Haykowsky, M., Hopkins-Rossee, D., Katzmarzyk, PT., Mancini, GB., Manns, PJ., McCartney, N., McNeely, M., Millar, P., Monti, V., Naidoo, K., Pipie, A., Reitav, JM., Shin, A., Stickland, M., Strong, M., Thomas, M., Tomczak, C., Trembley, G., Warburton, DER. Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention: Translating Knowledge Into Action. 3. Winnipeg, MB: Canadian Association of Cardiac Rehabilitation; 2009. Available at: <http://www.cacrc.ca/resources/guidelines.cfm>
13. British Association for Cardiovascular Prevention and Rehabilitation (BACPR). The BACPR Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation. 2. London, UK: 2012. Available at: [http://www.bacpr.com/resources/46C\\_BACPR\\_Standards\\_and\\_Core\\_Components\\_2012pdf](http://www.bacpr.com/resources/46C_BACPR_Standards_and_Core_Components_2012pdf)
14. Balady GJ, Williams MA, Ades PA, Bittner V, Comoss P, Foody JA, Franklin B, Sanderson B, Southard D. American Heart Association Exercise, Cardiac Rehabilitation, and Prevention Committee; Council on Clinical Cardiology; Councils on Cardiovascular Nursing, Epidemiology and Prevention, and Nutrition Physical Activity, and Metabolism; American Association of Cardiovascular and Pulmonary Rehabilitation. Core components of cardiac rehabilitation/secondary prevention programs: 2007 update: a scientific statement from the American Heart Association Exercise, Cardiac Rehabilitation, and Prevention Committee, the Council on Clinical Cardiology; the Councils on Cardiovascular Nursing, Epidemiology and Prevention, and Nutrition, Physical Activity, and Metabolism; and the American Association of Cardiovascular and Pulmonary Rehabilitation. *J Cardiopulm Rehabil Prev*. 2007; 27:121–129. [PubMed: 17558191]
15. Perk J, De Backer G, Gohlke H, Graham I, Reiner Z, Verschuren M, Albus C, Benlian P, Boysen G, Cifkova R, Deaton C, Ebrahim S, Fisher M, Germano G, Hobbs R, Hoes A, Karadeniz S, Mezzani A, Prescott E, Ryden L, Scherer M, Syv anne M, Scholte op Reimer WJ, Vrints C, Wood D, Zamorano JL, Zannad F. 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 (constituted by representatives of nine societies and by invited experts). Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR). *Eur Heart J*. 2012; 33:1635–1701. [PubMed: 22555213]

16. Hamm LF, Sanderson BK, Ades PA, Berra K, Kaminsky LA, Roitman JL, Williams MA. Core competencies for cardiac rehabilitation/secondary prevention professionals: 2010 update, Position statement of the American Association of Cardiovascular and Pulmonary Rehabilitation. *J Cardiopulm Rehabil Prev*. 2011; 31:2–10. [PubMed: 21217254]
17. Taylor R, Dalal H, Jolly K, Moxham T, Zawada A. Home-based versus centre-based cardiac rehabilitation. *Cochrane Database Syst Rev*. 2010; 340(1):CD007130. doi: 101002/14651858CD007130pub2.
18. Dalal HM, Zawada A, Jolly K, Moxham T, Taylor RS. Home-based versus centre based cardiac rehabilitation: Cochrane systematic review and meta-analysis. *BMJ*. 2010; 340:b5631. doi:101136/bmj.b5631. [PubMed: 20085991]
19. Jolly K, Taylor RS, Lip GYH, Stevens A. Home-based cardiac rehabilitation compared with centre-based rehabilitation and usual care: a systematic review and meta-analysis. *Int J Cardiol*. 2006; 111(3):343–351. [PubMed: 16316695]
20. Redfern J, Maiorana A, Neubeck L, Clark AM, Briffa T. Achieving coordinated secondary prevention of coronary heart disease for all in need (SPAN). *Int J Cardiol*. 2011; 146(1):1–3. [PubMed: 20826024]