Cardiovascular disease (CVD) continues to be the leading cause of morbidity and mortality in the United States and worldwide. In fact, the prevalence of CVD is on the rise as a function of increased longevity and the mounting effects of cardiac risk factors that typically accumulate over a lifetime. Outpatient cardiac rehabilitation (CR) programs offer a cost-effective, multidisciplinary, comprehensive approach to address these risk factors and to restore individuals to their optimal physiological, psychosocial, nutritional, and functional status.

Thus, the benefits of CR extend well beyond the cardiovascular system, positively affecting an individual’s overall health status. These benefits may be particularly important to certain CVD cohorts such as elderly patients who are more likely to present with greater functional limitations and frailty. Additionally, outpatient CR has been shown to dramatically reduce morbidity and mortality by nearly 25% compared with usual care.

Despite the clear benefits of formal, supervised outpatient CR and exercise training programs, as well as strides in automatic referrals, current statistics continue to demonstrate that referral and participation rates of eligible patients remain alarmingly low, with participation particularly poor in rural areas and in eligible patients who have lower socioeconomic status, limited education, advanced age, and/or female sex. In addition, Gurewich et al. reported several factors that are likely responsible for the poor referral rates to outpatient CR, which included “the degree of automation and assertiveness in securing referrals, the level of integration of CR within the hospital setting and physician community, the relationship to other CR facilities, and capacity constraints.”

Given the continually poor referral and participation rate in outpatient CR despite increased efforts to reverse this trend, additional actions are required. This scientific advisory calls on the inpatient and home healthcare teams (physicians, physician assistants, nurse practitioners, nurses, physical therapists [PTs], clinical exercise physiologists [CEPs], registered dieticians, and CR team members) to implement a coordinated effort to promote outpatient CR to eligible patients and to facilitate referral and enrollment. Furthermore,
this advisory recommends identifying an appropriately qualified healthcare professional to lead the inpatient multidisciplinary team (Key Recommendations for further details). Whereas patient-centered care presumes that programs can and should be tailored to suit patient preferences, it implicitly places an onus on the care-giving team to educate patients and to promote therapies that will best address needs of a given patient. The opportunity for the inpatient healthcare team to increase participation rates in outpatient CR appears to be underappreciated and therefore underused. Moreover, home health nursing and PT may also potentially play a valuable role in bridging the gap between acute care and outpatient CR, especially for patients who are more disabled after hospital discharge, thus improving the continuum of care and potentially increased referrals and ultimately participation rates. Therefore, a primary goal of this scientific advisory is to better define the role of key healthcare professionals in both the inpatient and home health settings to ultimately improve outpatient CR referrals and participation.

### Defining Key Professions in the Acute Care Setting

Multiple providers, with a broad range of expertise, are routinely involved in the inpatient care of individuals suffering a cardiac event. Similarly, a wide range of providers routinely attend to patients with a primary noncardiac issue but with management also affected by underlying cardiac disease. These health providers have the opportunity to work together to promote outpatient CR as a unifying feature of care. Each profession may, in its own way, provide a valuable role in facilitating and encouraging participation in outpatient CR after hospital discharge. It is essential, however, that strong oversight by someone familiar with all aspects of the inpatient cardiac care process be identified (“inpatient CR director”) and empowered to direct the inpatient CR process, including those responsibilities outlined in the Key Recommendations section. The following sections describe several key inpatient health professionals who can and should actively promote outpatient CR. Although a number of the responsibilities described overlap and could be accomplished by one of several healthcare professions, each member of the inpatient CR team offers a unique skill set, warranting inclusion of all professions described in subsequent sections. Additionally, overlapping responsibilities among the health professionals involved should be viewed as positive, given that it will build redundancy into the system and increase the likelihood of eligible patients receiving key education and a referral to outpatient CR. Moreover, consistent communication of the importance of outpatient CR from multiple health professionals is likely to increase the perceived value of this lifestyle intervention by a given patient. Unifying themes for all involved inpatient health professions are an understanding of the importance of CR to optimal recovery/outcomes in patients with CVD, a knowledge of all potential outpatient CR centers to which a given patient could be referred within a particular geographical region, and development of a relationship with these outpatient CR centers to make the referral/enrollment process as efficient as possible.

### Nursing

Nurses in the inpatient setting can play a pivotal role in educating patients about the value of outpatient CR after a cardiac event/procedure. In numerous settings, nurses are intricately involved in discharge planning and, in these instances, can be instrumental in facilitating a referral to outpatient CR. Independent predictors of participation in outpatient CR include the patient being referred to outpatient CR while in the hospital and the patient perceiving the value and need for CR. Both of these predictors could easily be addressed by the nurse during inpatient hospitalization. In the past, most inpatient healthcare facilities have had a phase I CR program, typically conducted by nurses and/or other allied health professionals. Although many traditional phase I CR programs have been discontinued, nurses still play a major role in providing inpatient programming. However, the responsibility of securing the outpatient CR referral or providing education on this valuable service can be ambiguous. If the inpatient nurse does not advocate for referral and encourage enrollment in outpatient CR, an important opportunity is missed. Nurses must be cognizant that outpatient CR is an essential component of the recovery of all eligible cardiac patients and that their encouragement and education are essential first steps to facilitating participation in this valuable lifestyle intervention after hospital discharge.

Nurses assume responsibility for the day-to-day care of the patient, including postoperative or postprocedural monitoring of vital signs, cardiac arrhythmias, and potential complications, and are responsible for the administration of and education about cardiac medications and treatments. During this 24-hour contact with the patient, nurses are in a position to recognize key “teachable moments” and to discuss outpatient CR with patients who qualify for enrollment and their caregivers. Nurses should discuss the reasons for obtaining a referral for outpatient CR and facilitate the process, the components of an outpatient CR program and how they pertain to the individual patient, the well-documented benefits of outpatient CR, how outpatient CR provides a safe environment for exercise, and how attending outpatient CR builds a network of resources for the future. The writing group acknowledges that these responsibilities are not specific to the nursing profession and thus can be accomplished by other appropriate healthcare providers. However, the increased amount of contact time between the nurses and the patient provides a unique opportunity to have an ongoing, in-depth discussion of the importance of outpatient CR.

Both inpatient nurses and nurse case managers often plan and directly participate in the discharge of the patient’s postcardiac event. They provide education, monitor patient data, and contribute to the optimal discharge plan for the patient. In cases when home health care is warranted, the nurse case manager typically directly communicates with the home health agency that provides home nursing follow-up when needed. A number of patients who have had open heart surgery are provided a period of home health nursing and PT on discharge. Therefore, nurse case managers should take the initiative to reinforce the importance of outpatient CR referral to the home health team once those services are complete. Home health professionals should also facilitate and encourage the patient to set up an
outpatient CR appointment after recovery from the cardiac event, as is discussed in subsequent sections.

**Physical Therapy**

The assessment of functional status and movement is a key examination from which PT treatment is prescribed and on which patient discharge from the hospital is based.\(^{21,22}\) In fact, the assessment of functional status in the inpatient setting by PT is 1 method by which many patients are deemed appropriate to return home or to spend additional time at a rehabilitation center.\(^{21–24}\) Although perhaps not widely appreciated and thus used in the current delivery model, participation in inpatient PT may have the potential to dramatically improve referral to outpatient CR.

Recent observations suggest that PT can be instrumental in providing valuable guidance in the inpatient setting and that adherence to recommendations may lower the risk of readmission.\(^{25}\) This observation highlights the role that structured assessments and sharing of patient information in the inpatient setting have in promoting favorable patient outcomes after discharge. Recent longitudinal data reveal that outpatient CR referral and participation improve when this type of structured inpatient assessment exists for patients with an acute cardiac event or procedure.\(^{16,26}\) PT referral for inpatient intervention and discharge assessment provides an examination of patient readiness for hospital discharge and entry into an outpatient CR program. If an automatic referral for inpatient PT is not already in place, a strong case can be made for the implementation of such a system given the likelihood of a diminished functional capacity in the majority of cardiac patients. This important step in the inpatient setting provides a robust referral base for outpatient CR\(^{26}\) and further ensures that CR is integrated within multiple disciplines working toward a common goal (ie, outpatient CR referral and participation). Of course, the inpatient PT in the cardiac setting must be cognizant of this opportunity and the role he/she plays in promoting outpatient CR participation. This writing group, particularly the members who are PTs, acknowledges that the proposed recommendations may represent a paradigm shift for current PT practice in the inpatient cardiac setting. However, such a paradigm shift has the potential to dramatically affect outpatient CR referral and participation in a positive manner.

In summary, PTs in the inpatient setting have the potential to substantially improve outpatient CR referral given their established presence in the inpatient cardiac setting and their role in assessing functional capacity and determining discharge status and placement on discharge (ie, home, subacute rehabilitation facility).\(^{21–25}\) In addition to their primary role of assessing and improving functional status, the inpatient PT should provide education on the importance of outpatient CR participation to the patient. The inpatient PT should embrace the role of advocate for outpatient CR, educating patients on the value of participating in this important lifestyle intervention and ensuring that a referral has been secured on discharge.

**Clinical Exercise Physiologists**

CEPs frequently are members of the multidisciplinary team in CR programs.\(^{27}\) Although more likely to be involved in the outpatient program, the role of CEPs on the inpatient team is to provide expertise related to exercise prescriptions and training, physical activity recommendations, patient education, and exercise equipment. CEPs working in the inpatient setting are likely to have regular contact with inpatients either through formal educational sessions or by meeting one-on-one with inpatients; thus, there are ample opportunities to communicate the clinical benefits of participating in outpatient CR to patients eligible for this intervention. Consequently, CEPs should be knowledgeable about the outpatient program model, referral process, hours of operation, and other program details that may be helpful to patients. This provides a valuable link between the inpatient experience and the outpatient program.

From an administrative perspective, if a CEP is employed by outpatient CR but also has responsibilities with an affiliated inpatient program, he or she can assist with monitoring the inpatient census and help to ensure that all eligible patients receive a referral to the outpatient program before discharge. This can be accomplished in a number of ways, including collecting paper referrals, verifying referrals in an electronic medical record, attending staff meetings on the appropriate inpatient units, and attending discharge planning meetings.

**Registered Dietitians**

Given the poor nutritional patterns of a large percentage of patients suffering a cardiac event,\(^{28}\) medical nutrition therapy is an essential therapeutic component for the secondary prevention of CVD.\(^{29}\) The habitual diet of many cardiac patients falls far short of meeting the recommended dietary pattern for the secondary prevention of CVD.\(^{30}\) An extensive database demonstrates the efficacy of a dietary intervention; however, sustained adherence to dietary advice is necessary to achieve treatment goals.\(^{31}\) As reported by Artinian et al,\(^{32}\) the scientific literature describes impressive rates of initial behavior changes after a cardiac event, but frequently they are not translated to sustained behaviors.

Registered dietitians (RDs) are uniquely qualified to provide medical nutrition therapy for cardiac patients by virtue of their training, expertise, and experience.\(^{33}\) The importance of RDs being an integral member of the medical team is acknowledged by the Adult Treatment Panel III, which recommends that RD referral be considered at each lifestyle therapy visit.\(^{29}\) Moreover, Van Horn et al\(^{34}\) recommend that patients with hypercholesterolemia be referred to an RD for medical nutrition therapy. Thus, RDs in the inpatient setting are in the position to educate patients on the value of outpatient CR and to advocate for referral on discharge. Because follow-up is required for a sustained nutritional behavior change, it is uniquely important for inpatient RDs to advocate for outpatient CR services. Thus, by doing their part in ensuring that eligible cardiac patients are referred and enrolled in outpatient CR, RDs can help patients achieve their long-term nutritional goals and facilitate their participation in other essential lifestyle interventions.

**Physicians**

The fundamental design of inpatient care for the cardiac patient entails coordination between the physician and the
above-described interdisciplinary team. Physicians involved in the care of cardiac patients may come from numerous disciplines (surgeons, interventionalists, primary cardiology, primary care physicians, hospitalists, etc) with differing perspectives and priorities. However, all physicians, regardless of background and training, can share the common goal of promoting outpatient CR in eligible patients. Although day-to-day issues are addressed through a collaborative organization, the physician has distinctive tasks: He/she plays a unique role in facilitating patient intakes and individual treatment planning, performing patient assessments, and evaluating medical safety. Likewise, the physician’s role and perspective are vital with respect to policies and procedures, and physicians must reinforce the value of outpatient CR and ensure the referral of all eligible cardiac patients. Smith et al previously demonstrated that a physician-endorsed, automated outpatient CR referral system results in higher rates of intake and enrollment. Conversely, Grace et al demonstrated that physician uncertainty as to which member of the healthcare team is responsible for securing an outpatient CR referral negatively affects eventual enrollment. Therefore, inpatient physicians should ensure that an outpatient CR referral system exists at their institution, identify the member(s) of the healthcare team responsible for securing the referral, and express strong support for the process. Physicians should also express their strong support for outpatient CR to all of the aforementioned health professionals involved in the care of cardiac patients and ensure that all members of the inpatient team discuss/endorse outpatient CR during their respective patient interactions. Moreover, in their own interactions with patients, their families, and other caregivers, physicians should convey the importance of outpatient CR to their recovery and strongly encourage participation, which in itself has been shown to improve enrollment. Finally, physician assistants and nurse practitioners, who often work very closely with physicians, should adopt the same principles and recommendations described in this section.

The Continuum of Care: Home Health Nursing and PT in the Immediate Postdischarge Period

According to recent estimates, roughly 7.6 million people in the United States receive community-based care, with a significant proportion receiving medical and therapeutic interventions at home. Moreover, the majority of home health patients are >65 years of age, a number that is expected to increase as the population ages. Not unexpectedly, the most frequent diagnoses are distributed across clients with endocrine and circulatory disorders. Nearly one third of home health patients present with diabetes mellitus and/or heart disease, ~40% with hypertension, and two thirds with diseases of the circulatory system.

Poor referral and participation rates in outpatient CR programs are well documented in patients being discharged from the inpatient setting. Presuming that these low referral and participation rates in outpatient CR programs can be applied to home health patients, it is likely that a very low percentage of the population managed at home are being provided optimal interventions to help achieve the goals of preserving functional independence or maximizing secondary prevention. The benefits of outpatient CR are well established, so solidifying a continuity of care from home health to an institution providing outpatient CR is vitally important to reaching an ever-expanding group of patients in need of lifestyle modification.

Because home health is often provided by nurses and PTs who focus on this population, potential avenues exist to expand the expertise of these practitioners in an effort to lay the foundation for eventual participation in outpatient CR, from both an educational and exercise training perspective, in the home setting. All patients would benefit from risk factor reduction and education; thus, they should be woven into the home health treatment plan. For the initial exercise training program, ECG monitoring via portable monitoring units or through telecommunication is feasible, and its use should be dictated by the clinical status of each individual patient. Even so, effective monitoring of vital signs, symptoms, and tolerance to exercise, combined with fundamental principles of exercise prescription, will serve the majority of nurses and PTs well in their overall management of the home health patient with chronic disease who will eventually be amenable to outpatient CR. It should be noted that not all patients treated in the home will become appropriate candidates for outpatient CR, and the clinical judgment of the nurse and/or PT should assist the physician in determining the correct therapeutic approach. However, referral and participation in outpatient CR should be a goal for all eligible patients once they are no longer homebound.

Frequently, a time gap between acute care discharge and initiation of outpatient CR occurs, creating a break in the continuum of care. For patients receiving home health care, the nurse and/or PT should reiterate the components, benefits, and safety of outpatient CR to the patient that ideally were taught by the inpatient healthcare team and assist in facilitating an appointment, when appropriate, if one has yet to be made. Maintaining a continuum of care is an important concept that will improve patient perception that outpatient CR is not just a choice but an expectation for a complete recovery. Moreover, many barriers contribute to why patients do not attend CR, including a lack of access, transportation issues, perceived inconvenience, caring for a spouse or others in the home, and financial need to return to work. The home health nurse and/or PT can often provide resources and/or strategies that may help the patient overcome these barriers. Finally, although the roles and responsibilities of the home health nurse and PT may differ, the unifying themes described previously for inpatient health professionals certainly apply to this setting as well.

A number of established outpatient CR programs incorporate home health in their range of services. Training and support for home health nurses and PTs to effectively manage their patients with appropriate CR strategies can be readily provided by outpatient CR program staff. Such collaboration is also likely to facilitate the transition from home health care to outpatient CR enrollment at the correct juncture of a patient’s recovery.

Key Recommendations

The process of identifying key personnel to direct and implement early inpatient CR, to educate about outpatient
Table. Recommendations for Inpatient Health Professionals to Improve Referral to Outpatient Cardiac Rehabilitation*  

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<tr>
<td>Assess and prepare patients for discharge home and eventual participation in inpatient CR</td>
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<td>Share relevant patient status and progress information during inpatient CR with all relevant inpatient healthcare professionals</td>
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<td>Help to identify patients not ready for the initiation of exercise or participation in outpatient CR and patients at risk for functional decline, depression, anxiety, or other psychological or social problems that may hinder acute, subacute, or long-term rehabilitation progress; consider referral to home therapy as a bridge to outpatient CR in these patients</td>
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<td>Initiation of an automatic referral to appropriate inpatient health professional(s) to assess the readiness of all patients with a cardiac event for discharge home and for participation in an outpatient CR program via</td>
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<td>A functional assessment with a functional performance measure (ie, 6MWT, TUG) to examine functional status directly and to enable the prescription of assistive devices and exercise as indicated, and performance of a submaximal exercise test via low-level treadmill or cycle ergometry exercise in appropriate patient(s)</td>
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<td>Use of generic (ie, SF-12 or SF-36) and/or specific (i.e., MLWHFQ, Duke Activity Scale) functional status questionnaires to examine perceived functional status</td>
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<td>Assessment of self-efficacy (ie, Cardiac Self-Efficacy Scale)</td>
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<td>Nutritional assessment</td>
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<td>Development and examination of evidence-based multidisciplinary models of discharge planning with a focus on</td>
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<td>Educating all inpatient health professionals on the methods to implement the above items</td>
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<tr>
<td>Educating all inpatient health professionals on the interpretation of the above items and developing different methods to improve referral to outpatient CR once acute, subacute, or long-term rehabilitation hospitalization is complete</td>
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<td>Increasing referrals and participation in outpatient CR</td>
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<td>Consider implementing quality indicators to objectively track outpatient CR referral performance</td>
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*The functional assessment, submaximal exercise test, and inpatient CR program should use all methods outlined in the American Association of Cardiovascular and Pulmonary Rehabilitation cardiac rehabilitation guidelines, including monitoring of symptoms, vital signs, and ECG in appropriate patients, as well as American Association of Cardiovascular and Pulmonary Rehabilitation/American College of Cardiology/American Heart Association performance measures for cardiac rehabilitation.10,11,27

†The American Heart Association and American College of Cardiology have previously described patients who may be appropriate for low-level exercise testing.39,43,44

CR indicates cardiac rehabilitation; 6MWT, 6-minute walk test; TUG, timed up-and-go; SF-12, Medical Outcomes Short Form-12; SF-36, Medical Outcomes Short Form-36; and MLWHFQ, Minnesota Living With Heart Failure Questionnaire.

CR provides recommendations for inpatient CR programs that would facilitate referral and participation in outpatient CR. At the outset of the planning process, it is important to develop an inpatient CR structure that is led by an individual (inpatient CR director) who possesses a strong background in CVD prevention and rehabilitation, including exercise training, CVD risk factor and behavioral modification, and program development. The interpersonal skills necessary to direct personnel from various health care disciplines, such as nursing, PT, CEP, and dietary, are also essential. In addition, the inpatient CR director must be an enthusiastic advocate for outpatient CR in interactions with facility administrators and all other healthcare professionals involved. There are a number of CR-related publications that the inpatient healthcare team should thoroughly review. Perhaps two of the most important documents that all healthcare team members should understand completely, particularly the inpatient CR director, are the “AACVPR/ACCF/AHA 2010 Update: Performance Measures on Cardiac Rehabilitation for Referral to Cardiac Rehabilitation/Secondary Prevention Services: A Report of the American Association of Cardiovascular and Pulmonary Rehabilitation and the American College of Cardiology Foundation/American Heart Association Task Force on Performance Measures (Writing Committee to Develop Clinical Performance Measures for Cardiac Rehabilitation)”11 and the earlier 2007 publication.10 These publications advocate the use of a performance measure to assess outpatient CR referral patterns from the inpatient setting, a practice the current writing group strongly endorses. Other publications detail the process for developing an automatic referral to outpatient CR, which is also strongly endorsed by the current writing group.45 Finally, publications invaluable in developing the policies and procedures for both inpatient and outpatient CR include the American Heart Association/American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) core components of cardiac rehabilitation46 and the AACVPR core competencies for cardiac rehabilitation professionals.47 Finally, a clear understanding of reimbursement directives and regulations, at both the local and national levels, is also essential.

The individual overseeing inpatient CR should be identified within the facility organizational chart and can be selected from medical staff or the staffs of other members of the healthcare team (eg, physicians, nursing, PT, CEP, dietary, or the existing outpatient CR program). The impact of credentialing requirements should also be considered at this time. The inpatient CR director should have a strong relationship with the medical staff, particularly cardiologists, internists, and family medicine practitioners. In addition, the director should have a defined level of autonomy to provide for program policies/procedures and structure, as well as supervision of all personnel contributing to the inpatient CR program or, at a minimum, during the provision of CR services. Finally, the inpatient CR director should maintain an open line of communication with home health professionals to ensure that a continuum of care is maintained for those patients initially receiving care in the home. In this context, given the potentially significant role that primary care physicians and their support staff (monitoring patient status,
responding to home health professionals questions/concerns, titrating medications, etc) play in the care of patients in the home health setting, it would be advantageous for the inpatient CR director to establish and maintain communication with health professionals in this setting as well.

A positive relationship among the inpatient CR program, home health, and outpatient CR program is essential to the process of outpatient referral and participation and to long-term outcomes. The process must be fluid and well understood by all, including administrators, physicians, program staff, patients, and their families. For patients, care must be taken to provide structured, culturally sensitive, health-literacy–appropriate, educational sessions and materials on the benefits and importance of outpatient CR. Inpatient physicians should strongly support efforts by the inpatient rehabilitation team to educate patients and families about outpatient CR, thus facilitating referral.

Educating patients and families, securing referral, and ultimately increasing participation in outpatients CR might appear to be a relatively simple process for facilities that have both inpatient and outpatient CR available but surprisingly, even under these circumstances, can be challenging. This is likely to be even more cumbersome when patients first receive home health care and/or are referred to other centers for outpatient CR within the same city, within a given state, or beyond. Tertiary or quaternary referral centers with large referral regions may find this aspect particularly challenging and may choose to develop the inpatient/outpatient transitional process in stages, focusing first on within-institution referral and then on an outpatient CR referral network to accommodate patients’ geographic preferences and needs. Beyond the inpatient center processes leading to within-institution referral, it is imperative that the director of inpatient CR be familiar with the referral mechanisms and considerations for patient participation in outside centers, including and especially related to reimbursement and ongoing physician oversight of patient care. This can sometimes be difficult when patients participate in centers without obvious ties to the inpatient-based physician. The inpatient CR director should initiate discussions with all referring physicians on preferences for outpatient centers and the desired mechanisms for ongoing patient follow-up. Superb communication skills and timely correspondence to outside centers are critical for success in this process. In instances when there is an anticipated gap between inpatient discharge and initiation of the outpatient CR program, a home health therapy referral in the interim should be strongly considered. Therefore, the inpatient CR director should also be familiar with processes associated with such referrals.

**Future Directions**

Despite the documented benefits of outpatient CR and the fact that it is strongly supported in many national guidelines, studies continue to show that only a small percentage of eligible patients are referred. Going forward, further efforts must be made to address the barriers to referral and participation in outpatient CR, including those from clinical, community, and research perspectives. The following future directions are proposed to address the lack of referral to outpatient CR:

1. Educate providers, healthcare systems, patients, and their families about the benefits of outpatient CR. A general lack of knowledge about the benefits of outpatient CR clearly exists among both patients and healthcare providers. This is no doubt a major contributor to its persistent underutilization. Education on the benefits of CR must include efforts to change the perception of outpatient CR as less important than pharmacological or interventional therapy.

2. Reduce barriers to referral and participation in outpatient CR. The reasons for lack of referral are numerous and include not only lack of awareness by healthcare providers of its benefits (both improvements in numerous health metrics and healthcare expenditures) but also barriers attributable to patients themselves (knowledge of benefits, motivation to participate), health system barriers (perception of its value, priority given to acute care rather than secondary prevention), and community barriers (infrastructure, availability of programs, public policy).

3. Promote a better understanding of outpatient CR as a cost-effective, multidisciplinary secondary prevention treatment option and chronic disease management service. The perception that outpatient CR is an exercise-only, gym-based treatment contributes to the discouragement of referral and participation for eligible patients. The typical patient referred to outpatient CR has multiple subclinical and clinical diagnoses, yet many rehabilitation programs do not get enough referrals to maintain financial viability. Thus, programs must be designed to incorporate patients with multiple diagnoses because this approach has been shown to be cost-effective and to reduce personnel, program, and facility redundancy. Programs should be structured to attract and manage this expanding group of patients while adhering to current treatment guidelines. A better understanding of the spectrum of outpatient CR services would enhance its status among policy makers and health care providers and would likely enhance resources and referrals directed to them.

4. Continue efforts to increase coverage and resources for outpatient CR services. Healthcare referrals naturally parallel reimbursement patterns, and the limited or absent reimbursement for rehabilitation is an important contributor to low referral rates. Although there is inconsistency in reimbursement policies, lack of awareness among healthcare providers that Medicare and many health insurance policies cover outpatient CR services is another barrier to referral.

5. Increase awareness of outpatient CR performance measures. Implementation of performance measures for outpatient CR should be strongly considered. These measures help healthcare providers track referral rates, adopt tools to improve enrollment, and assess and improve quality. System-based approaches such as automatic ordering sets and discharge checklists for referring eligible patients to a program have been shown to improve referral rates.

6. Expand the spectrum of responsibilities of home health nurses, PTs, and other allied healthcare providers to include home-based or community-based CR.

7. Continue innovative strategies to bring rehabilitation to more patients. Another impediment to referral is lack of accessibility to formal programs. Telemedicine,
Internet-based, home-based, and community programs have shown promise as alternative models for outpatient CR.\textsuperscript{51–54} In addition, women, the elderly, and patients with comorbidities appear to be less likely to receive an outpatient CR referral.\textsuperscript{15,55} Educating physicians and other healthcare professionals involved in patient care that all eligible patients benefit from outpatient CR can be an important step in broadening the referral base.

8. Continue research initiatives to fill gaps in CR literature. Poor CR referral patterns are also likely attributable to the lack of randomized controlled trials that include cohorts receiving modern therapy for CVD and current and comprehensive CR cost-effectiveness analyses that include examination of the impact of patient (eg, single-vessel disease with preserved ventricular function versus multivessel disease with diminished ventricular function) and program (eg, program location and commute distance [rural versus urban]) characteristics. These types of investigations, if they are properly conducted and produce positive findings, would further bolster support for CR.\textsuperscript{6}

**Conclusions**

CR and secondary preventive services have been well documented to reduce morbidity and mortality. In addition, focusing resources toward lifestyle changes and the spectrum of other secondary prevention therapies through multidisciplinary outpatient CR has been shown to improve risk factor management and to reduce costs. Despite the well-documented benefits, outpatient CR referral and participation rates remain disappointingly low. Therefore, greater efforts must be made to reinforce the importance of outpatient CR among healthcare systems, providers, and the public and thus to increase referral rates. Although enhanced efforts by inpatient and home health professionals to ensure outpatient CR endorsement and referral would not ameliorate all issues surrounding poor participation, such an approach is likely to be highly beneficial.

**Disclosures**

**Writing Group Disclosures**

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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.


Increasing Referral and Participation Rates to Outpatient Cardiac Rehabilitation: The Valuable Role of Healthcare Professionals in the Inpatient and Home Health Settings: A Science Advisory From the American Heart Association

Ross Arena, Mark Williams, Daniel E. Forman, Lawrence P. Cahalin, Lola Coke, Jonathan Myers, Larry Hamm, Penny Kris-Etherton, Reed Humphrey, Vera Bittner, Carl J. Lavie and on behalf of the American Heart Association Exercise, Cardiac Rehabilitation and Prevention Committee of the Council on Clinical Cardiology, Council on Epidemiology and Prevention, and Council on Nutrition, Physical Activity and Metabolism

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