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Referral, Enrollment, and Delivery of Cardiac Rehabilitation/Secondary Prevention Programs at Clinical Centers and Beyond

A Presidential Advisory From the American Heart Association

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Each year, an estimated 785 000 Americans will suffer a new myocardial infarction (MI; heart attack), and nearly 470 000 will have a recurrent attack.¹ Within 5 years of an initial MI, 15% of men and 22% of women 45 to 64 years of age and 22% of men and women >65 years of age will suffer a recurrent MI or fatal coronary heart disease (CHD).¹ Given this high recurrence rate, preventing secondary cardiac events is an essential part of the care for patients with cardiovascular disease (CVD).

Cardiac rehabilitation/secondary prevention programs (CR/SPPs) are medically supervised programs that help patients with CVD to recover more quickly after a cardiac event and to stay healthy. CR/SPPs are more than just diet and exercise programs; these programs offer a multifaceted and multidisciplinary approach to optimize the overall physical, mental, and social functioning of people with CVD. CR/SPPs include specific core components that aim to optimize cardiovascular risk reduction, foster healthy behaviors and compliance with these behaviors, reduce disability, and promote an active lifestyle for patients with CVD.² Comprehensive CR/SPPs consist of baseline patient assessment, nutritional counseling, aggressive risk factor management (ie, lipids, hypertension, weight, diabetes mellitus, and smoking), psychosocial and vocational counseling, and physical activity counseling and exercise training. Patients participating in CR/SPPs are also prescribed cardioprotective drugs that have evidence-based efficacy

for secondary prevention. The goal of cardiac rehabilitation and secondary prevention is to stabilize, slow, or even reverse the progression of CVD, which in turn reduces the risk of a future cardiac event. The interventions provided by CR/SPPs are especially important because of the limited time available during the shortened hospital stays and brief outpatient physician visits now common in contemporary medical practice.

There is ample evidence on the proven benefits of CR/SPPs on CHD risk factors and exercise capacity.³ Moreover, recent data demonstrate that participation in CR/SPP is associated with a reduction in mortality after percutaneous coronary interventions⁴ and with a dose-dependent reduction in both mortality and recurrent MI for those patients with stable angina or patients after MI or coronary artery bypass surgery.⁵ Given the significant benefits that CR/SPPs bring to CVD prevention, every recent major evidence-based guideline from the American Heart Association (AHA) and the American College of Cardiology Foundation (ACCF) about the management and prevention of CHD provides a Class I-level recommendation (ie, procedure/treatment should be performed/administered) for referral to a CR/SPP⁶ for those patients with recent MI or acute coronary syndrome, chronic stable angina, heart failure, or after coronary artery bypass surgery or percutaneous coronary intervention. CR/SPPs are also indicated for those patients after valve surgery or cardiac transplantation.⁶

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Despite the clear benefits of cardiac rehabilitation, the use of such programs remains dismally low. Of eligible patients, only 14% to 35% of heart attack survivors^{7,8} and ≈31% of patients after coronary bypass grafting surgery⁷ participate in a CR/SPP. Lack of accessibility to program sites and lack of insurance coverage contribute to the vast underuse of cardiac rehabilitation services.³ Another major factor is a low patient referral rate, particularly of women, older adults, and ethnic minorities, to CR/SPP services.³ Accordingly, patients in these latter groups are the least likely to participate in cardiac rehabilitation.⁷ This is especially noteworthy because women and minorities are significantly more likely to die within 5 years after a first MI compared with white male patients.¹

The remarkably wide treatment gap between scientific evidence of the benefits of cardiac rehabilitation and clinical implementation of rehabilitation programs is unacceptable. To rectify barriers attributed to the underuse of cardiac rehabilitation, the AHA has previously recommended alternative models to traditional clinic- and hospital-based settings such as home-based and community-based rehabilitation programs.³ The Patient Protection and Affordable Care Act (ACA; also known as health reform)⁹ supports several new healthcare delivery models such as accountable care organizations (ACOs), patient-centered medical homes (PCMHs), wellness initiatives, care coordination for those eligible for both Medicare and Medicaid (dual eligibles), and delivery system models tested through the Center for Medicare and Medicaid Innovation (CMMI) that have potential to enhance patient access to cardiac rehabilitation services significantly. Furthermore, the essential benefits package established under health reform includes as a general benefit category “rehabilitative and habilitative services and devices.” When implemented in 2014, the essential benefit package will greatly improve access to cardiac rehabilitation for low-income and underinsured populations.

Health reform offers a unique opportunity for the reengineering of CR/SPPs to move beyond the traditional clinical center model toward new models of service delivery that can help expand the provision of high-quality comprehensive cardiac rehabilitation to all patients with CVD. However, it is important first to understand the barriers to appropriate care, including issues of patient referral and enrollment in CR/SPPs and disparate access to cardiac rehabilitation among women, minorities, and older individuals. Accordingly, the AHA Board of Directors has commissioned this Advisory Panel of experts to examine these gaps in access to treatment and to develop novel models for the delivery of rehabilitation services to patients with CVD. This statement outlines the Advisory Panel’s findings, presents policy recommendations for enhancing quality of and participation in CR/SPPs, and discusses opportunities to expand access to CR/SPPs through health reform implementation.

Factors Affecting CR/SPP Referral and Enrollment

With a goal of increasing participation, considerable effort has been expended to better understand barriers and potential solutions to patient referral, along with subsequent program

Table 1. Factors Associated With Limited Referral and Enrollment in Cardiac Rehabilitation/Secondary Prevention Programs

Patient-oriented factors ^{3,10–17}	
Female sex	
Older age	
Racial/ethnic minority group	
Lack of or limited healthcare insurance	
Low socioeconomic status	
Low educational attainment	
Low self-efficacy	
Low health literacy	
Lack of perceived need for CR/SPP	
Language	
Cultural beliefs and understanding of disease and treatment	
Work-related factors (job flexibility, loss of salary, self-employment, and lack of healthcare/disability benefits)	
Limited social support	
Home responsibilities	
Medical factors ^{11,12}	
Multiple comorbidities, including depression and musculoskeletal conditions	
Healthcare system factors ^{12,16,18}	
Lack of referral	
Limited facilitation of enrollment after referral	
Strength of the endorsement of CR/SPP by the patient’s physician	
Patient-provider relationship	
Program availability and characteristics	
Lack of programs that serve specific geographic areas, including rural areas and low-income communities	
Distance of CR/SPP from the patient’s home	
Hours of operation	
Parking and public transportation access	
Lack of race/ethnic diversity among the CR/SPP workforce	
Gender-dominated programs	

CR/SPP indicates cardiac rehabilitation/secondary prevention program.

enrollment and completion. Patients must be referred to participate in CR/SPP, a step that generally takes place before or soon after hospital discharge following a qualifying cardiac event. Many factors are associated with limited referral and enrollment in CR/SPPs (Table 1). As noted earlier, inappropriate variability in the referral of patients has been reported, with women, the elderly, racial/ethnic minorities, and people of lower socioeconomic status being less likely to be referred than their counterparts.^{10,11} This variability can be explained in part by the strength of physician endorsement of CR/SPPs¹⁸ and failure of the in-hospital healthcare team to refer eligible patients to CR/SPP. Indeed, hospital-based interventions that promote the automatic referral of eligible patients have been shown to have a significant impact on referral rates.^{10,11,19,20} Brown et al¹⁰ in a study of 72 819 hospitalized cardiac patients found that hospitals using the AHA’s Get With The Guidelines program had a referral rate that was higher than the national average (56%).^{12,13} In-

Table 2. Methods to Facilitate Referral and Enrollment in Cardiac Rehabilitation/Secondary Prevention Programs

Including referral to CR/SPP in the hospital discharge plan
Automatically referring all eligible patients at the time of hospital discharge
Having ward clerks/office staff ensure that referrals are completed
Providing patients with a choice of CR/SPP to attend
Ensuring that patients are aware of and agree to the referral
Arranging personal visits from CR/SPP liaison
Providing written invitations and program brochures in multiple languages
Informing the CR/SPP of the referral and, when possible, establishing an appointment at the point of care
Making comprehensive interpreter service available if required
Providing transportation and parking assistance if required
Following up with those referred but not yet enrolled

CR/SPP indicates cardiac rehabilitation/secondary prevention program. Adapted from Higgins AR et al.²² Copyright 2008. The *Medical Journal of Australia*—reproduced with permission.

ing the referral rate of patients would be expected to increase participation of patients in CR/SPP. However, many patients who are referred do not enroll in a program. In 1 series, only 34% of those referred actually enrolled in CR/SPP.¹⁴ Many who enroll do not complete the full course of CR/SPP therapy, generally 36 sessions in 12 weeks.^{7,10,12,15,16,21}

Steps that are thought to help reduce barriers to program enrollment and completion include the use of patient-specific programming (eg, programs for women), alternative CR/SPP delivery models (home-based or Internet-based programs), and expansion of insurance coverage to include a larger portion of the adult population. Some investigators find marked improvements in CR/SPP enrollment with comprehensive strategies (Table 2).²² A recent comprehensive review of the literature demonstrates that the strength of evidence for any specific referral strategy is lacking, but the combined approach of systematic (ie, use of discharge order sets) plus liaison (personal bedside provision of information and invitation to enroll) appears to offer the most promise.²³

Healthcare policy is a critically important part of the solution to the gap in delivery of cardiac rehabilitation. Potential ways in which policymakers can exert a significant effect on participation rates include the following:

1. By increasing accountability of healthcare providers and healthcare systems. Quality-enhancing policies such as the inclusion of CR/SPP referral as a “core” quality-of-care measure for hospitals and the public reporting of each hospital’s adherence to the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR)/ACCF/AHA cardiac rehabilitation performance measures are likely to have a positive impact on program referral, enrollment, and completion.⁶ The referral metrics have been endorsed by the National Quality Forum.²⁴
2. By supporting alternative CR/SPP delivery models. As third-party payers and ACOs begin to cover evidence-based alternative models of delivery such as some home-based and Internet-based models, overall participation will likely improve for many subgroups of the population with the lowest participation rates.

3. By using opportunities offered by healthcare reform implementation to provide affordable access to CR/SPPs (see Opportunities to Expand Cardiac Rehabilitation Through Health Reform Implementation).

Disparities in Access

Among individuals with CHD, older patients, women, members of minority populations, those who have low socioeconomic status, individuals with lower levels of education, and those do not have English as their primary language often have a higher burden of comorbidities and cardiac risk factors, lower health literacy, and lesser disease self-management skills.^{1,25,26} Members of these groups are less likely to be referred to CR/SPP^{7,10,21} and are less likely to enroll after referral (Table 1).^{14,27} Patients in these groups who complete CR/SPP benefit in clinical, behavioral, and health domains. However, they may not always do so to the same degree as other enrollees.²⁸

Common logistical barriers to CR/SPP attendance (eg, lack of insurance coverage for CR/SPP participation, lack of transportation, lack of social support, responsibilities at home in caretaking roles, residence too far away from CR/SPPs, or inability to take time off from work) are disproportionately present in such disparate populations. Patients of low socioeconomic status are often underinsured and may be under pressure to return to work because of less generous unemployment and short-term disability benefits. Home training may not significantly alleviate such barriers because members of these groups tend to have fewer community resources for risk factor modification, including less access to grocery stores with healthy foods or safe areas to walk in their neighborhoods.²⁹ Low health literacy may impair CR/SPP attendance for individuals who lack basic skills such as interpreting appointment slips, negotiating public transportation, or understanding education materials typically provided in CR/SPP, which often require reading competency at a sixth grade level or above. Cultural attitudes toward chronic disease, exercise, and disease rehabilitation also need to be considered, in part, because members of minority groups may not be convinced that cardiovascular events are preventable, that they can modify their risk factor levels through lifestyle modifications and adherence to medications, and that CR/SPPs can assist them in this process.³⁰ Heterogeneity in attitudes and beliefs within specific population groups further complicates the situation, but there is general agreement that it is critical for healthcare providers to build trust and to have good communication skills and high sensitivity to cultural issues.²⁹ Frequently, multiple barriers coexist, and single modifications of CR/SPP addressing a particular barrier (eg, implementation of an automating referral system to prevent referral bias) may not significantly improve enrollment rates.¹⁴

Women are faced with several unique barriers to program participation that may account for their lower enrollment, poorer adherence, and higher dropout rates. The role of caregiver is traditionally filled by women. Some women may feel uncomfortable participating in a program dominated by men, whereas others may be reluctant to participate because of a lack of prior physical activity experience.³¹ After a

coronary event, women also tend to increase their activity levels sooner and to a greater extent than men, primarily by undertaking household chores at an earlier stage of their convalescence.¹⁷ Thus, they may not feel that they need a traditional exercise-based rehabilitation program to enhance their functional capacity.

Studies included in the 2010 Cochrane review that addressed CR/SPP enrollment and adherence³² were quite small, included patients who were predominantly male and white, and were not designed to address issues such as socioeconomic status, ethnicity, and literacy. Interventions had mixed success in terms of enrollment and adherence, and studies often did not address how these issues related to CR/SPP outcomes. Although not specifically addressing cardiac rehabilitation, Artinian and colleagues²⁹ concluded that the effectiveness of nontraditional interventions to improve diet and exercise behavior (eg, Internet approaches) had not been established among individuals with low income or in minority samples.

Models of Delivery

Clinical Centers

Traditional exercise-based CR/SPP at clinical centers has now become the standard of care within the medical community by which a broad spectrum of patients are restored to their optimal physical, medical, vocational, and psychosocial status after an acute MI or coronary revascularization procedure.^{3,4,33} Benefits have also been reported in patients with silent or symptomatic myocardial ischemia, compensated heart failure, cardiomyopathies, aortic aneurysm repair, heart valve repair/replacement, pacemaker or cardioverter defibrillator implantation, peripheral vascular disease, and associated comorbid conditions (eg, pulmonary disease, diabetes mellitus, metabolic syndrome) and cardiac transplant recipients.³

Typically, at program entry, a medical and surgical history is obtained, recent cardiovascular tests and procedures (eg, 12-lead ECG, coronary angiogram, echocardiogram, and pharmacological and/or exercise stress test) are reviewed, and cardiovascular risk factors and current medications are documented. These components are an integral part of the national program certification process established by the AACVPR (<http://www.aacvpr.org/certification/>). Programs certified by the AACVPR are recognized as meeting essential standards of care in keeping with the contemporary definition of cardiac rehabilitation as a secondary prevention program. The AHA encourages all CR/SPPs to meet the standards for AACVPR program certification.²

The rehabilitation staff typically includes a medical director (eg, cardiologist, primary care physician, physiatrist), program director (who may also be the medical director but may be a registered nurse or an exercise physiologist), 1 or more nurse clinicians with coronary care experience, and at least 1 exercise specialist, physical therapist, or physiologist (ideally with professional certification). Other complementary staff, whether accessible on site or through associated private practices, includes a registered dietitian and a psychologist or behavior therapist. Vocational counseling and

social support resources are also part of contemporary multifaceted CR/SPPs.

The safety of moderate-to-vigorous exercise training at clinical centers in patients with CHD is well documented. An aggregate analysis of clinically relevant reports suggests the following average complication rates: 1 cardiac arrest per 116 906 patient-hours, 1 fatality per 752 365 patient-hours, and 1 major complication per 81 670 patient-hours.^{34–37} More recently, Pavy et al³⁸ reported a higher event rate (1 per 49 565 patient-hours of cardiac rehabilitation exercise training) and a lower cardiac arrest rate (1.3 per 1 million patient-hours of exercise) with no fatal complications. It should be emphasized, however, that these low mortality rates apply only to medically supervised programs equipped with a defibrillator and appropriate emergency drugs.

Although traditional supervised group rehabilitation CR/SPPs at clinical centers are associated with additional cost and extended travel time,³⁹ considerable data support the safety, efficacy, and cost-effectiveness of this model.³ Hence, such programs are more appropriate for patients at increased risk for future cardiac events or exercise-related adverse events. Supervised programs also facilitate patient education and counseling, provide group recreational opportunities, and offer staff reassurance and the potential for enhanced adherence, safety, and surveillance.³³ On the other hand, common concerns with the traditional model for exercise-based cardiac rehabilitation include suboptimal program participation, extended travel time to and from the facility, poor facilitation of independent exercise, use of costly continuous ECG monitoring, and lack of insurance reimbursement.

Novel Methods and Opportunities

A small body of evidence from randomized clinical trials involving mainly male post-MI patients suggests that participation in traditional CR/SPP can be increased by as much as 18% to 30% with the use of multifaceted patient-targeted strategies; for example, motivational communications delivered through letters, telephone calls, and home visits.³² Accordingly, there is a need to design, evaluate, and implement evidence-based alternative approaches to traditional cardiac rehabilitation that help provide all appropriate patients affordable access to clinically effective secondary prevention interventions. Such alternative approaches should not replace traditional CR/SPPs but should be used to engage the many patients who currently do not participate and to provide ongoing intervention after completion of traditional CR/SPP.

Efficacy and Safety

In recent years, a variety of alternative approaches for delivering CR/SPP interventions to patients with CVD have been reported in the scientific literature. Innovative models that have been implemented successfully span a broad spectrum and include facility-based interventions in which intensive lifestyle management and psychosocial counseling and support are heavily emphasized; home-based programs in which exercise training is monitored through transtelephonic transmission of ECGs; physician-supervised/nurse-case-

managed interventions delivered in clinical settings and from call centers via the telephone; computer-assisted interventions delivered by exercise physiologists in community-based settings; disease management and lifestyle health coaching interventions delivered by nurses and other nonphysician health professionals via the telephone and Internet; and other Internet-based case-management systems.^{40–42} These newer approaches may increase access to high-quality rehabilitative care and simultaneously decrease the cost of treatment. A recent Cochrane systematic review of data from 12 randomized controlled trials (1938 participants) conducted in 6 different countries evaluated the effectiveness of home-based CR/SPP compared with supervised center-based cardiac rehabilitation.⁴⁰ For the meta-analysis, home-based cardiac rehabilitation was defined as a structured program with clear objectives for the participants, including monitoring, follow-up visits, letters or telephone calls from staff, and the use of self-monitoring diaries. The majority of studies recruited lower-risk patients after an acute MI or coronary revascularization procedure (excluding those with significant arrhythmias, ischemia, or heart failure), but 2 studies also included individuals with New York Heart Association class 2 or 3 heart failure. Outcome measures included mortality (all cause and cardiac), morbidity (reinfarction, revascularization, and cardiac-associated hospitalization), exercise capacity, multiple modifiable risk factors, health-related quality of life, adverse events, adherence, health service use, and costs or cost-effectiveness. The review found no evidence of a difference in outcomes in cardiac patients receiving home-based or center-based cardiac rehabilitation in either the short term (3–12 months) or longer term (up to 24 months). The authors concluded that although additional research is clearly warranted, the data support the use of home-based programs to give patients a choice in line with their personal preferences and thereby to potentially favorably affect CR/SPP participation rates.

The Heart Failure: A Controlled Trial Investigation Outcomes of Exercise Training (HF-ACTION) Study is the largest single study in which the safety of exercise training outside the clinical center in patients was assessed. Subjects with New York Heart Association class II to IV symptoms ($n=2331$) were randomized to either 36 sessions of supervised, moderate-intensity training followed by home-based training for at least 1 year or usual care. Overall, the adverse event rates (including MIs, worsening heart failure, hospitalization after exercise, and death) during the entire study period did not differ between the exercise and usual care groups.⁴³

Internet-Based Technologies

Although not specifically focusing on patients with CVD, the AHA recently published an extensive review of interventions to promote physical activity and dietary lifestyle changes for cardiovascular risk factor reduction in adults.²⁹ Because societal and cultural factors can affect the feasibility and success of specific intervention strategies, studies included in the review were limited to those conducted in the United States. The authors conclude that individual, group, and

multicomponent intervention delivery strategies can be effective and provide evidence-based recommendations for counseling individuals to promote dietary and physical activity changes to reduce cardiovascular risk. Class I (recommended) intervention processes and/or delivery methods include the use of individual- or group-based strategies (Level of Evidence A) and, for appropriate target populations, the use of Internet- and computer-based programs (Level of Evidence B).

The Internet boom of the 1990s served to ignite a burst of technological innovation and has revolutionized the process of communication and information transfer. From a CR/SPP perspective, the Internet has the potential to favorably affect the delivery of virtually all core components of cardiovascular risk reduction interventions. In addition, Internet-based interventions have been shown to integrate well with a wide variety of Web-enabled technologies and devices (such as text messaging, social networking, videoconferencing, mobile phones, blood pressure monitors, digital scales, glucose monitors, heart rate monitors, and electronic medical records) that can be used to enhance program compliance, to provide ongoing feedback to both patients and practitioners about risk factor control in the home environment, and to document program outcomes.^{41,44,45} Most important, the Internet has the potential to mitigate at least 2 major barriers to participation in traditional CR/SPP, namely cost and accessibility. On the basis of the immense promise of Internet-based interventions, particularly because a rapidly growing majority of Americans have Internet access, and because of the favorable results of preliminary studies, additional research is warranted. Such research should assess the feasibility and the clinical effectiveness and cost-effectiveness of such approaches in patients with CVD and clarify the balance of online and offline interventions that provide the greatest benefits.

Modifications to Traditional Programs

Even for those patients who participate in traditional programs, the duration of formal intervention (ie, the number of sessions and length of time over which the services are delivered) and the therapeutic emphasis (eg, exercise training, healthy diet, weight management, tobacco cessation, risk factor modification, and psychosocial intervention) are often dictated less by actual patient needs and more by reimbursement and other financial constraints.⁴¹ To counteract these concerns, less staff-intensive, more convenient, lower-cost modified⁴⁶ or hybrid⁴⁷ programs that emphasize independent exercise have been successfully implemented with outcomes similar to those of traditional rehabilitation regimens.

On the basis of demonstration project results, the Centers for Medicare/Medicaid in the United States recently expanded reimbursement for cardiac rehabilitation services to include an alternative intervention mode, designated intensive cardiac rehabilitation.⁴⁸ Intensive cardiac rehabilitation is defined as “a physician-supervised program that furnishes cardiac rehabilitation more frequently and often in a more rigorous manner, and has shown, in peer-reviewed published research, that it improves patients’ CVD through specific outcome measurements.” Provided specific conditions of coverage are met, reimbursement for intensive cardiac reha-

bilitation is available for up to 72 one-hour sessions, up to 6 sessions per day, over a period of up to 18 weeks (as opposed to 36 sessions, up to 2 one-hour sessions per day, over a period of up to 36 weeks with the option of an additional 36 sessions over an extended period of time for traditional cardiac rehabilitation). As is the case with traditional cardiac rehabilitation, for payment to be received, intensive cardiac rehabilitation must be conducted in a physician's office or hospital outpatient setting, and all settings must have a physician immediately available and accessible for medical consultations and emergencies at all times when services are being provided. It is likely, because of the frequency of exercise and dietary limitations provided, that very highly motivated individuals would be most attracted to such programs. Hence, it is uncertain whether such intensive programs would narrow the gap in the provision of CR/SSP. The Centers for Medicare/Medicaid demonstration projects involving other approaches, such as disease management and lifestyle health coaching services, either have recently been completed or are currently in progress.⁴⁹

Policy Recommendations

- CR/SPPs must play an increasingly important role in supporting the AHA's strategic goals in the era of health-care reform by providing integrated quality care that is driven by outcomes. CR/SPP referral, enrollment, program design, and adherence strategies should specifically target older patients, women, members of minority populations, those who have low socioeconomic status, individuals with lower levels of education, or those do not have English as their primary language. This is especially important because these patients often have a higher burden of comorbidities and cardiac risk factors, lower health literacy, and lesser disease self-management skills; are less likely to be referred to CR/SPP; and are less likely to enroll after referral.
- Quality-enhancing policies should include CR/SPP referral as a "core" quality-of-care measure for hospitals and the public reporting of each hospital's adherence to the AACVPR/ACCF/AHA cardiac rehabilitation performance measures.^{6,24}
- CR/SPPs should be reengineered to include a wide array of service options that meet the needs of individual patients; they should provide more flexible programs within and beyond the traditional clinical center to enhance access, adherence, and effectiveness. These should include the following:
 - Hybrid programs that are less staff intensive, more convenient, and lower cost and that emphasize independent exercise and self-reporting
 - Facility-based interventions for appropriate patients in which intensive lifestyle management and psychosocial counseling and support are heavily emphasized
 - Physician-supervised/nurse–case-managed interventions that can be delivered and monitored at call centers via the telephone or Internet
 - Computer-assisted interventions delivered by exercise physiologists in community-based settings
 - Disease management and lifestyle health coaching interventions and case management delivered by nurses and other nonphysician health professionals via the telephone, Internet, and other means of communication
- Such alternative approaches should not replace traditional CR/SPPs but should be used to engage the many patients who currently do not participate to enhance existing clinical center interventions and to provide ongoing monitoring and treatment after completion of traditional CR/SPP.
- Alternative approaches to traditional CR/SPPs should meet quality standards such as those established by the AACVPR Certification Program (<http://www.aacvpr.org/certification/>)²; these standards may need to be customized for each model accordingly.
- Any new approach should not be widely implemented until it has been shown to be effective as evidenced by results of clinical studies published in peer-reviewed journals.
- Third-party payers should cover the costs of evidence-based alternative models of delivery that have been shown to be effective in peer-reviewed published clinical trials such as hybrid programs, home-based models, and telephone/Internet-based models.
- Third-party payers should eliminate patient copayments for CR/SPP; this is consistent with policy measures implemented by the ACA in 2010 regarding elimination of copayment or deductible to receive recommended preventive health services.
- The provision of insurance cost-reduction incentives to patient-member participants of CR/SPPs should be studied with regard to its effect on enrollment and adherence to such programs.
- Referral to and enrollment in CR/SPPs should include measures that can be tailored for the patient at hospital discharge or the patient in an outpatient practice setting (Table 2).

Opportunities to Expand Cardiac Rehabilitation Through Health Reform Implementation

Health reform implementation also provides numerous opportunities for improving access to and quality of CR/SPPs under new care delivery models.⁵⁰

- Essential health benefits. By late 2011, the Department of Health and Human Services is expected to issue draft regulations on the essential health benefits that all plans offered through state health insurance exchanges must offer. Essential health benefits will also serve as a platform for the benchmark coverage that the states must offer to individuals who will qualify for Medicaid coverage under the ACA. Essential health benefits must include as a general category "rehabilitative and habilitative services and devices."

- Implementing regulations should adequately define rehabilitative and habilitative services and devices.
 - States should implement the essential health benefit package in a way that ensures meaningful coverage of cardiac rehabilitation services for the Medicaid expansion population. States should bear in mind the needs for cardiac rehabilitation coverage within their state, including the cardiac care needs of uninsured populations likely to become enrolled in state exchanges or through Medicaid expansion.
 - As states work to expand their Medicaid programs to newly eligible populations, states should absorb lessons learned on how to target cardiac rehabilitation toward women, minorities, populations with low-socioeconomic status, and other populations that have experienced low enrollment in CR/SPPs.
- Center for Medicare and Medicaid Innovation. The ACA establishes a new entity within the Center for Medicare and Medicaid Services called the CMMI. The CMMI will test various innovative payment and service delivery models to determine how these models could reduce program expenditures while preserving or enhancing the quality of care provided to individuals enrolled in Medicare, Medicaid, and Children's Health Insurance Program. The CMMI will prioritize testing models that use comprehensive care plans, promote care coordination between providers, support care coordination for chronically ill patients at high risk of hospitalization, use medication therapy management, establish community-based health teams, promote patient decision support tools, fund home health providers who offer long-term care management, promote greater efficiency in inpatient and outpatient services, and use a diverse network of providers to improve care coordination for individuals with 2 or more chronic conditions and a history of prior hospitalization.
 - Improving the delivery of cardiac rehabilitation services fits well within CMMI's priorities for testing new delivery system models. CMMI should consider testing novel alternative approaches to cardiac rehabilitation such as home-based programs with telephonic and Internet-based interventions.
 - Accountable care organizations. Starting January 1, 2012, the Medicare Shared Savings Program established under health reform will incentivize groups of providers and suppliers to work together through ACOs.⁵¹ The goal of the shared savings program is to promote accountability and thus better care coordination for Medicare fee-for-service patient populations. Providers participating in an ACO under the shared savings program have a financial incentive to coordinate care and to improve outcomes for patients.
 - The ACO model encourages providers to ensure that their patients receive the preventive care they need to avoid future costly healthcare events. CR/SPP providers should be included as participants within the ACO, and all ACO providers have a responsibility to ensure that qualified heart patients are successfully participating in CR/SPPs.
 - Patient-centered medical homes. In a PCMH, an individual is assigned to a personal physician who manages the individual's whole health care by coordinating with other qualified professionals, including specialists. The PCMH personal physician guides the patient through preventive, long-term, and short-term care and will work with the individual and his or her family to provide appropriate referrals to hospitals, ancillary care services, community care, and residential services. The ACA establishes a program to provide grants to states to establish community-based, interdisciplinary, interprofessional teams ("health teams") to support primary care providers who manage care through a PCMH model.⁵²
 - Cardiac rehabilitation is a natural fit within the PCMH model. Primary care physicians managing patient care through a PCMH should have information about CR/SPPs and should be equipped with model questions that can help them determine which patients qualify for cardiac rehabilitation interventions.
 - Dual eligibles. The ACA has established the Federal Coordinated Health Care Office, which is charged with ensuring more effective integration of benefits under Medicare and Medicaid for individuals eligible for both programs and improving coordination between the Department of Health and Human Services and the states in the delivery of benefits to dual eligibles.⁵³
 - Dual eligibles have poorer health status and have higher rates of CVD than non-dual eligible populations.⁵⁴ Providing cardiac rehabilitation is a key component of care for dual eligibles with CVD. The Federal Coordinated Care Office should explore targeted initiatives to provide better coordinated cardiac rehabilitation for dual eligibles.
 - Shared decision making. The ACA establishes a program to develop evidence-based patient decision aids that engage patients and caregivers in informed healthcare decision making.⁵⁵ Using these decision aids as a tool, healthcare providers will be able to assist patients in weighing treatment options and can design medical plans that are better suited to a patient's personal preferences.
 - Specific circumstances that heart patients face such as lack of transportation, lack of social support, responsibilities at home in caretaking roles, and inability to take time off of work contribute to low enrollment in cardiac rehabilitation. The Department of Health and Human Services should ensure that patient decision aids created under this program include appropriate information on cardiac care. Decision-making tools that take into account the preferences and needs of the individual may help providers refer patients to particular CR/SPPs (such

as home-based models) that are less burdensome for patients and favorably affect participation rates.

- Wellness visits, health screenings, and prevention programs. Since January 1, 2011, the ACA has required Medicare to cover annual wellness visits and personalized prevention plan services to all beneficiaries, which include screening for chronic disease risk factors and furnishing referrals to health education and prevention counseling services.⁵⁶ The ACA also offers grants to small businesses to provide comprehensive workplace wellness programs⁵⁶ and grants to state and local health departments to provide public health and community interventions for individuals 55 to 64 years of age.⁵⁷ These interventions include health screenings and referrals to treatment for chronic diseases and should incorporate efforts to improve nutrition, to increase physical activity, to reduce tobacco use, and to promote healthy lifestyles through community-based interventions. Finally, state Medicaid programs can apply for grants established by the ACA to provide incentives to Medicaid enrollees who participate in prevention programs aimed at tobacco cessation, controlling or reducing weight, lowering cholesterol, lowering blood pressure, avoiding the onset of diabetes mellitus or managing a diabetic condition, and addressing comorbidities.⁵⁸

- Although ideally patients will be referred to rehabilitation immediately after a cardiac event, coverage of wellness visits under Medicare, new workplace and community-based wellness programs, and prevention programs under Medicaid provide an ongoing opportunity for individuals who have experienced a cardiac event to enroll in rehabilitative care.
- Because these health screenings and wellness visits are likely to be conducted by a primary care physician who may not be as knowledgeable about options for cardiac care, providers should have information about CR/SPPs and access to model questions that can help them determine which patients qualify for cardiac rehabilitation interventions.
- Understanding health disparities. Health reform establishes new criteria for data collection under federal healthcare programs to better understand healthcare disparities.⁵⁹ By March 2012, every federally conducted or supported healthcare program, activity, or survey must collect and report data on race, ethnicity, sex, primary language, and disability status and for underserved rural populations.
- The Department of Health and Human Services should analyze the data collected to better understand disparities in cardiac rehabilitation services.

Disclosures

Writing Group Disclosures

Writing Group Member	Employment	Research Grant	Other Research Support	Speakers' Bureau/Honoraria	Expert Witness	Ownership Interest	Consultant/Advisory Board	Other
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This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (a) the person receives \$10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (b) the person owns 5% or more of the voting stock or share of the entity, or owns \$10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

†Significant.

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*Modest.

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