

Editorial

Cardiac Rehabilitation Adherence: Another Gender-Treatment Paradox

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See article by Oosenbrug et al., pages 1316–1324 of this issue.

Cardiovascular disease remains the leading cause of death in North America with a higher rate of morbidity and mortality in women than in men.¹ After an acute coronary syndrome (ACS), women are more likely than men to die, particularly women younger than the age of 55 years who present with an ST-elevation myocardial infarction.^{2,3} Further, women with an ACS suffer from delays in diagnosis and treatment,⁴ undergo less invasive management,^{5,6} receive less medical therapy,⁷ and have higher complication rates such as bleeding, than do men.^{8,9} Finally, women have lower socioeconomic status, quality of life, and exercise capacity than their male counterparts.¹⁰

Cardiac rehabilitation (CR) is an outpatient chronic disease management program that encompasses patient education, dietary advice, structured and supervised exercise training, and risk factor assessment and modification after a cardiac event. There are >200 CR rehabilitation programs in Canada; 3 of which also offer women-only programs.¹¹ Research suggests there are many benefits to CR including reduced morbidity and mortality, improved functional status, improved quality of life, and cost savings for society and the economy.^{12–15} The benefits appear similar in men and women, with some studies suggesting greater mortality reduction in women compared with men, particularly in those with good program adherence.¹⁶ Unfortunately, despite the well known benefits of CR, enrollment rates are low, particularly in women.^{17,18}

In this issue, Oosenbrug et al.¹⁹ performed a meta-analysis on CR adherence in men and women and quantitatively assessed sex differences in adherence. The mean age was 61 years and women accounted for only 27.3% of participants. The mean duration of CR programs was 15 weeks with a mean frequency of sessions of 2.5 per week. Overall, the mean

adherence for men and women was 68% and 64%, respectively, and in the pooled analysis the mean difference was significant and favoured men. This was particularly apparent in studies conducted in Canada, in studies published after 2010, in higher-quality studies, in programs in which < 3 sessions per week were offered, and in programs of > 12 weeks' duration.

As the authors point out, it is cause for concern that sex differences exist in this era. And herein lies the paradox: increased event rates in women after a cardiac event, yet lower rates of CR enrollment and adherence, despite the proven clinical benefits of CR. Further, Beckie et al.²⁰ report that women who prematurely terminate CR participation tend to be younger, more obese, have worse quality of life, and greater frequency of depression, which are arguably the patients who would benefit the most from CR. So why is this the case? And what can be done? Grace et al. identified the following barriers to enrollment and adherence to CR in women: transportation, family responsibilities, lack of CR awareness, experiencing exercise as tiring or painful, and comorbidities that limit physical activity.²¹ Certainly cost is a major issue as well. Most CR programs charge upwards of \$100 per month; a cost that for women receiving welfare can be a significant barrier.

So what can be done? To overcome the transportation barrier, alternative forms of CR have been examined, namely home CR or a hybrid model. Interestingly, studies have shown that most patients actually prefer a traditional CR over home-based CR.²² Regarding the lack of CR awareness, many Cardiac Care Units and cardiac surgery wards have implemented automatic referrals to CR as part of preprinted orders. This does appear to increase awareness and might increase enrollment although not many studies have examined this.²¹ To overcome the issue of frequent comorbidities such as arthritis and fibromyalgia interfering with patients' ability to exercise, many programs offer stationary and/or reclining bikes with less associated impact. Further, swimming is also an alternative although the ability of CR programs to offer this is limited by the nature of the sport. Finally, to address the cost of CR, many clinics are now incorporating social workers as

Received for publication December 23, 2015. Accepted December 23, 2015.

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See page 1284 for disclosure information.

part of the team to review the financial status of the CR applicant. For low-income patients, some clinics will fundraise to cover the cost of patients who are unable to afford the typical CR fees.

So what does the future hold? Women-only programs are enticing and allow gender-specific exercise regimens; social interaction that might be more comfortable and reassuring; and gender-specific education. Currently only 3 CR programs across Canada offer this.¹¹ Beckie and Beckstead randomized women to a women-only CR vs a traditional CR program and found that although both programs improved physical functioning, the women-only program improved general health, social functioning, vitality, and mental health to a greater degree than the traditional program.²³ Andraos et al. also examined a women-only program compared with traditional CR and noted that women felt significantly more comfortable in their workout attire and perceived the environment as less competitive in the women-only CR program.²² Whether these benefits of a women-only program will translate into improved enrollment and adherence remains to be studied. Disease-specific CR clinics are also starting to develop. One example is a CR program for patients who have suffered spontaneous coronary artery dissection as a cause for their ACS. Because > 90% of spontaneous coronary artery dissection occurs in women, these clinics tend to be women-only and have the benefit of a built-in support group in addition to a safe and comfortable environment to initiate exercise.^{24,25} There are several limitations, however, including availability and cost of setting up such a program. Finally, the use of technology such as telehealth and internet-based systems of CR is currently being tested in British Columbia and a pilot study of 12 weeks showed favourable results compared with usual care.²⁶

In conclusion, the gender gap in CR must be closed to reverse the paradox of higher adverse outcomes in women with decreased use of proven beneficial services such as CR. Patient engagement will be key to closing this gap. Without strong advisement and support from the referring physician, low enrollment rates and poor adherence will prevail. CR needs to be viewed as a component of evidence-based care—atorvastatin 40 mg daily for 3 months, and CR 3 times a week for 24 weeks. The recent development of Canadian Cardiovascular Society quality indicators for CR provides the opportunity to measure and report on enrollment in CR across Canada, for men and women. The old adage holds here too—we cannot improve what we do not measure.²⁷

Disclosures

The authors have no conflicts of interest to disclose.

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