A review of issues concerning implementation of cardiac rehabilitation programs

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ABSTRACT

Cardiac rehabilitation (CR) is a tertiary preventative intervention for patients who have experienced adverse cardiac events such as a myocardial infarction (MI). Interdisciplinary CR teams focus on reducing multiple risk factors by addressing diet, exercise, and behavior change. CR programs have proven to be comparable in cost to other interventions for cardiac diseases, however the appropriate delivery of these programs faces multiple issues. One major barrier to effective delivery of CR programs is the lack of referral by the health care teams who assess cardiac patients. Other barriers are funding, team structure, and patient access to these programs. This article examines the issues facing CR delivery and possible ways to address them. Given the evidence for its efficacy and cost-effectiveness, physicians should work to ensure proper CR referral and improved program delivery.

INTRODUCTION

Cardiac rehabilitation (CR) is a preventative health strategy created for patients who have experienced an adverse cardiac event. Its primary objectives are to reduce the likelihood of additional adverse coronary events, decrease mortality, and increase quality of life.1 In the delivery of CR programs, interdisciplinary teams focus on many different risk factors by addressing diet, exercise, and behavior.2,3 While there is some evidence disputing the clinical efficacy of CR, the majority of the evidence supports CR as a clinically significant intervention.4-6 CR has shown to be clinically effective in reducing mortality from coronary disease as well as all-cause mortality.7

While the effectiveness of CR is notable, most analyses on CR indicate that it is either comparable to other health interventions, and some argue that it is possibly cost-saving by reducing hospital admissions. Compared to no intervention, a meta-analysis found CR to increase quality-adjusted life years (QALY) among all age groups.8 This meta-analysis also found that the incremental cost per QALY for CR was comparable to coronary artery bypass grafting, and even lower in certain subgroups.9 CR should therefore be seen as an important health care intervention. While CR is both a cost and clinically effective method for preventing future cardiac events, there are still many barriers to effective implementation of CR.10 This article will seek to explain some of the issues impeding the appropriate delivery of these programs.

ISSUES FACED IN CARDIAC REHABILITATION DELIVERY

The challenges of CR delivery can be examined on two fronts: issues faced by healthcare teams and issues faced by patients. While there is much information on the efficacy of CR, few articles have reviewed the barriers to appropriate CR delivery. A thorough review of barriers to CR delivery is therefore important to provide insight into areas of further study or improvement.

One of the highest predictors of CR effectiveness, delivery, and participation is physician referral.10 While seemingly obvious, as patients who are not referred could not access these programs, eligible candidates are still not routinely referred to CR programs.11 One study found the referral rates for eligible populations to be as low as 24%, however most studies find referral rates to be around 50%.11,12 Furthermore, patients who possibly represent the most cost-effective populations for this intervention, such as women and elderly men, are among the least likely to be referred to these programs.13 Another area of concern is that while CR is comparable to coronary artery bypass grafting in terms of cost effectiveness, it does not receive the same dedication of funding. A paper in 2009 reported that in Ontario, CR received around 1% of the funding that was allocated to coronary interventions and diagnostic services.14

Patients are not only being referred to CR with alarming infrequency; a qualitative meta-analysis on patient experiences of CR found that even when referrals were made, they were made at inappropriate times, and the information given was contradictory or incomplete.15 A possible explanation of the inappropriate timing and information given with referral is confusion about the structure and function of CR programs.2 The diversity in how CR programs are organized is not only confusing to some physicians but may also have impacts on the delivery of CR. For example, of the 220 Canadian programs for CR that were in service in 2014, only 80% were interdisciplinary and only 66.7% of these programs had a relationship with either an in-house or a referring psychologist, despite evidence of the importance of psychological intervention in CR.16-18 The lack of a standard interdisciplinary team and variability in program structure could be negatively influencing both referral rates and program efficacy.

There are also barriers experienced by patients upon receiving appropriate referral that prevent either attendance or completion of programs. Patient barriers include physical barriers (distance to CR program or lack of transport), cost of programs, psychological barriers (patients’ perceived importance of CR), and lack of recommendation by healthcare providers.19 There are also several patient characteristics that influence attendance and completion of CR programs, such as depression, age, gender, and possibly race.17,20

SUGGESTED AREAS OF IMPROVEMENT

One key area of improvement for CR programs is in the refer-
ral to CR. Simply referring more people to CR programs has been shown to increase the impact of these programs.\textsuperscript{10} One promising method for increasing referrals to CR programs involves the implementation of automated systems that create a computer-based prompt for referral.\textsuperscript{2,22} There are many other strategies available for increasing referral to CR programs, and the systems that most effectively increase patient referral rates should be determined. Increasing referral to CR programs increases the effectiveness of this intervention, and improvements are paramount for the proper implementation of CR.\textsuperscript{23} Increasing understanding amongst health care providers about the health benefits of CR programs as well as improving communication within health care teams, could help to increase both patient referral and adherence.\textsuperscript{44}

Patient barriers to the completion of CR programs should also be taken into account. It is possible that understanding and screening for common patient barriers to CR completion could help to aid care teams in providing appropriate care. One study showed that patients who reported physical barriers, such as distance from a center delivering CR, benefited from modified home-based CR programs that had similar levels of completion to hospital-based programs.\textsuperscript{24} There is also some evidence that a portion of the at-home treatment group maintained higher exercise levels one year after completion of CR programs. Addressing these patient barriers may provide increased adherence to CR programs and increase the overall effectiveness of this intervention.\textsuperscript{26-28} Finally, there is limited research available on the best method of administering CR to patients. Given the large number of programs offered and the relatively different composition of teams employed in these programs, it is difficult to determine if there is a single model of delivery that addresses all of the issues of patient adherence, optimal team structure, and delivery of CR.\textsuperscript{29,30}

**CONCLUSION**

The study, clarification, and optimization of CR programs are vital for increasing the positive health outcomes after adverse cardiac events. While CR programs are faced with issues in both their validation and their implementation, it is important to reiterate that they confer significant health benefits to patients who have experienced an adverse cardiac event. The primary barrier to successful delivery of CR programs is the lack of referral of eligible patients. This should be addressed through physician education and improvement of referral strategies. New methods of delivery are promising, especially for people who have physical barriers to accessing hospital-based CR programs. Furthermore, creating a standardized model for CR would be beneficial as it would allow closer study into how different models of delivery alter patient outcomes.

**REFERENCES**


