

HEALTH POLICY STATEMENT

2015 ACC Health Policy Statement on Cardiovascular Team-Based Care and the Role of Advanced Practice Providers



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REFERENCES 2129

APPENDIX 1

Author Relationships With Industry and Other Entities (Relevant)—2015 ACC Health Policy Statement on Cardiovascular Team-Based Care and the Role of Advanced Practice Providers 2131

APPENDIX 2

Reviewer Relationships With Industry and Other Entities (Relevant)—2015 ACC Health Policy Statement on Cardiovascular Team-Based Care and the Role of Advanced Practice Providers 2132

APPENDIX 3

Abbreviation List 2136

PREAMBLE

This document has been developed as a health policy statement by the American College of Cardiology (ACC). Health policy statements are intended to promote or advocate a position, be informational in nature, and offer guidance to the stakeholder community regarding the stance of the ACC and other contributing organizations on healthcare policies and programs. Health policy statements are not intended to offer clinical guidance and do not contradict existing ACC clinical policy. They are typically overseen by the ACC Clinical Quality Committee, the group that represents an intersection of the work of the Science, Education, and Quality division and that of the Advocacy division of the College. The topic of team-based care was identified by the Clinical Quality Committee as an area of interest for a health policy statement in 2013, and an outline was circulated to various stakeholders who might be relevant to its development. During this process, the Board of Trustees and Executive Committee noted the specific need to clarify the College's position on the role of advanced practice providers in team-based care. Given the core constituency that advanced practice providers represent within the ACC and the complexity of the issues that might be addressed, the Board of Trustees and Executive Committee elected to take oversight responsibility for this statement. The Board and Executive Committee also engaged the Cardiovascular Team Section of the College, which had also been organizing a stakeholder roundtable summit to discuss team-based care. In the course of preparation of the document and summit, the scope of this statement was narrowed from the original Clinical Quality Committee proposal, which covered a broad range of topics on team-based care, to focus on the skills and expertise of specific team members, their education, and

potential organizational models. The summit was held in November, 2014, during which these topics were discussed in depth. The statement was drafted subsequently to summarize the information presented at the summit, and the resulting position is reflected in this statement.

To avoid actual, potential, or perceived conflicts of interest that may arise as a result of industry relationships or personal interests among the writing committee, all members of the writing committee, as well as peer reviewers of the document, are asked to disclose all current healthcare-related relationships, including those existing 12 months before initiation of the writing effort. These disclosures are reviewed to determine what companies make products (on market or in development) that pertain to the document under development. Based on this information, a writing committee is formed to include a majority of members with no *relevant* relationships with industry (RWI) and other entities, led by a chair with no *relevant* RWI. Authors with *relevant* RWI are not permitted to vote on recommendations pertaining to their RWI. On all conference calls, RWI is reviewed and updated as changes occur. Author and peer reviewer RWI pertinent to this document are disclosed in [Appendixes 1 and 2](#), respectively. In addition, to ensure complete transparency, authors' *comprehensive disclosure information*—including RWI not pertinent to this document—is available as an [online supplement](#) to this document. The ACC disclosure policy for document development is also available [online](#). The work of the writing committee was supported exclusively by the ACC without commercial support. Writing committee members volunteered their time to this effort. Conference calls of the writing committee were confidential and were attended only by committee members.

*Patrick O'Gara, MD, MACC
Immediate ACC Past President*

1. INTRODUCTION

1.1. Document Development Process

1.1.1. Writing Committee Organization

The ACC has a long-standing commitment to the concept of cardiovascular team-based care. For decades, our members have worked collaboratively within multidisciplinary teams that include cardiovascular nurses, technologists, cardiac surgeons, primary care physicians, and other specialists. More recently, we have seen the emergence of a group of team members that we will refer to collectively as advanced practice providers (APPs). This group includes advanced practice registered nurses (APRNs), physician assistants (PAs), and pharmacists (PharmDs). This position paper is meant specifically to address the policy of the ACC on

cardiovascular team-based care as it relates to the contributions of APPs.

1.1.1.1. Background and Rationale

The College reached out to nonphysician members of the cardiac care team in 2003, when the ACC Board of Trustees approved a new cardiac care associate membership category for cardiovascular registered nurses (RNs), clinical nurse specialists, nurse practitioners, and PAs (1). Soon after, the Nursing Education Work Group was established, and the ACC was awarded a Certificate of Accreditation as a provider of continuing nursing education from the American Nurses Credentialing Center. In 2007, cardiac care associate membership was extended to clinical cardiovascular PharmDs. In 2009, the ACC Board of Trustees approved the designation of Associate of the American College of Cardiology for APPs with board certification in their respective disciplines and at least 2 years of ACC membership, upon review of formal letters of recommendation. The ACC Board also approved the awarding of the title of Fellow of the American College of Cardiology to APPs with exceptional academic achievement. In 2010, an APP was added to the Board of Trustees, becoming the first nonphysician member of the board. During this time, the College increased its focus on cardiovascular team-based care and APPs through the development of several committees, sections, task forces, and councils. Currently, the College has over 4,600 cardiac care associate members, reflecting the deep and enduring commitment of the College to its newest group of members and to the concept of cardiovascular team-based care.

In the fall of 2014, the ACC leadership, at the direction of the Board of Trustees, appointed a multidisciplinary writing committee to articulate the ACC's official policy regarding cardiovascular team-based care as it relates to the contributions of APPs. The ACC also convened a daylong "think tank" meeting at Heart House on November 7, 2014, to examine regulatory, financial, and organizational barriers to achieving optimal cardiovascular team-based care. To facilitate a wide-ranging discussion, the ACC invited representatives from the professional societies for nursing, advanced practice RNs, PAs, and PharmDs; representatives from state licensing boards and other regulatory agencies; experts in payment models; representatives from other physician groups; and chairs of relevant ACC committees. This policy statement reflects the collective contributions of the writing committee, the think tank meeting, and numerous related College activities.

The College's early emphasis on cardiovascular team-based care was propitious because of anticipated physician workforce shortages (2) and multiple other challenges to cardiovascular healthcare delivery. Our

patients are older, are sicker, and present with more complicated conditions than ever before, and the field of cardiovascular medicine has become strikingly more complex. Physicians are accountable for an increasing number of quality and performance measures and must fulfill public reporting as well as new maintenance of certification requirements, and new, intricate payment models. Healthcare systems are rapidly consolidating, and cardiologists are increasingly seeking the security of integration with hospitals and large healthcare systems (3,4). Finally, the Affordable Care Act has already added millions of newly insured patients to the healthcare market, which, along with the aging population and the epidemics of obesity and diabetes mellitus, could markedly increase the demand for cardiovascular services (2). These rapidly changing environmental factors are placing stress on the practice of cardiovascular medicine in new and unpredictable ways. Cardiovascular team-based care models can provide efficiencies and other enhancements that will help physicians and other providers cope with the demands of today's practice environment and positively impact patients and their care.

Many cardiology practices have avidly embraced the concept of team-based care. Its implementation may vary depending on the size and setting of a practice, state regulations, and workforce availability. Other practices have not adopted team-based care, possibly owing to a lack of awareness of the capabilities of APPs and the advantages of multidisciplinary approaches to care delivery. Additionally, regulatory or financial factors may also constitute barriers that have inhibited practices from embracing cardiovascular team-based care.

This position paper focuses on APPs because these members of the cardiovascular team have the requisite education, training, and experience to allow them greater autonomy, thus extending a team's capabilities. In addition, other longstanding members of the cardiovascular team should be recognized for their continued contributions to effective cardiovascular team-based care. These team members include registered nurses, licensed practical nurses, medical assistants, nurse aides, technologists, nutritionists, genetic counselors, social workers, and chaplains. These other team members can take on added responsibilities requiring a high level of skill over time, but their formal training and licensing requirements have remained relatively constant, and they are not the focus of this report. It should be emphasized, however, that these other team members are highly valued.

This health policy statement will inform ACC members and the public about the capabilities of APPs, discuss existing barriers to cardiovascular team-based care, offer successful examples, and provide recommendations for improving the provision of cardiovascular team-based care. Finally, this paper will illustrate ways that

cardiovascular team-based care enables the provision of care that is of higher quality and results in greater patient and provider satisfaction than any single team member can provide independently.

2. TRAINING AND QUALIFICATIONS OF TEAM MEMBERS

Members of the cardiovascular care team come from a variety of professional disciplines with distinct education and training pathways, resulting in a rich diversity of talent and capabilities. The general curriculum for APPs includes physiology, pathophysiology, pharmacology, psychology, and varying amounts of clinical experience, depending on the type of degree. Degree-granting institutions are accredited according to national standards. Each APP takes a qualifying examination in his or her state and is board-certified by the appropriate national organization upon successful completion of all necessary steps. These requirements are listed in [Table 1](#).

Residency and fellowship training programs are well established for cardiologists, and a variety of opportunities exists for post-graduate training for PharmDs and PAs. The Accreditation Review Commission on Education for the Physician Assistant, Inc. is currently revising its accreditation process for PA post-graduate programs; however, APRNs (which include both nurse practitioners and clinical nurse specialists) have few formal opportunities for postgraduate training in cardiovascular care. The Institute of Medicine Committee on the Future of Nursing has recommended developing residency training programs and other additional educational opportunities for APRNs (5). For both APRNs and PAs, the stated intent of the established degree program is to provide a general education in the given field. At present, most APPs working as members of cardiovascular teams receive their cardiovascular specialty training through informal apprenticeship training programs developed by individual practices and hospitals. These advanced and/or specialty training programs vary in length, are usually funded by the practices and hospitals in which the APP is employed, and may last for 3 to 6 months.

As noted, fellowship training and certification requirements for cardiologists are well established. Since 1995, the details for training cardiovascular fellows have been specified in a series of documents produced by the ACC called, collectively, the Core Cardiovascular Training Statement (COCATS) (6). The COCATS documents provide curricular content for training programs that goes beyond the broad ACGME minimum requirements for residency and fellowship. The documents define progressive levels of skills and competency in designated areas and provide a level of specificity that has informed ABIM requirements for certification. Over the years, these documents have

become more focused on competency-based training, curricular milestones, and learner outcomes than on duration of time or the specific number of procedures performed (e.g., coronary angiograms). They help define the entrustable professional activities of the cardiology profession. Interestingly, 1 entrustable professional activity in COCATS 4 is the ability to provide cardiovascular team-based care (team-based care is also listed as a core competency for residency and fellowship training by the ACGME). Currently, there are no corresponding documents that delineate the core competencies of cardiovascular APPs.

3. ROLES OF TEAM MEMBERS

The post-graduate training experience of APPs largely determines their role on a cardiovascular team. All cardiovascular APPs are taught problem-solving algorithms, treatment protocols, procedures, and standards for general cardiovascular care. Many APPs are taught to practice in a focused area of cardiovascular care, such as heart failure.

The diversity of backgrounds for APPs should be viewed as an asset for the team. For example, nurse practitioners may be particularly focused on chronic disease management, patient education, and transitions of care, whereas clinical nurse specialists may be focused on developing and improving specific cardiovascular programs. The tasks of physician assistants tend to be modeled on the technical and clinical tasks of the physicians, thus expanding the overall capabilities of physician-led teams. PharmDs may be focused on tasks such as medication reconciliation during care transitions, improving medication adherence, providing prevention care, and managing complex drug therapy.

A discussion paper written in 2012 by an Institute of Medicine roundtable on team-based care defined 5 personal values or attributes that are frequently seen among members of well-functioning teams: honesty, discipline, creativity, humility, and curiosity (7,8). These values are particularly relevant for cardiovascular care, which can sometimes be perplexing, stressful, and exhausting. Teams should be honest and transparent about uncertainty and mistakes. Team members should be disciplined regarding their roles and responsibilities and about when to call for help from a more knowledgeable or experienced team member. Clinical cardiology calls for creativity to tackle the unique problems of individual patients in a patient-centered fashion. The complexity of cardiovascular medicine demands a degree of humility and honest recognition of the degree of ambiguity in clinical practice. Finally, curiosity can engender an attitude of continuous quality improvement and constant learning. To allow members to grow and develop

TABLE 1 Education, Licensing, Credentialing, Advanced Training, and Certification Requirements of Cardiovascular Team Members

Requirement	Cardiologist	APRN	PA	PharmD	RN
Education	4 years for an MD or DO degree (after obtaining undergraduate degree) in a school accredited by the LCME of the AAMC and AMA or the AOA	2 years for a MSN (after obtaining an RN/BS or BSN degree) and 2-3 additional years for those who choose to obtain a DNP or 2-4 additional years for a PhD (completed within 7 years) in a school accredited by the AACN	2-3 years for a PA master's degree in a school accredited by the ARC-PA (after obtaining undergraduate degree), and 1-3 additional years for those who choose to obtain a DHSc or DScPA degree	4 years for a PharmD (after 2-4 years of undergraduate study) in a school accredited by the ACPE	Up to 4 years for a diploma in nursing, associate's degree, or baccalaureate degree in nursing in a school accredited by the CCNE or ACEN
Testing for licensure	USMLE examination for physicians with an MD degree, or the COMLEX-USA examination for physicians with a DO degree, parts 1-3	Examination administered by the ANCC, AANP, and AACN	PANCE administered by the NCCPA	NAPLEX and state-specific examinations	NCLEX
Licensure	State board of medicine	State board of nursing (in some states, both the board of nursing and board of medicine)	State board of medicine (a few states have a separate physician assistant board)	State board of pharmacy	State board of nursing
Added certifications	Not applicable to physicians, who have official board certifications*	E.g., heart failure, lipid management, anticoagulation (ANCC, AACN, or other certifying organizations)	E.g., cardiovascular and thoracic surgery, emergency medicine, hospital medicine (NCCPA), lipid management	E.g., lipid management, anticoagulation, BCPS AQ-Cardiology	E.g., heart failure, lipid management, anticoagulation (ANCC)
Residency	3 years in a program accredited by the ACGME or AOA; certified by ABIM, AOBIM, or ABP	Not available	Limited availability	1-2 years optional (ASHP, ACCP)	Not available
Fellowship	3 years in a program accredited by the ACGME or AOA, with the 3 years then certified by ABIM, AOBIM, or ABP	Very limited availability	Limited availability	1-2 years optional (ASHP, ACCP)	Not available
Advanced fellowship	1-2 years in a program accredited by the ACGME or AOA, with the 1-2 years certified by the ABIM or AOBIM	Not available	Not available	Not available	Not available
Maintenance of licensure	Every 2 years	Every 2 years	Every 1-2 years	Every 1-2 years	Every 2 years
Maintenance of certification (MOC)*	ABIM secure examination every 10 years with record of MOC activity every 2 years and demonstration of 100 points of MOC activity every 5 years, or OCC for DO physicians	Every 5 years; requires documentation of practice hours, of CE (100 hours), and of scholarly activities; retesting if certification has lapsed	PANRE examination every 10 years and documentation of at least 100 hours of CME every 2 years (administered by the NCCPA)	BCPS (AQ Cardiology) portfolio review every 7 years	Every 5 years

*ABIM is currently making revisions to MOC requirements.

AACN = American Association of Colleges of Nursing; AAMC = Association of American Medical Colleges; AANP = American Academy of Nurse Practitioners; ABIM = American Board of Internal Medicine; ABP = American Board of Pediatrics; ACCP = American College of Clinical Pharmacy; ACEN = Accreditation Commission for Education in Nursing; ACGME = Accreditation Council for Graduate Medical Education; ACPE = Accreditation Council for Pharmacy Education; AMA = American Medical Association; ANCC = American Nurses Credentialing Center; AOA = American Osteopathic Association; AOBIM = American Osteopathic Board of Internal Medicine; APRN = advanced practice registered nurse; AQ = Added Qualifications; ARC-PA = Accreditation Review Commission on Education for the Physician Assistant, Inc.; ASHP = American Society of Health-System Pharmacists; BCPS = Board-Certified Pharmacotherapy Specialist; BS = Bachelor of Science; BSN = Bachelor of Science in Nursing; CCNE = Commission on Collegiate Nursing Education; CE = continuing education; CME = continuing medical education; COMLEX-USA = Comprehensive Osteopathic Medical Licensing Examination of the United States; DHSc = Doctor of Health Science; DNP = Doctorate of Nursing Practice; DO = Doctor of Osteopathic Medicine; DScPA = Doctor of Science Physician Assistant; LCME = Liaison Committee on Medical Education; MOC = maintenance of certification; MSN = Masters of Science in Nursing; NAPLEX = North American Pharmacist Licensure Examination; NCCPA = National Commission on Certification of Physician Assistants; NCLEX = National Council Licensure Examination; OCC = Osteopathic Continuing Certification; PA = physician assistant; PANCE = Physician Assistant National Certifying Exam; PANRE = Physician Assistant National Recertifying Exam; PharmD = Doctor of Pharmacy; PhD = Doctor of Philosophy; RN = registered nurse; USMLE = United States Medical Licensing Examination.

over time, team leaders should be aware of the individual aspirations of each team member. Teams that espouse these values will deliver more cooperative and effective cardiovascular team-based care, and will

demonstrate these core team values to the patient and his or her family.

The most important member of any cardiovascular care team is the patient (9,10). The patient and the patient's

family should be included in discussions about treatment and have the final say on the overarching goals of care. These goals should be clearly articulated and understood by all members of the care team.

A useful motto for cardiovascular team-based care is “shared goals and clear roles.” Each team member should have a clear understanding of his or her functions, responsibilities, and what is expected of him or her. Team members’ roles are developed through explicit preparation and systematic development of specific knowledge, skills, interests, and resources. Each member should be supported by a feeling of mutual trust and guided by effective communication among team members. Finally, shared goals should be monitored by measurement and feedback of the team’s processes and outcomes, with a clear mechanism for correcting any deficiencies (7).

Implementing the motto of “shared goals and clear roles” will create greater stability in team composition over time, increasing the reliability and effectiveness of the team as a whole. The range of activities for each team member may expand, reflecting the accumulating experience of a team member, and may vary, reflecting revised team goals and tasks. For efficiency, members should have sufficient autonomy to reduce overlap in functions. Every team should strive to make the highest and best use of the education, training, experience, and talents of each team member.

3.1. Leadership

Questions arise regarding who leads cardiovascular teams. We should re-emphasize that the ultimate leader for patient care is, of course, the patient. It is the informed patient, in consultation with family, who should ultimately determine the goals of cardiovascular team-based care. The objective of healthcare teams should be to engage the patient in a constructive collaboration of care, to seamlessly merge the patient’s desires and aspirations with the science and art of medicine.

As noted by the Institute of Medicine roundtable on team-based care, issues of leadership are sometimes entangled with disputes over scope of practice and whether all teams should be physician-led (7). The Institute of Medicine roundtable notes that these issues seem to be less problematic in the field than they are in the political arena, and that observation seems true for cardiovascular teams as well. Front-line practitioners usually have no trouble figuring out who is the logical leader of the team. Leadership of healthcare teams can be situational, clinical, or managerial, depending on the charge and the task that the team is undertaking.

Historically, the leader of a cardiovascular team has been a cardiologist. It is our position that leadership should be flexible, reflecting the specific needs of the patient at a particular time and setting. For example, a

chaplain or a social worker may lead a team meeting to discuss transition to palliative care; a nurse or a pharmacist may lead a team that organizes a chronic anticoagulation clinic; and an APRN or PA may lead a team that coordinates transitions of care. The leader should be the team member with the greatest knowledge and experience and the best qualifications for the leadership task at hand. Organizations should clearly define delegated leadership roles to provide support for the assigned leaders and ensure the team’s successful completion of the task.

For clinical leadership, the most important factor for determining the leader is the amount of knowledge, training, and experience a person brings to the task. For most clinical matters of cardiovascular team-based care, the overall leader will be a cardiologist. In general, cardiologists have substantially more training and have the certifiable competencies that patients and the public expect for leadership and oversight of a clinical cardiovascular care team. Well-functioning teams should readily respect the clinical qualifications of the clinical leader, and the clinical leader should match that respect with a level of humility that will engender candid dialogue and feedback among team members.

Managerial leadership is affected by a number of organizational factors. In academic practice, managerial leadership is determined by hierarchical academic structures. In private practice, managerial leadership is usually determined by ownership and the bylaws of the firm. In nonacademic integrated practice, the managerial leadership is determined by comanagement agreements and legal contracts. For clinical program development, the cardiologist will be the logical leader for clinical matters, collaborating with other clinical team members and administrative partners for overall program development and supervision.

It should be abundantly clear to all team members and to patients and families who the leader is for each particular task. Patients often ask, “Who is in charge?” They should, therefore, be clearly informed about the identity of the leader and how other team members will interact with the leader to accomplish the team’s—and the patient’s—goals. Some well-functioning teams provide patients with brochures or web-based guides with pictures of team members and descriptions of their roles, expectations, and relationships with others on the cardiovascular team. Patients often identify an APP as their day-to-day “go-to” person who is most consistently available to guide them through the confusion of a hospitalization and the transition to the home.

Rather than promoting fixed and inflexible rules regarding team leadership, we should recognize that the members of the cardiovascular team are professionals, and as such, are self-regulated. This sense of self-

regulation will engender an attitude that the team leadership role goes to the team member who is most qualified to lead the team to perform the task at hand in a patient-centered and responsible fashion.

3.2. Accountability

A well-functioning team should clearly state what is expected of each team member and the ways in which each member is accountable for accomplishing specifically designated tasks and goals. The team should also be clear about who has ultimate accountability for the overall mission of the team, as ambiguity and diffusion of accountability are detrimental to the quality of patient care. For both clinical and legal reasons, ultimate accountability for the clinical care of cardiovascular patients will continue to rest with the cardiologist.

As a result of the increasing use of public reporting and pay-for-performance programs, teams are more accountable for their performance than in the past. Generally, the performance measures used in these programs are hospital- or practice-level measures of processes and outcomes. Policy makers and payers choose performance measures with measurement feasibility, clinical validity, and statistical credibility. In addition, there are opportunities for teams to measure performance for internal use with measures that may not be as statistically robust as externally reportable measures; these internal measures can sometimes provide an early signal for continuous quality improvement.

4. BARRIERS TO BROAD DISSEMINATION OF CARDIOVASCULAR TEAM-BASED CARE

4.1. Regulatory Barriers

Licensure of practitioners is regulated by states. Each state and territory in the United States generally has a Medical Practice Act and a Nurse Practice Act that

establish a board of medicine, a board of nursing, and a board of pharmacy to regulate the activities of healthcare practitioners. The laws regarding scopes of practice are established by statute. State boards can write rules, enforce laws, and sanction practitioners, but the lawmakers of each state are responsible for writing the laws that determine licensing requirements and scope-of-practice regulations.

Licensing requirements for practitioners are listed in **Table 2**. In all states, physicians are granted an unrestricted license to practice medicine after completing medical school or a school of osteopathy and 1 year of internship, and after passing their board examinations. For physicians, there are no statutory licensing restrictions on scope of practice. Instead, any such restrictions are largely regulated by hospital credentialing rules and community standards of care. Physicians (as well as other practitioners) who practice outside what is generally accepted as the standard of care for their scope of practice can be reported to state medical boards and subjected to hospital disciplinary actions, malpractice lawsuits, and other legal proceedings with potentially serious consequences.

PAs are licensed by state boards of medicine in most states and by physician assistant boards in a few. In all U.S. states and territories, PAs are licensed to practice medicine under the supervision of a physician, who has broad discretion over what clinical activities can be delegated to a PA. Many states require a formal collaborative practice agreement (CPA) between the PA and a physician. PAs are granted prescriptive authority in all 50 states.

Pharmacists are licensed by state boards of pharmacy and may perform certain patient care services within their scope of practice (e.g., medication reviews, patient education and counseling, disease screening, and referral) in all 50 states. CPAs can expand the services that

TABLE 2 Licensing Requirements of Cardiologists, Advanced Practice Providers, and Registered Nurses

Practitioner	Requirement
Cardiologist (MD, DO)	Graduation from medical school or school of osteopathy; 1 year of internship (during which time an interim license is granted); and successful completion of the USMLE examination part 3; renewal every 2 years.
Advanced practice registered nurse (APRN)	Varies by state, but generally graduation from APRN graduate-level program and successful completion of ANCC, AANP, or AACN certification examination in appropriate role and population specialty area; renewal every 2 years. Some states do not license their APRNs.
Physician assistant (PA)	Graduation from an accredited physician assistant program and successful completion of the NCCPA board certification examination; renewal every 2 years.
Pharmacist (PharmD)	Graduation from an accredited college or school of pharmacy; successful completion of the NAPLEX examination and state jurisprudence examination; renewal every 1-2 years.
Registered nurse (RN)	Diploma in nursing, associate or baccalaureate degree in nursing, and successful completion of the NCLEX examination; renewal every 2 years.

AACN = American Association of Critical-Care Nurses; AANP = American Academy of Nurse Practitioners; ANCC = American Nurses Credentialing Center; APRN = advanced practice registered nurse; NAPLEX = North American Pharmacist Licensure Examination; NCCPA = National Commission on Certification of Physician Assistants; NCLEX = National Council Licensure Examination; USMLE = United States Medical Licensing Examination.

pharmacists provide to patients. A CPA defines patient care functions that a pharmacist can provide autonomously within the context of a defined protocol (e.g., providing patient assessments, counseling, and referrals; ordering laboratory tests; administering drugs; and selecting, initiating, monitoring, continuing, and adjusting drug regimens). Currently, 48 states and the District of Columbia allow CPAs to be created. CPA provisions vary greatly by state in terms of the extent of the pharmacists' authorized services, limitations on practice sites and health conditions, authority to order laboratory tests, and requirements for pharmacist participation.

APRNs, which include certified nurse practitioners, certified nurse midwives, certified registered nurse anesthetists, and clinical nurse specialists, are licensed by state boards of nursing. In some states, APRNs are licensed by both the board of nursing and the board of medicine. State licensing requirements, regulations regarding scope of practice, and the limits within which APRNs can practice vary considerably between states. Currently, 19 states give APRNs statutory authority to practice without a written CPA with a supervising physician. Additionally, 19 states have various requirements regarding physician involvement for the APRN to prescribe but not to diagnose and treat. Twelve states require physician involvement to diagnose, treat, and prescribe (11,12).

In 2010, the Institute of Medicine, in collaboration with the Robert Wood Johnson Foundation, published a report entitled *The Future of Nursing: Leading Change, Advancing Health* (5). This report called for regulators to allow nurses to practice "to the full extent of their education and training" through the elimination of regulatory barriers. The report also recommended improvements in nursing education and training, a full-partnership role for nurses in redesigning the healthcare system, and better workforce planning and policymaking through better data and information gathering. It additionally suggested that changing state regulations to extend the role of nurses would help alleviate present and future shortages in primary care. This report has generated considerable controversy between nursing organizations and physician organizations, particularly those that represent primary care physicians.

In 2011, the U.S. Surgeon General's office released a report entitled *Improving Patient and Health System Outcomes through Advanced Pharmacy Practice* (13). This report documents the benefits of pharmacist-delivered care in many healthcare settings and recommends that healthcare leadership and policy makers optimize the pharmacist's role in delivering patient-centered care and disease prevention services in collaboration with physicians or as part of a healthcare team. The report recognizes that policy, legislation, and

compensation barriers often hinder the expansion of pharmacist services.

The Future of Nursing, in particular, has created considerable controversy regarding whether APRNs should be licensed to practice independently in primary care settings. The hot-button issues that are part of that controversy, such as practice independence, competition, and restraint of trade, are not germane to the present discussion on cardiovascular team-based care. Issues that are germane to cardiovascular team-based care, such as interdependency, cooperation, autonomy, efficiency, and effectiveness, however, are not controversial. By "autonomy," we mean self-reliant team members who do not require direct supervision, thereby avoiding duplication of effort. We distinguish "autonomy" from "independence," the latter referring to practitioners acting alone and not in a team-based model. The heated controversy about independent practice should not become a distraction as we work to improve the quality of cardiovascular team-based care and thereby improve patient outcomes.

An issue raised in *The Future of Nursing* that is germane to cardiovascular team-based care is the wide variability in prescriptive authority among providers and across states. Inconsistency between states in terms of what PAs, APRNs, and PharmDs are licensed to prescribe can become a barrier to broad-based implementation of cardiovascular team-based care (5,11). Furthermore, this state-by-state variability can create impediments to the development of national consensus documents and national standards regarding cardiovascular team-based care. PAs have fairly uniform regulations across states regarding prescriptive authority. Greater state-by-state uniformity in the prescriptive authority of APRNs and PharmDs would be a step forward for improving cardiovascular team-based care.

4.2. Payment Barriers

A second barrier for cardiovascular team-based care relates to payment by Medicare and commercial payers. In general, Medicare payment rules are confusing, complex, and open to interpretation by fiscal intermediaries. Practitioners may be reluctant to embrace cardiovascular team-based care because of a poor understanding of the rules and fear of an allegation of payment fraud.

Medicare pays for some services performed by a PA or nurse practitioner (but not a PharmD) under a physician's supervision. Physician supervision is defined as general (where the physician's direct presence is not required), direct (in the office setting with the physician in the office suite and immediately available), or personal (with the physician in the room during the performance of the procedure). For evaluation and management coding, the level of physician supervision is 1 factor that determines

the charge that an APP can submit to Medicare. According to Medicare rules, physician supervision cannot be delegated to an APP. For example, an APP can perform but not supervise an exercise stress test.

In the outpatient setting, some APP services can be covered under the “incident to” designation, which means that the service is furnished under the direct supervision of a physician by that physician’s employee for a service that is integral, although incidental, to the physician’s professional service. This usually pertains to a follow-up office visit provided by an APP, following the physician’s documented plan of care. When billing “incident to,” the provider is reimbursed at 100% of the Medicare reimbursement rate, whereas if service is not “incident to” and the bill is submitted under the APP, it would be reimbursed at 85% of the physician rate. For patients seen by APPs billing “incident to,” the physician is expected to stay actively involved in the care, with a direct visit every 6 to 12 months, or more frequently if necessary.

“Incident to” billing does not apply to care delivered outside of the office setting. In the hospital, the APP role in cardiovascular team-based care may be “pre-rounding” on patients who are also seen by the physician and billed under the physician’s provider number. This is referred to as a “shared-service” visit, and the documentation must represent the work of the team. Specifically, if the visit is billed this way, the physician must document his or her direct encounter with the patient and the elements of the examination, visit, and medical decision-making that he or she personally provided. The combined documentation (either a shared note or 2 linked notes) of both the physician and the APP provides the basis for the billed code. If an APP sees a patient independently in the hospital, the bill is submitted under the APP and reimbursed at 85% of the physician rate.

Because pharmacists are not recognized as providers for Medicare Part B services, they may only bill using the lowest level reimbursement code (i.e., level 1 or 99211) in most outpatient clinic settings. The amount of time needed for an office visit for even a moderately complex patient makes it virtually impossible for a PharmD to generate enough revenue to offset the cost of seeing patients in this manner.

New payment codes now allow an APP to bill for transitional care as well as new chronic care management services that may not require face-to-face services. Final rules regarding the flexibility and supervision of chronic care management are pending. These services will help improve communication and coordination of cardiovascular team-based care.

Many practices employ APPs in both the office and hospital setting. In the office, the APP can provide billable services that provide both practice income and better

access for patients. In the hospital, the APP does not submit a bill for a shared visit, but the cost of the APP’s unreimbursed activity can be justified by the gain in physician efficiency.

Commercial payers have varying policies regarding APPs. Whereas many have payment policies that are similar to Medicare, some do not even credential APPs. The ACC’s payer advocacy members and staff will continue to advocate for fair APP billing policies.

4.3. Future Payment Models

The future of the fee-for-service payment model is uncertain. There is much talk about moving from this payment model that rewards volume to one that rewards value. In the new models, providers will be paid incentives to reach targets for quality, efficiency, and patient satisfaction. Medicare and commercial payers are actively pursuing several alternative payment models and the 2 most prominent examples are payment models associated with accountable care organizations, and bundled payment models. These new models represent both an opportunity and a challenge for cardiovascular team-based care. The key to success will be to assign the right clinician to the right clinical task and patient at the right time to enhance efficiency and avoid indiscriminately replacing more-skilled providers with less-skilled providers (5).

The Secretary of the Department of Health and Human Services has stated that the Department’s goal is to have 30% of Medicare payments tied to quality and value through alternative payment models by the end of 2016 and 50% of payments by the end of 2018 (14). Medicare is currently implementing these new payment models through programs such as the Pioneer Accountable Care Organization model and the Medicare Shared Savings Program. In these models, practitioners share a varying degree of financial risk and are rewarded for improved efficiency while meeting specified quality performance targets. Medicare is also implementing bundled payment programs for acute care (delivered at the time of an index hospital admission), for acute and postacute care (which includes care given for 30 days after an index admission), and for postacute care alone. In addition, Medicare is now applying financial penalties and bonuses to hospitals through its value-based payment program on the basis of 30-day mortality rates and 30-day readmission rates for particular conditions, including acute myocardial infarction and congestive heart failure. These global and bundled payment models will reframe the value agenda to include measures of patient satisfaction and efficiency and will create financial incentives for greater coordination and consolidation of care. It remains to be seen whether the payments will be sufficient to adequately support the provision of cardiovascular team-based care.

In addition, how global or bundled payments are distributed internally will be an administrative challenge for cardiovascular teams.

Commercial health plans are also implementing new payment models through the patient-centered medical home model, including additional per-member, per-month payments for coordinating care and achieving certain quality targets. In addition, health plans are implementing accountable care organization models for the commercial population.

Going forward, the challenge for cardiovascular team-based care will be to successfully navigate the transition to new payment models. It will be extraordinarily difficult to provide high-quality care in a “mixed” transition environment. This looming challenge is 1 reason why so many cardiology practices have integrated into large health systems. Integration and cardiovascular team-based care may help mitigate the difficulty that providers will encounter as they transition to these new payment models.

5. EXAMPLES OF EFFECTIVE CARDIOVASCULAR TEAM-BASED CARE

The cardiovascular field has pioneered many models of cardiovascular team-based care. Examples of cardiovascular team-based care are listed in [Table 3](#).

Clinics for patients with chronic and advanced heart failure have a long history and extensive experience in cardiovascular team-based care (15). A 2011 national survey of programs that followed patients with chronic heart failure, cardiac transplants, and mechanical circulatory support devices included 257 unique practices in the United States (16). Average staffing utilization constituted

2.65 physician full-time equivalents, 2.21 APP full-time equivalents, and 2.61 RN coordinator full-time equivalents. The survey noted that as programs grow, physicians, APPs, and RNs are hired in equivalent numbers to meet the expanding needs of a larger patient population. These teams used a variety of methods, including telephone monitoring, electronic home monitoring, and web-based assessment to extend the reach of care. This survey reminds us of the important role provided by RNs, in addition to physicians and APPs, in cardiovascular team-based care. By working in teams, heart failure clinic providers have been able to adjust to both the expanding numbers of patients and the increasing intensity of care that patients require.

The ACC’s Hospital-To-Home (H2H) quality improvement initiative is an effort to reduce hospital readmission rates by improving the transition to the outpatient setting for patients with congestive heart failure and acute myocardial infarction (17). The initiative encourages the use of specific strategies for smoothing the transition to outpatient care. A key aspect of the project is to encourage the use of teams, including PharmDs and nurses, to ensure optimal discharge medication management, and to educate patients to be self-activated regarding the signs and symptoms of recurring problems.

Another early example of cardiovascular team-based care is the Cardiac Hospitalization Atherosclerosis Management Program, established in 1994 at the University of California at Los Angeles (18). This cardiovascular team-based care program has shown improvements in the provision of evidence-based therapies in a chronic care setting.

Kaiser Permanente of Colorado has developed the Collaborative Cardiac Care Service. This care model is

TABLE 3 Examples of Cardiovascular Team-Based Care

Setting	APP or RN	Advantage
Hospital transitions of care	Transitional care model (17,24,25)	Reduced readmissions
Chronic heart failure management	Disease-state management (15,16)	Reduced hospitalizations, reliable use of evidence-based therapies, dose titrations, consistent documentation of education
Lipid clinics	Disease-state management	Reliable use of evidence-based therapies, consistent documentation of lifestyle education
Hypertension clinics	Disease-state management	Improved blood pressure control, better use of evidence-based therapies, reliable documentation of lifestyle education
Anticoagulation clinics	Disease-state management	Improved patient safety through reliable education and assessment, drug/food interaction monitoring, and improved time in therapeutic range
Exercise stress laboratories	Care supervision (22)	Efficient use of workforce
Structural heart programs	Care coordination (23)	Improved access and care coordination
Arrhythmia management for pacemakers and implantable cardioverter-defibrillators	Disease-state management	Improved access and care coordination
Cardiology-specific medical home	Disease-state management	Improved access and care coordination
Outreach to rural clinics and remote locations	Disease-state management	Improved access, connected by telemedicine and electronic health records

APP = advanced practice providers; RN = registered nurse.

directed by a physician and employs APRNs and PharmDs in direct patient care roles. The program uses an electronic medical record, patient-tracking software, and telephone follow-up to apply reliable, evidence-based therapies for chronic disease management and risk factor modification and to provide education to patients and other team members. The model has reported substantial improvements in patient outcomes (19,20).

The unique Grand-Aides Program employs APPs or RNs as supervisors and nurse aides or community health workers as nurse extenders who visit patients in their homes to educate, monitor, and optimize adherence to medications and dietary restrictions and to reconcile medications in the home—all under the direct video supervision of an APP (21). This is a new concept that promises to improve readmission rates and other outcomes. The early data show a 58% reduction in heart failure readmissions (21).

Another example of cardiovascular team-based care is in the cardiac stress-testing laboratory. A recent scientific statement from the American Heart Association articulated a clear set of guidelines for the training and supervision of team members that ensures patient safety and quality in the cardiac stress laboratory (22). Non-physicians (usually APPs) directly monitor most routine stress tests under the supervision of a cardiologist, with clear delineation of roles and responsibilities being paramount to ensure patient safety. Current Medicare rules require direct physician supervision for reimbursement for cardiac stress testing, but revised payment rules could enable APPs to perform these tasks with greater flexibility.

The medical literature is full of examples of team-based care in integrated healthcare systems. APPs have been an essential component of multidisciplinary heart teams that have introduced complex new technologies, such as transcatheter aortic valve replacement, into cardiovascular practice (23). Cardiac rehabilitation programs and anticoagulation clinics have relied on team-based care over the years. There are also many unpublished examples in communities across the country in which independent practices have effectively embraced the concept of team-based cardiovascular care. Cardiovascular teams will continue to define new and creative examples of team-based care to address future challenges.

6. OPPORTUNITIES TO IMPROVE CARDIOVASCULAR TEAM-BASED CARE

Broad dissemination of cardiovascular team-based care paradigms will be realized by further educating the cardiology community about their components, characteristics, and potential to improve patient outcomes. This document is meant to fulfill this educational opportunity

by informing ACC members and others about the value and potential of APPs in cardiovascular team-based care.

The creation of a COCATS-equivalent Task Force that specifically focuses on APRN, PA, and PharmD cardiovascular training could provide an opportunity to improve the training and certification of APPs. Most APPs receive their cardiovascular training in hospitals and practices across the country, without a set of standard core competencies or training milestones. A COCATS-equivalent Task Force on APRN, PA, and PharmD education could provide national consensus on core competencies, guidance on how APPs should be trained, and delineation of their expected contribution to the cardiovascular team. Currently, nurse practitioners, PAs, and PharmDs have different educational pathways, and a COCATS-type document could reduce or eliminate the problem associated with different training silos while respecting the uniqueness of the different disciplines. It would further benefit APPs if the COCATS-type document defined a certifiable level of competency that could be transported from employer to employer. Thus, a COCATS-type document for APPs could lead the way to more consistent training and more reliable attainment of core competencies, and could spur the development of specialty certifications for APPs in cardiology.

There are opportunities to expand interprofessional education that will enable APPs to attain and maintain the knowledge and technical skills required for optimal performance in the rapidly changing field of cardiovascular medicine (26,27). Interprofessional education facilitates greater interaction among providers across different disciplines. The interaction leads to conversations that can inspire new thinking and ideas for improving cardiovascular team-based care and can help dispel lingering, misguided professional stereotypes (28). The ACC should develop combined programs and purposeful educational opportunities that meet the learning needs of APPs and should work with nursing, physician assistant, and pharmacy organizations to ensure that these educational efforts are aligned with the educational strategies of the respective professional organizations.

The ACC will continue its advocacy efforts for sensible payment reforms and should continue to work on the design of cardiovascular team-based care that meets the future clinical demands in a way that conforms to emerging payment models.

Finally, the ACC will continue to explore emerging technologies that extend the capabilities of cardiovascular team-based care, including telemedicine and virtual teams. Having established the value of team-based care, ACC activities can now work creatively to develop team-based care models that expand the reach of cardiovascular care and enable geographic extensions of care to underserved regions.

7. SUMMARY

The mission of the American College of Cardiology is “to transform cardiovascular care and improve heart health.” Cardiovascular team-based care is a paradigm for practice that can transform care, improve heart health, and help meet the demands of the future. One strategic goal of the College is to help members successfully transition their clinical practices to the future, with all its complexity, challenges, and opportunities. The ACC’s strategic plan is aligned with the triple aim of improved care, improved population health, and lower costs per capita. The traditional understanding of quality, access, and cost is that you cannot improve one component without diminishing the others. With cardiovascular team-based care, it is possible to achieve the triple aim of improving quality, access, and cost simultaneously to also improve cardiovascular health. Striving to serve the best interests of patients is the true north of our guiding principles. Cardiovascular team-based care is a model that can improve care coordination and communication and allow each team member to focus more on the quality of care. In addition, the cardiovascular team-based care model increases access to cardiovascular care and allows expansion of services to populations and geographic areas that are currently underserved.

This document will increase awareness of the important components of cardiovascular team-based care and

create an opportunity for more discussion about the most creative and effective means of implementing it. We hope that this document will stimulate further discussions and activities within the ACC and beyond about team-based care. We have identified areas that need improvement, specifically in APP education and state regulation. The document encourages the exploration of collaborative care models that should enable team members to optimize their education, training, experience, and talent. Improved team leadership, coordination, collaboration, engagement, and efficiency will enable the delivery of higher-value care to the betterment of our patients and society.

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**APPENDIX 1. AUTHOR RELATIONSHIPS WITH INDUSTRY AND OTHER ENTITIES (RELEVANT)—
2015 ACC HEALTH POLICY STATEMENT ON CARDIOVASCULAR TEAM-BASED CARE AND
THE ROLE OF ADVANCED PRACTICE PROVIDERS**

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APPENDIX 2. REVIEWER RELATIONSHIPS WITH INDUSTRY AND OTHER ENTITIES (RELEVANT)— 2015 ACC HEALTH POLICY STATEMENT ON CARDIOVASCULAR TEAM-BASED CARE AND THE ROLE OF ADVANCED PRACTICE PROVIDERS

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Michelle J. Nickolaus	Content Reviewer—ACC Cardiovascular Team Section Leadership Council	Susquehanna Health Heart and Vascular Institute—Lead Nurse Practitioner, Cardiology	None	None	None	None	None	None
Dorothy Pearson	Content Reviewer—ACC Cardiovascular Team Section Leadership Council	Children's Hospital Boston—Physician Assistant	None	None	None	None	None	None
Donna M. Polk	Content Reviewer—ACC Cardiology Training and Workforce Committee	Hartford Hospital—Director, Preventive Cardiology	None	None	None	None	None	None
Athena Poppas	Content Reviewer—ACC Clinical Quality Committee	Rhode Island Hospital Division of Cardiology, Brown Medical School—Associate Professor of Medicine	None	None	None	None	None	None
Chittur A. Sivaram	Content Reviewer—ACC Cardiology Training and Workforce Committee	University of Oklahoma—David Ross Boyd Professor, Vice Chief of Cardiovascular Section, and Associate Dean for Continuing Professional Development	None	None	None	None	None	None
John A. Spertus	Content Reviewer—ACC Clinical Quality Committee	St. Luke's Mid America Heart Institute	<ul style="list-style-type: none"> ■ United Healthcare Scientific Advisory Board ■ CV Outcomes* 	None	None	None	None	None
Eric Stecker	Content Reviewer—ACC Clinical Quality Committee	Knight Cardiovascular Institute, Oregon Health and Science University—Assistant Professor of Medicine	<ul style="list-style-type: none"> ■ Center for Medicare Services MEDCAC Committee* ■ Massachusetts Medical Society 	None	None	None	None	None

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APPENDIX 2. CONTINUED

Peer Reviewer	Representation	Employment	Consultant	Speakers Bureau	Ownership/ Partnership/ Principal	Research	Institutional, Organizational, or Other Financial Benefit	Expert Witness
Linda L. Tavares	Content Reviewer—ACC Cardiovascular Team Section Advocacy Work Group	Bon Secour Heart and Vascular Institute—Acute Care Nurse Practitioner	None	None	None	None	None	None
Mary Norine Walsh	Content Reviewer—CQC Patient-Centered Care Committee	St. Vincent Heart Center of Indiana— Medical Director, Heart Failure and Cardiac Transplantation	■ United Health Care	None	None	None	None	None
Thad F. Waites	Content Reviewer—ACC Advocacy Steering Committee	Forrest General Hospital, Catheterization Laboratory—Medical Director	None	None	None	None	None	None
W. Douglas Weaver	Content Reviewer—ACC Clinical Quality Committee	Henry Ford Hospital—Head, Division of Cardiovascular Medicine	None	None	None	None	None	None
John R. Windle	Content Reviewer—ACC Clinical Quality Committee	University of Nebraska Medical Center—Professor and Chief of Cardiology	None	None	None	None	None	None

This table represents the relationships of reviewers with industry and other entities that were disclosed at the time of peer review and determined to be relevant to this document. It does not necessarily reflect relationships with industry at the time of publication. A person is deemed to have a significant interest in a business if the interest represents ownership of ≥5% of the voting stock or share of the business entity, or ownership of ≥\$5,000 of the fair market value of the business entity; or if funds received by the person from the business entity exceed 5% of the person's gross income for the previous year. A relationship is considered to be modest if it is less than significant under the preceding definition. Relationships that exist with no financial benefit are also included for the purpose of transparency. Relationships in this table are modest unless otherwise noted. Names are listed in alphabetical order within each category of review.

According to the ACC, a person has a *relevant* relationship if: a) the *relationship or interest* relates to the same or similar subject matter, intellectual property or asset, topic, or issue addressed in the *document*; b) the *company/entity* (with whom the relationship exists) makes a drug, drug class, or device addressed in the *document*, or makes a competing drug or device addressed in the *document*; or c) the *person or a member of the person's household*, has a reasonable potential for financial, professional, or other personal gain or loss as a result of the issues/content addressed in the *document*.

*No financial benefit.

ACC = American College of Cardiology; ACHD = adult congenital heart disease; CQC = Clinical Quality Committee; MEDCAC = Medicare Evidence Development & Coverage Advisory Committee; UCLA = University of California at Los Angeles; VA = Veterans Affairs.

APPENDIX 3. ABBREVIATION LIST

AACN = American Association of Colleges of Nursing
ABIM = American Board of Internal Medicine
ACC = American College of Cardiology
ACGME = Accreditation Council for Graduate Medical Education
ANCC = American Nurses Credentialing Center
AOA = American Osteopathic Association
APP = advanced practice provider
APRN = advanced practice registered nurse
AQ = Added Qualifications
COCATS = Core Cardiovascular Training Statement
CPA = collaborative practice agreement
DO = Doctor of Osteopathic Medicine
MOC = maintenance of certification
NCCPA = National Commission on Certification of Physician Assistants
PA = physician assistant
PharmD = Doctor of Pharmacy
RN = registered nurse
RWI = relationships with industry