Cardiac rehabilitation (CR) is a multidisciplinary, systematic approach for reducing morbidity and mortality across a spectrum of cardiovascular conditions.1,2 Yet, in spite of the class IA recommendations for CR, ≤80% of eligible patients are not referred; many of those referred do not attend; and many participants do not complete the program.3,4 A large body of literature over many decades has emphasized the complexity of patient, provider, and healthcare system factors influencing the uptake and adherence to CR. Documented barriers range from cost, access to care and health professional endorsement, and solutions apparent.5

Considering CR within the framework of disease management, with a particular focus on the coordination of healthcare interventions to defined patient populations, may improve access to CR. Marzolini et al, in this issue of Circulation: Cardiovascular Quality and Outcomes, have identified another piece of the puzzle in accessing CR by investigating wait times. To date, the relationship between longer wait times and the commencement of CR has not been well described, and this analysis may elucidate how system-based factors can moderate access to evidence-based care and as a consequence health outcomes.

Marzolini et al investigated total wait time (time from surgery to first CR exercise session) in 6497 Canadian participants after coronary artery bypass surgery.6 Factors associated with longer wait times for CR included female sex, older age, being employed, less social support, longer commute to CR, lower neighborhood socioeconomic status, higher systolic blood pressure, abdominal obesity and a complex medical history. In this study, longer wait times were not just associated with poorer adherence to CR, but also less improvement in cardiovascular fitness and cardiovascular risk reduction. This analysis casts the spotlight on not just the complexity of ensuring eligible patients receive CR, but also the importance of both process and outcome measures in optimizing healthcare delivery and monitoring performance.7 Although Marzolini et al did not investigate costs specifically, in Ontario, Canada, where this study was undertaken, CR services are reimbursed by a single-payer system, and there is no direct costs for patients, except for parking fees. In the United States, cost and reimbursement issues are often cited as the reason for low uptake of CR. But in countries, such as Australia, Canada, and the United Kingdom, where CR is readily accessible and reimbursed, participation and program completion remain a challenge.8,9 Therefore, if we want to promote CR in the United States, we need to take into consideration not just reimbursement but systems and process issues; considering referral and wait times is an important part of the equation.

Overcoming Barriers and Alternate Models

After decades of documenting barriers to CR, there is a clear signal we have to do things differently. Currently many experts are calling for strategies for repackaging and reframing CR.4 This approach will likely mean changing our models of service delivery and collaborating with providers across care settings and working differently. There is evidence to suggest that home-based models of CR are equally as effective as facility-based models, and the role of telehealth in supporting health care is increasing.9,10 Many of these models have the potential to address the well-documented barriers in accessing and participating in CR. Increasingly, there will be a need to develop accessible, affordable, and acceptable models in communities rather than focusing on service delivery models within acute care settings. It is clear that developing innovative models will require moving beyond considering CR as a unidimensional and definitive strategy to a complex intervention. Considering CR within an integrated disease management model; identifying environmental dimensions, target population, intervention content, intensity, dosing and complexity, delivery personnel; and the importance of both process and outcome assessment in driving service efficiency and optimizing patient outcomes will be important in implementing and refining models of care.11

Globally, healthcare systems are striving to achieve efficiencies, increase accessibility, and improve equity. Identifying those at highest risk is an important strategy to maximize the benefits of treatments, and this is likely to be the case in CR. Strategies, such as community health workers and patient navigators, are likely important not just in engaging vulnerable populations, but in delivering elements of secondary prevention.10 In the United States, the Patient Protection and Affordable Care Act has increased the focus on coordination of health care and the focus on not just individuals but populations.12 As a consequence, Accountable Care Organizations have been formed which are coalitions of
service groups and healthcare providers, who strive to provide coordinated high-quality care. This is a promising development for CR delivery. Engaging both patients and providers in valuing CR as integral to the care model, rather than as an optional extra, is important in increasing uptake, ensuring persistence, program completion, and adherence with recommendations over time.

**The Way Forward**

Applying the many valuable lessons of barriers to CR from both experimental studies and registry data demands a comprehensive review of existing practices, models of care, and using information to determine a pathway for the future. Strategies, such as automatic referral and discharge checklists for eligible patients, have been identified as a first step in accessing CR. But as shown by Marzolini et al, referral is an important first step, but not sufficient to maximize the benefits of CR. Marzolini et al emphasized that barriers are most apparent in women, the elderly, and those from lower socioeconomic status populations. Ensuring access to CR will require integrated patient, provider, and system solutions. Continuing to document these barriers is no longer viable in the science of CR; we need to develop and test strategies to promote access to this evidence-based approach for improving cardiovascular outcomes.

**Disclosures**

None.

**References**


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Another Piece of the Puzzle: Wait Times Call for Integrated Patient, Provider, and System Solutions for Cardiac Rehabilitation

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