

HEALTH POLICY STATEMENT

ACCF 2012 Health Policy Statement on Patient-Centered Care in Cardiovascular Medicine

A Report of the American College of Cardiology Foundation Clinical Quality Committee

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Preamble

This document is an American College of Cardiology Foundation (ACCF) health policy statement and is intended to promote or advocate a position, be informational

in nature, and may offer guidance to the stakeholder community regarding the American College of Cardiology's stance on healthcare policies and programs. Health policy statements are not intended to offer clinical guidance and do not contradict existing ACCF clinical policy. They are overseen by the ACCF Clinical Quality Committee (CQC), the group responsible for developing and implementing all health policy statement policies and procedures related to topic selection, commissioning writing committees, and defining document development methodologies. The CQC brings together various areas of the College such as the Advocacy Committee, the National Cardiovascular Data Registry, the ACCF/American Heart Association Task Forces on Guidelines and Performance Measures, and the Appropriate Use Criteria Steering Committee. The CQC recommended the development of this Health Policy Statement to document the College's official position on patient-centered care (PCC).

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 in existence 12 months before initiating the writing effort. The ACCF CQC reviews these disclosures to determine what companies make products (on market or in development) that pertain to the document under development. Using this information, the CQC forms a writing committee that includes a majority of members with no relevant relationships with industry or other entities (RWI), led by a chair with no relevant RWI. Authors with relevant RWI are not permitted to draft or vote on text or recommendations pertaining to their RWI. RWI is reviewed on all conference calls and updated as changes occur. Author and peer reviewer RWI pertinent to this document are disclosed in Appendices 1 and 2, respectively. Additionally, to ensure complete transparency, authors' comprehensive disclosure information—including RWI not pertinent to this document—is available online (see Online Appendix). Disclosure information for the ACCF CQC is also available online at www.cardiosource.org/ACC/About-ACC/Leadership/Guidelines-and-Documents-Task-Forces.aspx, as well as the ACCF disclosure policy for document development at www.cardiosource.org/Science-And-Quality/Practice-Guidelines-and-Quality-Standards/Relationships-With-Industry-Policy.aspx.

The work of the writing committee was supported exclusively by the ACCF without commercial support. Writing committee members volunteered their time to this effort. Conference calls of the writing committee were confidential and attended only by committee members.

*Joseph P. Drozda Jr., MD, FACC, Chair
ACCF Clinical Quality Committee*

1. Introduction

1.1. Document Development Process

1.1.1. Writing Committee Organization

The writing committee consisted of a broad range of members representing general medicine, the cardiac care team, consumers, and advocacy. Cardiac care team members included those with expertise in general cardiology and in specialty areas such as pediatric cardiology, geriatric cardiology, and healthcare disparities, as well as physicians and nurses in both private practice and academia, including those who work in rural, suburban, and urban areas. A pharmacist was also included on the writing committee, along with a healthcare services researcher and 2 consumers of cardiovascular care. Expertise in patient adherence and patient education was reflected on the committee as well. This writing committee met the ACCF's disclosure requirements as described in the Preamble.

1.1.2. Document Development and Approval

The writing committee convened by conference call and e-mail to finalize the document outline, develop the initial draft, revise the draft per committee feedback, and ultimately sign off on the document for external peer review. Peer review consisted of 16 reviewers representing 281 comments. Comments were reviewed and addressed by the writing committee. A CQC member served as lead reviewer to ensure that all comments were addressed adequately. Both the writing committee and CQC approved the final document to be sent for board review. The ACCF Board of Trustees reviewed the document, including all peer review comments and writing committee responses, and approved the document in March 2012. The document is considered current until the CQC revises or withdraws it from publication.

2. Purpose and Background

This statement presents a review of the current state of patient-centered care (PCC) in cardiovascular medicine, details the many multidisciplinary efforts that are ongoing in its development, and underscores areas of needed research. The document is an outgrowth of the commitment by the ACCF beginning in 2009 to develop a patient-centered approach to cardiovascular care.

In 2001, the Institute of Medicine issued the report, *Crossing the Quality Chasm* on the status of health care in the United States (1). In this report, 6 characteristics of an effective healthcare system were identified: The system should be safe, effective, patient-centered, timely, efficient, and equitable. PCC was defined as care that is “respectful of and responsive to individual patient preferences, needs, and values and ensures that patient values guide all clinical decisions” (1, p. 3). The term PCC has been used to describe an approach to care that empowers patients to become active participants in their own health care (2).

PCC can be thought of as an amalgamation of patient education, self-care, and evidence-based models of practice (3,4). Hobbs suggested that “PCC is a poorly conceptualized phenomenon and can indicate anything from soothing room design, emotional support of patients, customization of meals, to support of patient decision making” (5, p. 52). Berwick defined PCC as “the experience (to the extent the informed, individual patient desires it) of transparency, individualization, recognition, respect, dignity, and choice in all matters, without exception, related to one’s person, circumstances, and relationships in health care” (6, p. w560).

At its foundation, PCC requires patient knowledge and self-monitoring. Shared decision-making (SDM) is a tenet of PCC, but there can be no involvement in SDM by the patient without the provision of information, including the existence of alternatives and their merits and shortcomings (1). Health literacy is a prominent component of PCC, as it is the foundation for self-management programs and the ability of patients to engage in productive interactions with their clinicians about the optimal course of care (7,8).

Although there is much theoretical support for patient-centered approaches to care (9–11), and although the patient-centered model is widely advocated and believed to be used in practice, actual evidence of effective use of PCC in practice is somewhat limited (12–15). Intrinsic to the PCC approach for patients with chronic disease are the concepts of continued physician-to-patient communication (16) and patients’ involvement in their care (2). To allow patients with chronic cardiovascular disease (CVD) to participate in their own care, they must first understand their disease and be able to monitor the measures that identify the status of their condition. However, patients’ needs for information to follow a patient-centered approach often remain unfulfilled (14,17,18). To provide PCC, clinicians require focused education on PCC (19) and properly aligned financial incentives for managing patients with chronic diseases (20).

Much of the research in PCC has focused on assessments of communication styles by clinicians or patients and interventions to enhance patient–clinician communication (21–23). In a study of 274 consecutive patients, receiving more information from the physician and taking part in decisions was the most desired patient choice (24). In a survey of 2,500 adults visiting outpatient clinics, 76.2% desired to be told of all possible adverse effects. Robinson et al. (19) suggested that patient involvement in their own care and individualized patient care were 2 measures that identified the essence of PCC and recommended developing numeric scales to quantify these measures to assess the quality of PCC. Spertus (25) has suggested that health status measures (patients’ symptoms, function, and quality of life) be incorporated into routine clinical practice so as to better quantify the success of treatment as a measure of PCC.

Low health literacy in patients limits a true PCC approach and contributes to a lack of medication adherence

(26). Current evidence suggests that a large proportion of people with chronic disease do not receive either proven medical and behavioral interventions or adequate information and support for self-management (27). Tarn et al. (28) found that physicians often fail to communicate critical elements of medication use, and similarly, Lin et al. (29) found that many physicians do not achieve blood pressure control in patients with hypertension because of incomplete sharing of relevant treatment information. Hedblad et al. (30), who studied causes for failure to reach target goals in the management of hypertension, found that frequent blood pressure measuring and patient communication with physicians, a PCC approach, correlated with attaining blood pressure goals. Pedersen et al. (31) have discussed the need to consider a PCC approach to patients with implanted devices (32). They suggested that PCC involving behavior measures be included in device databases.

To advance care for chronic conditions, patient participation must be increased through self-management, education, collaborative goal-setting, and treatment planning (11). Moreover, clinicians have a responsibility to enhance PCC through enhanced training in communication and goal solicitation, serial assessments of patients' health status as a foundation for monitoring their disease and response to treatment, explaining the impact of therapies on the outcomes that patients value most, and creating time for such interactions to occur. A practical approach to PCC is embodied in the patient-centered medical home (PCMH) (33). This concept includes adopting health information technology and decision support systems, modifying clinical practice patterns, and ensuring continuity of care (34).

A successful PCC approach is also a foundation for improving patients' experiences with care. The success of the healthcare system hinges on the ability to provide patients with the respect, attention, and successful treatment that satisfies their needs. In a series of articles defining value in health care (35,36), Porter challenges the healthcare system to emphasize patients' outcomes, their survival, and health status as the benchmark against which the expenditure of resources are judged. PCC serially measures and monitors these outcomes, judiciously investing in shared decision-making to support the investment of resources that optimize the outcomes that patients value most.

Elements of Patient-Centered Care

- Enhanced clinician–patient communication
- Health literacy
- Clinician-directed patient education
- Assessment of patient-centered outcomes
- Shared decision-making
- Collaborative care planning
- Collaborative goal setting
- Patient empowerment and self-management

3. Elements of Patient-Centered Care

3.1. Enhanced Clinician–Patient Communication

3.1.1. Recommendation

Focused education and training around patient–clinician communication should be incorporated into medical school and continuing education curricula. Programs should emphasize empathy, educational skills, and skills in behavioral change strategies.

Clinician–patient communication is a central construct in the overarching paradigm of PCC. The term *patient-centered communication* has been used by experts in the field of healthcare communication to include the patient perspective, and the psychosocial context along with shared understanding, power, and responsibility (37). In a consensus statement developed by representatives from medical education and professional organizations, 7 essential communication tasks were identified: 1) build the doctor–patient relationship; 2) open the discussion; 3) gather information; 4) understand the patient's perspective; 5) share information; 6) reach agreement on problems and plans; and 7) provide closure (38). This is used in medical education and provides a template for evaluating the various elements of patient-centered communication. Patient-centered communication, awareness of suboptimal health literacy, and the importance of cultural competence in communication are imperative for effective patient communication and have been identified as key contributors to patient safety by the Joint Commission (39).

For the cardiovascular clinician, clinician–patient communication may occur in a broad spectrum of settings from the bedside to the examination room, from the emergency department to the cardiac catheterization or electrophysiology laboratory, and in follow-up telephone communication. The objectives in these disparate settings may include eliciting a focused history, coaching a patient on preventive lifestyle modifications strategies, instructing a patient on oral anticoagulation therapy, obtaining informed consent from a patient with an acute coronary syndrome about to undergo emergency percutaneous coronary intervention, and discussing end-of-life issues with a patient with heart failure (HF). Each of these is likely to utilize different proportions of empathy, educational skills, and, potentially, skills in behavioral change strategies such as motivational interviewing (40–44). Such encounters can be reinforced with print materials, multidisciplinary referrals (e.g., a dietitian), or a carefully scrutinized list of credible websites to access for additional information.

In studying clinician–patient communication, Beckman demonstrated that upon asking a patient to describe his or her concerns, the clinician interrupted the patient after an average of 18 s; most often, the physician redirected the patient following the first-expressed concern, with subsequent discussion focused solely on that concern (45). If

patients are given the opportunity to speak without interruption or redirection, they are likely to express 3 concerns per office visit (15). Clinicians may be skeptical about allowing a patient to continue until he or she has listed all concerns; however, patients who were allowed to complete their concerns only spoke an average of 32 s (15). Consequences of interrupting initial descriptions of concerns include late-arising concerns and, worse, missed opportunities to gather important information (15). The value of the patient-led information gathering was noted in a review by Barrier et al. (46), who contended that the 2 most important words to improve physician–patient communications are “what else?” In addition to open-ended information gathering, Mauksch et al. (47) further define attributes of communication in the clinical encounter that blend quality-enhancing characteristics with efficient time utilization. Positive behavior attributes of the clinician include those of being focused, reflective, curious, and tolerant of silence.

3.2. Health Literacy

3.2.1. Recommendation

Clinicians should be familiar with the sources of knowledge appropriate for their patient populations, and have access to a variety of educational materials to provide their patients. Pamphlets, online programs, community events, or group education sessions enable clinicians to accommodate patients with different learning styles, cultural realities, and socioeconomic status.

Health literacy is a prominent component of PCC, as it is the foundation for self-management programs (8). The American Medical Association’s 2001 video “Low Health Literacy: You Can’t Tell By Looking” (48) has served as an epiphany for many clinicians. This documentary demonstrated that a person’s health literacy is not solely related to the number of years completed in school, his or her socioeconomic status, or native language. Even highly educated, literate adults may be challenged by processing, understanding, and using health-related information to make appropriate decisions about their health. Low health literacy can result in increased emergency department visits, decreased adherence to medical recommendations, failure to engage in healthy behaviors, inferior outcomes, and higher healthcare costs (49).

Approximately 89 million people in the United States, or one-third of the adult population, lack the level of health literacy that would enable them to plan and follow through on recommended diagnostic testing, medical treatments, and maintenance of preventive health. Because it has been demonstrated that those with low health literacy most often hide their inability to read or understand information, it is recommended that healthcare professionals practice universal precautions and approach all patients as though they read at the sixth grade level (50). Older adults are at particular risk for low health literacy levels, irrespective of their past knowledge base and cognitive function. In a study of the

association between age and health literacy among elderly persons, when stratified by the number of years of education, all educational strata showed similar deterioration in mean Short Test of Functional Health Literacy in Adults scores between age 65 and age 85 years (51). The U.S. Department of Health and Human Services has published a Web tool, A Quick Guide to Health Literacy and Older Adults, recommending specific communication techniques for this group (52).

Electronic media enable patients to access information regarding their specific medical condition, according to their specific interests and education level, facilitating more meaningful and targeted discussions with clinicians (16). This has positive downstream effects, with studies showing higher measures of trust and satisfaction among patients and medical practitioners when communication quality is enhanced (53–56). Having access to various methods of content delivery (e.g., pamphlet, online, library, organized programs, or group education sessions) facilitates accommodation of different learning styles, cultural realities, and socioeconomic status of patient subgroups (16).

3.3. Clinician-Directed Patient Education

3.3.1. Recommendation

Patient education materials provided by clinicians should be individually relevant and culturally appropriate, incorporate actionable goals, and acknowledge patients as respected partners in their care.

A third vital component of PCC is educating and motivating patients to become better stewards of their health and more active participants in the management of their diseases (8). Overcoming patient inertia, closing knowledge gaps, acknowledging cultural and educational diversities, and providing practical actionable resources to help them attain positive outcomes are all goals and opportunities within this arena. The emergence of progressively more complex and involved treatment options and external pressures driving reductions in face-to-face time between patients and clinicians are clear challenges to achieving these goals and likely to become even more acute in both the short and long term.

Communication between clinicians and patients typically occurs according to the transactional model, where there is a continuous exchange and deciphering of messages between the sender and receiver (16). This implies that both parties bring knowledge, interest, and a willingness to actively interact during the healthcare encounter. Within the patient-centric model of care, the life experiences and health attitudes of patients must also be incorporated into communication and decision-making, such that consumers become respected knowledge partners in their management plans (16). If patients are not well informed, if clinicians are oblivious to individual patient needs, or if actionable resources are unavailable to leverage the knowledge gained,

the chance that quality care or outcome improvements ensue is low.

Similar to methods to enhance communication between clinicians and patients, many options for clinician-delivered patient education exist. In-person communication, online resources, written materials, group seminars, and self-monitoring tools all represent methods for informing and activating patient consumers. Assessment of understanding is an integral component of clinician-facilitated patient education and must be incorporated into the process to ensure success.

Unless patients clearly understand the information they receive, they will not be able to apply it to improve their care. Assessment of understanding can be accomplished through the “teach back” method, which includes having the patient explain in his or her own words what was just learned or show that the patient is able to perform a demonstrated task (57).

Rather than being unidirectional and prescriptive, content should be specifically tailored to the potential users. Ideally, educational resources are developed and modified by clinicians according to the expressed need or knowledge gaps of patients in their practice. Such tools can be improved by incorporating ongoing feedback from all stakeholders (58).

Because the well-informed patient is more likely to be actively engaged in his or her health management, clinician-facilitated education is a vital component of PCC (16). Education must be individually relevant, presented in a culturally appropriate manner, incorporate actionable goals, and acknowledge the patient as a respected partner in the exchange of information. It is also important to recognize that education is an ongoing process and can be built upon over time (59). The learning must also be clearly understood. These considerations are critical to healthcare delivery as improvements in care quality and outcomes cannot be fully realized without the participation of activated and well-informed patients who have reciprocal communications with clinicians.

3.4. Assessment of Patient-Centered Outcomes

3.4.1. Recommendation

Healthcare policies including performance measurement systems and payment models should support and promote the explicit assessment of patient-centered outcomes, including health status (symptoms, function, and quality of life) as a foundation for guiding PCC. In addition, policies should support the periodic assessment of patients’ experiences with care as a means of assessing the success of PCC.

Cardiovascular diseases manifest themselves to patients through symptoms that can limit their ability to function physically, socially, and mentally, as well as impair their quality of life. Moreover, many of the available cardiovascular treatments are capable of improving patients’ health

status. In fact, the strongest predictor of benefit from percutaneous coronary revascularization is the severity of patients’ angina at the time of treatment (60,61). A primary goal of PCC is to assess the status of patients’ diseases and its impact on their health, using this information as a foundation for recommending a patient’s optimal therapy at a given state of their disease.

Assessing patients’ health status entails explicitly inquiring about patients’ symptoms, function, and quality of life, and doing so frequently, given the variable course of CVD. In fact, such assessments have been explicitly endorsed as performance measures in coronary disease and HF (62,63). Although traditional techniques have included physicians’ interpretation of patients’ health status with the Canadian Cardiovascular Society classification system for angina (64) and the New York Heart Association classification for HF (65), these have been demonstrated to have poor inter-rater reliability (66–69). More recently, disease-specific, patient-reported outcome measures have been developed that enable patients to report their health status in valid, reproducible, and sensitive metrics (25). Although a complete description of available measures is beyond the scope of this statement, and new ones are continually being developed, recent guidance by the Food and Drug Administration provides a framework for evaluating the quality of such measures (70). The use of such patient-reported outcomes can provide a more sensitive assessment of patients’ conditions than those that are physician-assessed (71).

Beyond health status, patient-centered outcomes can include experiences with care (i.e., satisfaction and participation in shared decision-making). Explicitly quantifying these domains can provide insight into the success of care in meeting the needs of patients. Furthermore, systematically capturing the experiences of patients within a practice can provide insights into that practice’s ability in meeting patients’ needs as well as provide a foundation for improving the quality of PCC.

Emphasizing the need for a renewed focus on health status, the Patient Centered Outcomes Research Institute recently established its research priorities to center on addressing the key questions of “Given my personal characteristics, conditions, and preferences, what should I expect will happen to me?” and “What are my options, and what are the benefits and harms of these options?” [72, p. e31(2)]. From the patients’ perspectives, their prognosis and the impact of treatment are often centered on their health status, including the way in which the disease manifests itself. To deliver PCC, clinicians need to understand patients’ current functioning and to be able to explain the expected prognosis and treatment options within a framework that patients understand. Doing so in terms of their health status, can improve the quality of communication and lay the foundation for shared decision-making.

3.5. Shared Decision-Making

3.5.1. Recommendation

Easy-to-use tools for both physicians and patients need to be identified and developed to assist in implementing shared decision-making strategies.

The clinician–patient relationship forms the cornerstone of PCC. Despite patients' strong desire for information and despite long-standing professed advocacy by physicians for patient involvement, patients vary in their desire to participate in medical decision-making (73–77). Traditionally, patients have had a non-participatory or passive role in medical encounters, even when they have formulated important questions prior to their visit (73,77–79). This passivity can result in patients being relatively uninformed and unprepared to implement care plans (73).

Consequently, based on a positive relationship between patient satisfaction with both communication and information sharing by the physician, studies to encourage active patient participation first emerged in the late 1970s. These interventions occurred prior to physician encounters and included coaching by a health educator or training booklets to help patients identify and ask questions, negotiate medical decisions, verify information (checking their understanding), provide information (provisional statements about their concerns or symptoms), and reduce communication barriers (73,80–87). These interventions often, but not always (88,89), improved the quantity of information imparted, which resulted in enhanced patient participation in decision making without increasing visit duration. This led to improved diabetes and hypertension control, increased patient self-reported health updates, and greater patient and physician satisfaction (73,81,90–92). Kaplan et al. found that “patients who ask questions, elicit treatment options, express opinions, and state preferences about treatments during office visits with physicians have measurably better health outcomes than patients who do not” (93, p. 497).

Tools that assist clinicians in engaging patients in SDM can greatly improve the sharing of power and responsibility for treatment, thus minimizing passivity on the patients part and increasing their engagement (94). For patients facing treatment or screening decisions where the choices are “close calls” because of risks, benefits, scientific uncertainty, or variation in patient preferences for possible outcomes, decision aids have emerged to facilitate SDM. Their purpose is not to persuade but to improve patient knowledge and to clarify the importance of their preferences for the resulting outcomes in the decision-making process. These decision aids provide information about the disease, the risks and benefits of treatment or screening options, and their associated outcomes. Decision aids have been shown to improve knowledge, reduce decisional conflict due to feeling uninformed or unclear about personal values, increase active participation in decision-making, and reduce indecision (95). This evidence of benefit has led to the development and introduction of concepts such as informed patient choice as health policy, wherein deter-

mining decision quality involves assessing patient knowledge and measuring the concordance between patient health goals (preferences) and the choice of treatment (96–98).

The use of SDM tools also has the potential to reduce healthcare costs. When using such tools, patients in conjunction with their physicians often choose more conservative treatments (89,99). Additionally, SDM tools may make physicians less vulnerable to liability concerns (100). This may achieve lower healthcare expenditures by reducing unnecessary procedures and improving patient satisfaction.

CVD is particularly well suited to the use of SDM tools. First, the plethora of guidelines and evidence-based therapies form a solid foundation from which evidence can be distilled and shared with patients. Furthermore, numerous validated risk models of outcomes exist and can be used to inform patients of their likely outcomes, based on the results of previously treated patients (101). Second, there are many treatments for which no differences in outcomes are clear, or the treatment alternatives result in trade-offs, increasing the risk of one outcome and decreasing the risk of another so that patients' values and perspectives may be the appropriate driving force in decision-making. For example, bare-metal stents result in more frequent repeat procedures than drug-eluting stents (102,103), but they require a shorter duration of dual antiplatelet therapy compared with drug-eluting stents (104). Thus, patients concerned about bleeding/bruising—or medication costs—may select a bare-metal stent, even if a drug-eluting stent might minimize the likelihood of restenosis (101). An important opportunity for supporting PCC and shared decision-making is to extend valid prediction models to the clinical encounter so that individualized estimates of outcomes are available to assist patients and clinicians in selecting therapy aligned with patients' tolerance for risks and expected benefits. Although traditional outcomes have focused upon mortality, expanding these models to patient-centered health status outcomes could support an even greater focus on PCC that enables patients to choose therapies based upon their goals and preferences.

3.6. Collaborative Care Planning and Goal Setting

3.6.1. Recommendation

Easy-to-use and inexpensive self-management systems should be readily available to patients, and a reporting mechanism must be available to provide patient-collected data back to clinicians so that they may provide appropriate feedback and care so that the healthcare team, which includes the patient, can conduct appropriate collaborative care planning and goal setting.

Moving 1 step beyond SDM, *collaborative care planning* refers to the process by which health and social professionals, patients, care givers, and families interact to develop and plan a management strategy around a patient's care (105). Although SDM with decision aids typically involves making difficult treatment choices, caring for chronic conditions

requires a continuing partnership between the health team and the patient and potentially their caregivers or family (106). Goals for these interactions include the acquisition of knowledge and skill that leads to confidence and patient empowerment to manage their chronic disease (73). One result of collaborative care planning is the development of an action plan or written instructions to patients after a visit or upon discharge. Action plans have been examined in HF and found to improve recognition of disease exacerbations, to improve the initiation of the appropriate therapy, and to reduce combined mortality or hospitalizations (107,108). This methodology is currently being tested in a larger study (109). There has also been increased interest in the incorporation of palliative care consultations and planning for advanced HF (110,111).

Although inclusion of the patient and his or her family in the collaboration process is critical, interprofessional collaboration, which refers to health professionals working together to improve the health of a patient, should also be emphasized. Limited available evidence suggests that interprofessional collaboration can improve healthcare processes and outcomes. Its benefits are promising but not yet proven (112).

A systematic review of such care delivery identifies 3 alternative approaches for HF, as an example: 1) multidisciplinary interventions to bridge the gap between hospital admission and discharge (to home or to transitional care); 2) case management interventions involving telephone follow-up and home visitations after discharge; and 3) specialty clinic follow-up (113). These approaches can also be considered for other CVDs. Case management tended to reduce all-cause mortality and HF admissions. Randomized controlled trials of a multidisciplinary intervention demonstrated reduced HF admissions, but no studies of the effect of specialty clinic care alone were found (113–117). Tying closely to the collaborative care planning model, mutual goal setting has long been recognized as an essential component of care in order to achieve optimal health outcomes (118). The rise in the numbers of persons living with chronic cardiovascular conditions has brought renewed recognition of the importance of mutual goal setting. Long-term management of chronic conditions, such as hypertension, coronary heart disease, and HF, requires that patients follow complex therapeutic regimens. Clinicians can make recommendations, but if these recommendations are not understood by patients or are incongruent with patients' values, goals, and culture, it is unlikely that patients will follow the recommendations and perform the necessary self-care behaviors.

Interventions that incorporate mutual or collaborative goal setting have demonstrated efficacy in increasing self-care behaviors and reducing distress among persons with cardiovascular conditions. For example, Moore et al. (119) implemented the CHANGE (Change Habits by Applying New Goals and Experiences) intervention using a randomized controlled trial design among 250 patients who had a

recent cardiac event (angioplasty, coronary artery bypass surgery, or myocardial infarction). The intervention—guided by cognitive behavioral theories of self-efficacy (120), expectancy-value (121), social problem-solving (122), and relapse prevention (123)—incorporated goal setting with patients to help them maintain the exercise learned during cardiac rehabilitation. The intervention was successful: patients in the usual care group were 76% more likely to stop exercising, in comparison to the CHANGE group, in the year following the cardiac rehabilitation program (hazard ratio = 1.76; 95% confidence interval = 1.08 to 2.86, $p = 0.02$).

Dunbar (124) evaluated an educational and family partnership intervention designed to improve self-management of dietary sodium intake among patients with HF. Patients and their family caregivers were assigned to an educational intervention alone ($n = 29$; patient and family caregiver dyads) or an educational and family partnership support intervention ($n = 32$ dyads) that incorporated mutual goal setting. The patients who received the family intervention had significantly decreased urinary sodium levels at 3 months after baseline, and more patients in this group decreased their urinary sodium by $\geq 15\%$ ($p = 0.04$). Taken together, these studies provide evidence that mutual goal setting is an important part of interventions designed to change patient behaviors.

3.7. Patient Empowerment and Self-Management

3.7.1. Recommendation

Patients should be encouraged to accept responsibility for managing their health condition and work collaboratively with their healthcare team.

Patient empowerment and self-management is the final element of PCC. Studies have shown that many patients desire a partnership with clinicians in which clinicians include patients in the discussion of health goals, treatment options, risks versus benefits, and costs of care (125). The concept of patient empowerment espouses that patients accept responsibility for managing their health and medical conditions and work collaboratively with the healthcare team. For chronic illnesses such as CVD, the patient is the principal caregiver responsible for interpreting and reporting symptoms correctly, as well as using medications appropriately in the context of social and economic circumstances (126). Patients can self-identify problems and healthcare team members provide self-management education, not orders, that assist patients in taking measures that will improve health (127). Patient self-management skills are applied to physical health, psychological functioning, and social aspects of chronic illness (127,128). Patients desire tools and services that help them and their caregivers better manage their conditions and achieve their mutually agreed upon goals (129). For example, clinicians can empower patients by supporting them through referrals to culturally appropriate condition-specific support groups, as well as

community-based services such as exercise programs, transportation, assistance with activities of daily living, and medication therapy management services (127,130,131).

4. Patient-Centered Care and New Practice Challenges

4.1. Recommendation

Interventions need to be designed and implemented to support the patient and family caregivers in order to achieve optimal health outcomes for patients and their families.

4.2. Impact of Technology

Patients make use of the Internet and other technology and information transfer on an everyday basis for news-gathering, shopping, e-mail messaging, and access to health information. In 2004, the Pew Internet and American Life Project (132) estimated that on a typical day, 70 million Americans went online and 7 million looked for health or medical information. The Pew Project also estimated that 85% of women and 75% of men as users of online resources had searched for health information at least once in the past.

As a result of the tremendous amount of research many patients do, they are transforming themselves from helpless patients to medical end users as eloquently described by Ferguson in his editorial (133). In fact, the number of Medline searches performed by directly accessing the database at the National Library of Medicine increased from 7 million in 1996 to 120 million in 1997, when free public access became available; the new searches were attributed primarily to nonphysicians (134).

Although increasing numbers of patients are seeking health information via the Internet, relatively few communicate with their clinicians electronically. In a survey of primary care providers in the Boston area, 75% of physicians reported utilizing e-mail to communicate with patients, but they did so with only 5% of their patient population (135). When surveyed, a majority of patients would be interested in communicating with their clinicians via e-mail (136). Due to the asynchronous nature of electronic communications, it is most appropriate for nonurgent consultations, test results, and prescription refills. The American Medical Association has established guidelines for the use of clinician-to-patient e-mail communication (137). Secure, encrypted systems through which patients can access medical records and test results, request refills, and communicate nonurgent issues with providers are increasingly becoming available (138).

Electronic health records are revolutionizing medical care. They enable clinicians to access, store, and organize patient encounters, tests, and images into 1 easily accessible interface. They also allow patients unprecedented access to their own records, correspondence, and laboratory tests. In some cases, patients may, via a secure login, access their

latest test results from their own home. In other cases, patients may request refills, correspond with their care providers, or pay their medical bills. Electronic health records are also affecting patient care in other ways. They may automatically research information about potential drug interactions, remind clinicians about past due screening, and help clinicians provide quality guideline-driven care.

Electronic prescribing is another innovation that has positively affected patient care. Ammenwerth et al. (139) conducted a systematic review of the literature with regard to e-prescribing and concluded that 14 of the 25 studies that analyzed the effects on the medication error rate, 23 showed a relative risk reduction of 13% to 99%, and a majority of the studies examined showed a 30% to 98% relative risk reduction in adverse events. Therefore, e-prescribing has proven to help patients get the proper medication the first time and with many e-prescribing services, the pharmacy can either deliver or remind the patient to pick up the medicines, which may improve adherence.

Personal health records (PHR) or personal health vaults are becoming common. A PHR is a computerized application that stores an individual's personal health information. Many large software vendors have created personal health vaults, which allow patients to store their own medical histories, prescriptions, blood pressure readings, and lab results. With a PHR, patients can keep track of their own medical histories and records, as well as share them with their healthcare team. With this innovation, patients can ensure that virtually any caregiver with Internet access has tests, encounters, and a self-reported history available to them whenever needed—especially in emergencies. Most of the PHRs also allow patients the ability to research their health conditions, which enables them to learn more about their own medical conditions and treatments. The vast majority of Internet users surveyed in a Harris Interactive Poll thought that having a PHR would be beneficial and necessary to help with providing excellent care (140,141). Some vendors have also started to initiate patient management protocols. The U.S. Department of Health and Human Services and the Surgeon General are promoting the use of PHR (142).

The Information Age has several pitfalls with regard to patient access. Medical information, when taken in isolation and without formal medical training, can often lead to out-of-context diagnoses and treatment recommendations. The information quality and sources are highly variable on the Internet and, therefore, warrant further verification and discussion with patients (143,144). Additional concerns come from the proprietary format in which many PHR and electronic health records store data that can result in a lack of interoperability or transfer of information into other formats and other vendor platforms (145). Direct-to-consumer content that is provided by industry is often difficult to differentiate from that provided by scientists and clinicians; anecdotes and testimonials may appear very

similar to data that rests on evidence. Other concerns include patient privacy and confidentiality, such that security, encryption, and identity verification are necessary. Lastly, access to technology has uneven distribution (146).

Despite all of the features, power, and convenience of a connected patient and clinician, many people of varying socioeconomic groups simply do not have the ability, financial wherewithal, or willingness to be an avid technology user (147). As such, access is not equal to all, and needs to be strongly considered in any relationship between clinician and patient. In many studies, education and race were significant predictors of online health-seeking behavior (148,149).

4.3. Complexity of Care Strategies With Self-Care

Managing the complex therapeutic regimens for chronic cardiovascular conditions often requires lifelong behavioral change and self-care, which may be difficult for patients to understand (150). Self-care is a naturalistic decision-making process about choices of behaviors that individuals make to maintain physiologic stability (self-care maintenance) and to manage symptoms when they occur (self-care management) (151). Self-care maintenance includes routine monitoring of symptoms and medication, as well as dietary adherence. A lack of adherence to prescribed medication and dietary regimens is associated with adverse outcomes among patients with hypertension, post-myocardial infarction, and HF. The more complex process of self-care management includes interpreting, evaluating the significance of, and taking the appropriate actions to treat symptoms (151). In patients with acute myocardial infarction, the difficulty in interpreting and managing symptoms leads to a delay in seeking treatment that increases the likelihood of further infarction and death (152). In patients with HF, the difficulty in interpreting and managing symptoms may lead to further impairment of proper function and quality of life, unnecessary hospitalizations, and premature death (153).

A number of patient factors increase the complexity of self-care and makes learning the new behaviors and skills required more challenging, including older age, decreased health literacy, cognitive impairment, and the individual variation in symptom experience. In a study among 77 older patients with HF, most had inadequate cognitive and emotional responses for effective symptom management (154). Morrow et al. (155) focused on health literacy and designed patient-centered instructions. These instructions were compared with standard pharmacy instructions among 32 older patients with HF to improve medication adherence by improving patient knowledge. Patient-centered instructions were designed to meet patients' needs by decreasing sensory and cognitive demands. For example, large print and shorter sentences were used in the instructions. The order of information in the instructions was organized according to the way patients expect content to be presented. Icons were used to match instructional content to pictures in order to facilitate learning. Patients were better

able to recall and understand the patient-centered instructions. Furthermore, patients preferred patient-centered instructions (156). Cognitive impairment may prevent patients from learning new skills and abilities. Among 1,573 people over age 55, impaired cognition was an independent predictor of nonadherence to antihypertensive medications (157). One-fourth to one-half of patients with HF have cognitive impairment that may explain nonadherence (158,159).

Ideally, patients are able to self-manage their own therapeutic regimens. However, with advanced cardiovascular conditions, patients may have significant impairments in physical, emotional, and cognitive function and require assistance from family members. As much as 90% of chronic illness care in the United States is delivered by family caregivers (160), and in some studies, family caregivers had increased mortality compared with noncaregivers (161). Family caregivers of HF patients report high levels of physical and emotional distress, and in a recent study, 41% of 335 caregivers believed they needed to be available 24 hours a day to assist patients (162,163). Strategies for improving self-care among vulnerable patients who are unable to perform much of their own self-care need to incorporate family members.

4.4. Systemic Approach to Episodic Care

4.4.1. Recommendation

PCC demands that the healthcare system develop a means of accumulating and sharing information across all encounters of a single patient to the greatest extent possible. This information must be easily accessible, searchable, and organized in a systematic fashion so that it can be used to readily support evidence-based approaches with the ultimate goal of improving chronic disease management.

The basic tenets of PCC require a transition of healthcare delivery away from the traditional practice of episodic care toward a systemic approach. The 2001 Institute of Medicine report recognized that the care delivery system of the United States has traditionally been designed for acute episodic care, whereas the patient care needs of the populace has been shifting toward that of chronic conditions (1). Data show that chronic conditions are the leading cause of morbidity and mortality in the United States, affecting nearly one-half of the population and accounting for three-quarters of healthcare dollars (164). It is also known that there are significant potential barriers to obtaining needed care by those who do not have an established source of care, while at the same time, there are improved outcomes with potentially lower costs among those individuals who have an established and continuous source of care by the same clinician (165–169). It has been estimated that it can take up to 4 visits with a clinician before the acquired knowledge can be sufficiently synthesized to affect diagnostic testing strategies and impart changes in anticipatory care (170). It

takes time to evaluate and consolidate the unique needs of an individual patient and to develop a management plan that considers an individual's multiple medical and social variables. Each meeting with the same clinician allows for accumulation and synthesis of information that is impossible to capture on any 1 episodic encounter.

It takes more than a single continuous knowledgeable clinician to sustain PCC. The healthcare delivery system itself must also be reformed to provide what has been termed as informational continuity (171). Informational continuity contributes to the systemic approach of medicine by providing a collection of medical and social information that is available to any healthcare professional caring for any individual, which allows systematic communication about the information among all caregivers. In the traditional episodic style of healthcare delivery, caregivers and healthcare organizations often operate in silos, providing care without the benefit of complete information about the patient and the medical care.

4.4.1.1. PERSONALIZED CARE IN THE AGING POPULATION

4.4.1.1.1. RECOMMENDATION. **Given the intricacies of age and multiple morbidities, personalized medicine should be used as an alternative treatment paradigm; however, personalized medicine can only be sustained if patients achieve clear and realistic understandings of therapeutic options, including attention to costs and treatment limitations.**

The importance of personalized medicine is driven in part by increased longevity and by the high prevalence of multiple morbidities within the growing population of older adults. The average American life span has increased from 50 years in 1900 to almost 80 years in 2011, and even longer life spans are anticipated in the decades ahead. By 2030, it is projected that almost 20% of the U.S. population will be 65 years and older, with tripling of the subgroup aged 85 years and older by 2050 (172). Aging provokes ubiquitous changes throughout the body, exacerbating vulnerabilities to disease and to idiosyncratic responses to therapy (173–175). Moreover, most older adults have multiple morbid conditions and an associated likelihood of polypharmacy and frailty, compounding their predisposition to acute and chronic instability and to increased complexity of therapeutic choices (173,175). The concept of personalized medicine is very relevant for the management of patients with these challenges. It becomes critically important to consider unique outcome goals for each patient and to then determine the complex interaction of multiple morbidities, medications, and aging changes before therapy is initiated.

Aging changes in the cardiovascular system are usually predictable, limiting cardiovascular reserves, and increasing vulnerability to CVD (173,175). However, pervasive changes also occur in other organ systems, adding to cardiovascular instability, particularly because noncardiac stresses can more readily overwhelm the diminished cardiovascular physiological reserves. As an example, consider the common case of a simple

urinary tract infection causing both non-ST-segment elevation myocardial infarction and mental status changes in an otherwise functional nonagenarian.

Cascading pathological effects (e.g., noncardiac stresses, such as an infection) also tend to occur, and more often provoke cardiovascular instability, which in turn exacerbate noncardiac instability (such as bowel ischemia and/or renal failure). High mortality, poor functional status, prolonged hospitalizations, adverse drug events, duplicative tests, and conflicting medical advice all increase in association with aging and multiple morbidities.

Personalized medicine represents an alternate therapeutic paradigm, such that the intricacies of age and multiple morbidities are systematically addressed as an aggregate issue. Ideally, this approach still draws upon evidence-based insights but with more emphasis on the context of multi-system aging, morbidities, polypharmacy, psychosocial factors, and personal preferences.

The goal of providing personalized medicine to the expanding population of eligible patients remains a daunting challenge. Baby boomers represent a particular challenge because they are a patient group that has been associated with entitlements, high costs, and inefficiencies, and their underlying consumerist patterns may drive unrealistic expectations of care. Personalized medicine can only be sustained if patients achieve clear and realistic understandings of therapeutic options, including attention to costs and treatment limitations. Indeed, sometimes, the intensive drive to do everything possible can lead to a poorer quality of life. Informed consent and patient education techniques can evolve to better respond to these challenges.

4.4.1.2. PATIENT-CENTERED MEDICAL HOME

4.4.1.2.1. RECOMMENDATION. **A patient-centered medical home for cardiovascular care should be developed and demonstrated to manage patients with advanced cardiac disease across the continuum of care from the stable outpatient environment to the level of intensive in-hospital care without changing care teams.**

The PCMH has been proposed as a model of healthcare delivery that can provide care that is “accessible, continuous, comprehensive and coordinated and delivered in the context of family and community” (176). The initial PCMH concept embodied primary care physicians as the principal physicians, with specialists acting as consultants (177). However, as the intricacy of cardiovascular care strategies increase, the necessity for coordinated care directed by care team leaders who are expert in all aspects of CVD is clear. The PCMH for CVD (PCMH-CVD) can address this model for cardiologists and their patients, providing for the total care of these complex patients in an environment led by physicians with special expertise in heart and vascular disorders (178). When coupled with the extensive patient education efforts employed by cardiologists to facilitate self-care in chronic illness, these clinicians find themselves uniquely poised to deliver this comprehensive care.

The advancement of the baby boomer generation into the age of patients with CVD as their predominant malady will further increase the requirement for advanced cardiovascular care (179). This coupled with the exponential increase in the sophistication of cardiovascular management modalities make the PCMH-CVD a desirable and inevitable solution. This will become more relevant as healthcare payment reform results in the move away from fee-for-service management to a reimbursement strategy based upon episodes of care.

The PCMH-CVD will consist of a team directed by cardiologists with advanced training in CVD management. This care team will include nurse practitioners, physician assistants, pharmacists, registered nurses, medical technologists, nurse educators, and the support staff found in all PCMH (131). In addition, technologists with expertise in advanced imaging such as echocardiography, myocardial perfusion imaging, computed tomography, and implanted cardiac device management will be part of this PCMH-CVD environment. Expanded access will include not only the availability of patient appointments but also the utilization of electronic communication among care team members and patients to increase access and reduce delays, for a more therapeutic modification inherent with scheduled face-to-face visits.

A unique feature of the cardiovascular PCMH-CVD will be its ability to manage patients with advanced cardiac disease across the continuum of care from the stable outpatient environment to the level of intensive in-hospital care without changing care teams. Likewise, the transition from hospital care to intensive outpatient treatment to typical outpatient care either in a home environment or in subacute care facilities will be seamless and efficient, particularly for those with multiple concurrent illnesses and the potential for frequent hospitalization. This will hopefully improve quality, decrease readmissions, and reduce cost.

Finally, the PCMH-CVD will provide aggressive coordinated evidence-based risk factor modification not only for secondary prevention but also for the primary prevention of all forms of CVD by education in relation to lifestyle changes and appropriate medical intervention. In addition, the PCMH-CVD will provide the monitoring of complex medication regimens and chronic disease management in a coordinated and cost-efficient manner. Through the development of the PCMH-CVD, persons with complex CVD will experience enhanced health benefits at a reduced cost in a comfortable, pleasant, and patient-centered environment.

4.5. Barriers to Patient-Centered Care

4.5.1. Recommendations

Sufficient financial reimbursement and/or financial incentive that accommodate for additional clinician time to provide PCC needs to be developed and implemented.

Nonphysician members of the care team should be empowered to provide PCC to help manage the increasing demands of patients with chronic heart disease.

To provide PCC, physicians and other clinicians require focused education on PCC (19) and properly aligned financial incentives to apply this approach to chronic disease management (20). An obstacle to PCC is clinician time and reimbursement. As the physician shortage grows and the population of older individuals increases, less time will be available for physicians to provide the personal and frequent surveillance needed for high-quality PCC. Escalating medical costs and reduced reimbursement are other challenges for developing PCC programs in individual practices.

Reimbursement to a PCMH using a partial capitation model makes it well suited to follow patients with chronic HF, cardiac transplantation, implanted devices, and other chronic cardiac disorders that require frequent surveillance and changes in medication, by replacing the fee-for-service model in these cases. Alternatively, cardiology practices consisting of teams of physicians, nurses, advanced practice nurses, physician assistants, pharmacists, social workers, dietitians, and others could provide a comprehensive, longitudinal care system for the more complex patients with chronic heart disease in a specialty-oriented PCMH. The PCMH-CVD can also be incorporated into a core program for larger accountable care organizations as new models of reimbursement emerge.

With the continuously increasing number of patients with chronic heart disease, and the growing shortage of healthcare clinicians, providing an environment where patients are engaged in their care and educated about the medical and behavioral aspects of their disorders has become an essential component of long-term care. Considering patient preferences, differing lifestyles, special population needs, and improving communication tools, the concept of PCC has emerged to accommodate all of these factors in a new model of care. Developing programs within clinical practices to account for PCC is best done with a team care concept where nonphysician clinicians working with physicians provide these factors in a patient-centric comprehensive care model to manage the increasing care demands of patients with chronic heart disease. Essential to the success of PCC is the need for patients to become engaged in their care and accept some responsibility to participate in their care plans. Ongoing communication using the concepts of PCC should improve care for the growing population of patients with chronic heart disease. Recognition of this form of care is still needed in healthcare systems throughout the world, and new methods for reimbursement are still needed to maintain the multidisciplinary healthcare team that is fundamental for PCC.

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REFERENCES

1. Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the Twenty-First Century*. Washington DC: The National Academies Press; 2001.
2. Reynolds A. Patient-centered care. *Radiol Technol* 2009;81:133-47.
3. Bauman AE, Fardy HJ, Harris PG. Getting it right: why bother with patient-centred care? *Med J Aust* 2003;179:253-6.
4. Irwin RS. Patient-focused care: the 2003 American College of Chest Physicians Convocation Speech. *Chest* 2004;125:1910-2.
5. Hobbs JL. A dimensional analysis of patient-centered care. *Nurs Res* 2009;58:52-62.
6. Berwick DM. What 'patient-centered' should mean: confessions of an extremist. *Health Aff (Millwood)* 2009;28:w555-65.
7. Austin B, Wagner E, Hindmarsh M, Davis C. Elements of effective chronic care: a model for optimizing outcomes for the chronically ill. *Epilepsy Behav* 2000;1:S15-20.
8. Glasgow NJ, Jeon YH, Kraus SG, et al. Chronic disease self-management support: the way forward for Australia. *Med J Aust* 2008;189:S14-6.
9. Bergeson SC, Dean JD. A systems approach to patient-centered care. *JAMA* 2006;296:2848-51.
10. Davis K, Schoenbaum SC, Audet AM. A 2020 vision of patient-centered primary care. *J Gen Intern Med* 2005;20:953-7.
11. Wagner EH, Bennett SM, Austin BT, et al. Finding common ground: patient-centeredness and evidence-based chronic illness care. *J Altern Complement Med* 2005;11 Suppl 1:S7-15.
12. Barry CA, Stevenson FA, Britten N, et al. Giving voice to the lifeworld: more humane, more effective medical care? A qualitative study of doctor-patient communication in general practice. *Soc Sci Med* 2001;53:487-505.
13. Braddock CH III, Edwards KA, Hasenberg NM, et al. Informed decision making in outpatient practice: time to get back to basics. *JAMA* 1999;282:2313-20.
14. Little P, Everitt H, Williamson I, et al. Preferences of patients for patient centred approach to consultation in primary care: observational study. *BMJ* 2001;322:468-72.
15. Marvel MK, Epstein RM, Flowers K, et al. Soliciting the patient's agenda: have we improved? *JAMA* 1999;281:283-7.
16. Breen GM, Wan TT, Zhang NJ, et al. Improving doctor-patient communication: examining innovative modalities vis-a-vis effective patient-centric care management technology. *J Med Syst* 2009;33:155-62.
17. McKeown RE, Reiningger BM, Martin M, et al. Shared decision making: views of first-year residents and clinic patients. *Acad Med* 2002;77:438-45.
18. Ziegler DK, Mosier MC, Buenaver M, et al. How much information about adverse effects of medication do patients want from physicians? *Arch Intern Med* 2001;161:706-13.
19. Robinson JH, Callister LC, Berry JA, et al. Patient-centered care and adherence: definitions and applications to improve outcomes. *J Am Acad Nurse Pract* 2008;20:600-7.
20. Jordan JE, Briggs AM, Brand CA, et al. Enhancing patient engagement in chronic disease self-management support initiatives in Australia: the need for an integrated approach. *Med J Aust* 2008;189:S9-13.
21. Mead N, Bower P, Hann M. The impact of general practitioners' patient-centredness on patients' post-consultation satisfaction and enablement. *Soc Sci Med* 2002;55:283-99.
22. Mead N, Bower P. Patient-centred consultations and outcomes in primary care: a review of the literature. *Patient Educ Couns* 2002;48:51-61.
23. Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J Fam Pract* 2000;49:796-804.
24. Schattner A, Bronstein A, Jellin N. Information and shared decision-making are top patients' priorities. *BMC Health Serv Res* 2006;6:21.
25. Spertus JA. Evolving applications for patient-centered health status measures. *Circulation* 2008;118:2103-10.
26. Gazmararian JA, Kripalani S, Miller MJ, et al. Factors associated with medication refill adherence in cardiovascular-related diseases: a focus on health literacy. *J Gen Intern Med* 2006;21:1215-21.
27. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med* 2003;348:2635-45.
28. Tarn DM, Heritage J, Paterniti DA, et al. Physician communication when prescribing new medications. *Arch Intern Med* 2006;166:1855-62.
29. Lin ND, Martins SB, Chan AS, et al. Identifying barriers to hypertension guideline adherence using clinician feedback at the point of care. *AMIA Annu Symp Proc* 2006;494-8.
30. Hedblad B, Nerbrand C, Ekesho R, et al. High blood pressure despite treatment: results from a cross-sectional primary healthcare-based study in southern Sweden. *Scand J Prim Health Care* 2006;24:224-30.
31. Pedersen SS, van den Berg M, Theuns DA. A viewpoint on the impact of device advisories on patient-centered outcomes. *Pacing Clin Electrophysiol* 2009;32:1006-11.
32. Kramer DB, Brock DW, Tedrow UB. Informed consent in cardiac resynchronization therapy: what should be said? *Circ Cardiovasc Qual Outcomes* 2011;4:573-7.
33. Carrier E, Gourevitch MN, Shah NR. Medical homes: challenges in translating theory into practice. *Med Care* 2009;47:714-22.
34. Demiris G, Afrin LB, Speedie S, et al. Patient-centered applications: use of information technology to promote disease management and wellness. A white paper by the AMIA knowledge in motion working group. *J Am Med Inform Assoc* 2008;15:8-13.
35. Porter ME. A strategy for health care reform—toward a value-based system. *N Engl J Med* 2009;361:109-12.
36. Porter ME. What is value in health care? *N Engl J Med* 2010;363:2477-81.
37. Epstein RM, Franks P, Fiscella K, et al. Measuring patient-centered communication in patient-physician consultations: theoretical and practical issues. *Soc Sci Med* 2005;61:1516-28.
38. Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. *Acad Med* 2001;76:390-3.
39. Wilson-Stronks A, Erica Galvez E, Joint Commission on Accreditation of Healthcare Organizations. *Hospitals, Language, and Culture: A Snapshot of the Nation. Exploring Cultural and Linguistic Services in the Nation's Hospitals: A Report of Findings*. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations, 2007.
40. Anstiss T. Motivational interviewing in primary care. *J Clin Psychol Med Settings* 2009;16:87-93.
41. Lai DT, Cahill K, Qin Y, et al. Motivational interviewing for smoking cessation. *Cochrane Database Syst Rev* 2010;CD006936.
42. Lundahl B, Kunz C, Brownell C, et al. A meta-analysis of motivational interviewing: twenty-five years of empirical studies. *Res Soc Work Pract* 2010;20:137-60.
43. Miller W, Rollnick S. *Motivational Interviewing: Preparing People for Change*. New York, NY: Guilford Press; 2002.
44. Rubak S, Sandbaek A, Lauritzen T, et al. Motivational interviewing: a systematic review and meta-analysis. *Br J Gen Pract* 2005;55:305-12.
45. Beckman HB, Frankel RM. The effect of physician behavior on the collection of data. *Ann Intern Med* 1984;101:692-6.
46. Barrier PA, Li JT, Jensen NM. Two words to improve physician-patient communication: what else? *Mayo Clin Proc* 2003;78:211-4.
47. Mauksch LB, Dugdale DC, Dodson S, et al. Relationship, communication, and efficiency in the medical encounter: creating a clinical model from a literature review. *Arch Intern Med* 2008;168:1387-95.

48. American Medical Association. Low Health Literacy: You Can't Tell By Looking [video]. Available at: <http://www.ama-assn.org/ama/pub/about-ama/ama-foundation/our-programs/public-health/health-literacy-program/health-literacy-video.shtml>. Accessed March 15, 2011.
49. Neilsen-Bohman L, Panzer AM, Kindig DA. Health Literacy: A Prescription to End Confusion. Washington, DC: The National Academies Press, 2004.
50. U.S. Department of Health and Human Services. Agency for Healthcare Research and Policy. Health literacy universal precautions toolkit. Available at: <http://www.ahrq.gov/qual/literacy/>. Accessed June 16, 2010.
51. Baker DW, Gazmararian JA, Sudano J, Patterson M. The association between age and health literacy among elderly persons. *J Gerontol B Psychol Sci Soc Sci* 2000;55:S368-74.
52. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. A quick guide to health literacy and older adults. Available at: <http://www.health.gov/communication/literacy/olderadults/default.htm>. Accessed June 26, 2010.
53. Golin C, DiMatteo MR, Duan N, et al. Impoverished diabetic patients whose doctors facilitate their participation in medical decision making are more satisfied with their care. *J Gen Intern Med* 2002;17:857-66.
54. Gordon HS, Street RL Jr., Sharf BF, et al. Racial differences in trust and lung cancer patients' perceptions of physician communication. *J Clin Oncol* 2006;24:904-9.
55. Hall MA, Zheng B, Dugan E, et al. Measuring patients' trust in their primary care providers. *Med Care Res Rev* 2002;59:293-318.
56. Matusitz J, Breen GM. Telemedicine: its effects on health communication. *Health Commun* 2007;21:73-83.
57. London F. Meeting the challenge: patient education in a diverse America. *J Nurses Staff Dev* 2008;24:283-5.
58. Tugwell PS, Santesso NA, O'Connor AM, et al. Knowledge translation for effective consumers. *Phys Ther* 2007;87:1728-38.
59. Adams K, Greiner AC, Corrigan JM, editors, Committee on the Crossing the Quality Chasm: Next Steps Toward a New Health Care System. The 1st Annual Crossing the Quality Chasm Summit: A Focus on Communities. Washington, DC: The National Academies Press; 2004.
60. Spertus JA, Salisbury AC, Jones PG, Conaway DG, Thompson RC. Predictors of quality-of-life benefit after percutaneous coronary intervention. *Circulation* 2004;110:3789-94.
61. Weintraub WS, Spertus JA, Kolm P, et al. Effect of PCI on quality-of-life in patients with stable coronary disease. *N Engl J Med* 2008;359:677-87.
62. Bonow RO, Ganiats T, Beam C, et al. ACCF/AHA/AMA-PCPI 2011 performance measures for adults with heart failure: a report of the ACCF/AHA Task Force on Performance Measures and the American Medical Association-Physician Consortium for Performance Improvement. *J Am Coll Cardiol* 2012 Apr 23 [E-pub ahead of print], doi:10.1016/j.jacc.2012.03.013.
63. Drozda J Jr., Messer JV, Spertus J, et al. ACCF/AHA/AMA-PCPI 2011 performance measures for adults with coronary artery disease and hypertension: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Performance Measures and the American Medical Association-Physician Consortium for Performance Improvement. *J Am Coll Cardiol* 2011;58:316-36.
64. Compeau L. Grading of angina pectoris. *Circulation* 1975;54:522-3.
65. The Criteria Committee of the New York Heart Association. Nomenclature and Criteria for Diagnosis of Diseases of the Heart and Great Vessels. Boston, MA: Little, Brown & Co, 2012.
66. Bennett JA, Riegel B, Bittner V, Nichols J. Validity and reliability of the NYHA classes for measuring research outcomes in patients with cardiac disease. *Heart Lung* 2002;31:262-70.
67. Burkhoff D, Schmidt S, Schulman SP, et al., ATLANTIC Investigators. Transmyocardial laser revascularisation compared with continued medical therapy for treatment of refractory angina pectoris: a prospective randomised trial. *Angina Treatments-Lasers and Normal Therapies in Comparison*. *Lancet* 1999;354:885-90.
68. Goldman L, Cook EF, Mitchell N, et al. Pitfalls in the serial assessment of cardiac functional status. How a reduction in "ordinary" activity may reduce the apparent degree of cardiac compromise and give a misleading impression of improvement. *J Chronic Dis* 1982;35:763-71.
69. Raphael C, Briscoe C, Davies J, et al. Limitations of the New York Heart Association functional classification system and self-reported walking distances in chronic heart failure. *Heart* 2007;93:476-82.
70. U.S. Department of Health and Human Services FDA Center for Drug Evaluation and Research, U.S. Department of Health and Human Services FDA Center for Biologics Evaluation and Research, U.S. Department of Health and Human Services FDA Center for Devices and Radiological Health. Guidance for industry: patient-reported outcome measures: use in medical product development to support labeling claims: draft guidance. *Health Qual Life Outcomes* 2006;4:79.
71. Spertus J, Peterson E, Conard MW, et al. Monitoring clinical changes in patients with heart failure: a comparison of methods. *Am Heart J* 2005;150:707-15.
72. Washington AE, Lipstein SH. The Patient-Centered Outcomes Research Institute: promoting better information, decisions, and health. *N Engl J Med* 2011;365:e31.
73. Greenfield S, Kaplan S, Ware JE Jr. Expanding patient involvement in care: effects on patient outcomes. *Ann Intern Med* 1985;102:520-8.
74. Nease RF Jr., Brooks WB. Patient desire for information and decision making in health care decisions: the Autonomy Preference Index and the Health Opinion Survey. *J Gen Intern Med* 1995;10:593-600.
75. Ryan J, Sysko J. The contingency of patient preferences for involvement in health decision making. *Health Care Manage Rev* 2007;32:30-6.
76. Vertinsky IB, Thompson WA, Uyeno D. Measuring consumer desire for participation in clinical decision making. *Health Serv Res* 1974;9:121-34.
77. Wilkinson CR, Williams M. Strengthening patient-provider relationships. *Lippincotts Case Manag* 2002;7:86-99.
78. Beisecker AE, Beisecker TD. Patient information-seeking behaviors when communicating with doctors. *Med Care* 1990;28:19-28.
79. Street RL Jr. Information-giving in medical consultations: the influence of patients' communicative styles and personal characteristics. *Soc Sci Med* 1991;32:541-8.
80. Cegala DJ, McClure L, Marinelli TM, et al. The effects of communication skills training on patients' participation during medical interviews. *Patient Educ Couns* 2000;41:209-22.
81. Cegala DJ, Post DM, McClure L. The effects of patient communication skills training on the discourse of older patients during a primary care interview. *J Am Geriatr Soc* 2001;49:1505-11.
82. Kinnersley P, Edwards A, Hood K, et al. Interventions before consultations for helping patients address their information needs. *Cochrane Database Syst Rev* 2007;CD004565.
83. Robinson EJ, Whitfield MJ. Improving the efficiency of patients' comprehension monitoring: a way of increasing patients' participation in general practice consultations. *Soc Sci Med* 1985;21:915-9.
84. Roter DL. Patient participation in the patient-provider interaction: the effects of patient question asking on the quality of interaction, satisfaction and compliance. *Health Educ Monogr* 1977;5:281-315.
85. Roter DL. Patient question asking in physician-patient interaction. *Health Psychol* 1984;3:395-409.
86. Sepucha KR, Belkora JK, Mutchnick S, et al. Consultation planning to help breast cancer patients prepare for medical consultations: effect on communication and satisfaction for patients and physicians. *J Clin Oncol* 2002;20:2695-700.
87. Wetzels R, Harmsen M, Van Weel C, et al. Interventions for improving older patients' involvement in primary care episodes. *Cochrane Database Syst Rev* 2007;CD004273.
88. Bernstein SJ, Skarupski KA, Grayson CE, et al. A randomized controlled trial of information-giving to patients referred for coronary angiography: effects on outcomes of care. *Health Expect* 1998;1:50-61.
89. Morgan MW, Deber RB, Llewellyn-Thomas HA, et al. Randomized, controlled trial of an interactive videodisc decision aid for patients with ischemic heart disease. *J Gen Intern Med* 2000;15:685-93.
90. Greenfield S, Kaplan SH, Ware JE Jr., et al. Patients' participation in medical care: effects on blood sugar control and quality of life in diabetes. *J Gen Intern Med* 1988;3:448-57.

91. Kaplan SH, Greenfield S, Ware JE Jr. Assessing the effects of physician-patient interactions on the outcomes of chronic disease. *Med Care* 1989;27:S110-27.
92. Post DM, Cegala DJ, Miser WF. The other half of the whole: teaching patients to communicate with physicians. *Fam Med* 2002;34:344-52.
93. Kaplan SH, Greenfield S, Gandek B, et al. Characteristics of physicians with participatory decision-making styles. *Ann Intern Med* 1996;124:497-504.
94. Frosch DL, Kaplan RM, Felitti V. The evaluation of two methods to facilitate shared decision making for men considering the prostate-specific antigen test. *J Gen Intern Med* 2001;16:391-8.
95. O'Connor AM, Bennett CL, Stacey D, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev* 2009;CD001431.
96. O'Connor AM, Wennberg JE, Legare F, et al. Toward the 'tipping point': decision aids and informed patient choice. *Health Aff (Millwood)* 2007;26:716-25.
97. Sepucha KR, Fowler FJ Jr., Mulley AG Jr. Policy support for patient-centered care: the need for measurable improvements in decision quality. *Health Aff (Millwood)* 2004;Suppl Variation: VAR54-62. Available at: <http://content.healthaffairs.org/content/early/2004/10/07/hlthaff.var.54.long>. Accessed December 10, 2011.
98. Sepucha KR, Levin CA, Uzogara EE, et al. Developing instruments to measure the quality of decisions: early results for a set of symptom-driven decisions. *Patient Educ Couns* 2008;73:504-10.
99. Wagner EH, Barrett P, Barry MJ, et al. The effect of a shared decisionmaking program on rates of surgery for benign prostatic hyperplasia: pilot results. *Med Care* 1995;33:765-70.
100. King JS, Moulton BW. Rethinking informed consent: the case for shared medical decision-making. *Am J Law Med* 2006;32:429-501.
101. Arnold SV, Decker C, Ahmad H, et al. Converting the informed consent from a perfunctory process to an evidence-based foundation for patient decision making. *Circ Cardiovasc Qual Outcomes* 2008;1:21-8.
102. Greenhalgh J, Hockenhull J, Rao N, et al. Drug-eluting stents versus bare metal stents for angina or acute coronary syndromes. *Cochrane Database Syst Rev* 2010;CD004587.
103. Trikalinos TA, Alsheikh-Ali AA, Tatsioni A, et al. Percutaneous coronary interventions for non-acute coronary artery disease: a quantitative 20-year synopsis and a network meta-analysis. *Lancet* 2009;373:911-8.
104. Grines CL, Bonow RO, Casey DE Jr., et al. Prevention of premature discontinuation of dual antiplatelet therapy in patients with coronary artery stents: a science advisory from the American Heart Association, American College of Cardiology, Society for Cardiovascular Angiography and Interventions, American College of Surgeons, and American Dental Association, with representation from the American College of Physicians. *J Am Coll Cardiol* 2007;49:734-9.
105. Crawford MJ, Rutter D, Manley C, et al. Systematic review of involving patients in the planning and development of health care. *BMJ* 2002;325:1263.
106. Montori VM, Gaffni A, Charles C. A shared treatment decision-making approach between patients with chronic conditions and their clinicians: the case of diabetes. *Health Expect* 2006;9:25-36.
107. DeWalt DA, Pignone M, Malone R, et al. Development and pilot testing of a disease management program for low literacy patients with heart failure. *Patient Educ Couns* 2004;55:78-86.
108. DeWalt DA, Malone RM, Bryant ME, et al. A heart failure self-management program for patients of all literacy levels: a randomized, controlled trial. *BMC Health Serv Res* 2006;6:30.
109. DeWalt DA, Brouckson KA, Hawk V, et al. Comparison of a one-time educational intervention to a teach-to-goal educational intervention for self-management of heart failure: design of a randomized controlled trial. *BMC Health Serv Res* 2009;9:99.
110. Adler ED, Goldfinger JZ, Kalman J, et al. Palliative care in the treatment of advanced heart failure. *Circulation* 2009;120:2597-606.
111. Goodlin SJ, Hauptman PJ, Arnold R, et al. Consensus statement: palliative and supportive care in advanced heart failure. *J Card Fail* 2004;10:200-9.
112. Zwarenstein M, Goldman J, Reeves S. Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. *Cochrane Database Syst Rev* 2009;CD000072.
113. Taylor S, Bestall J, Cotter S, et al. Clinical service organisation for heart failure. *Cochrane Database Syst Rev* 2005;CD002752.
114. Cline CM, Israelsson BY, Willenheimer RB, et al. Cost effective management programme for heart failure reduces hospitalisation. *Heart* 1998;80:442-6.
115. Rich MW, Beckham V, Wittenberg C, et al. A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. *N Engl J Med* 1995;333:1190-5.
116. Riegel B, Carlson B, Kopp Z, et al. Effect of a standardized nurse case-management telephone intervention on resource use in patients with chronic heart failure. *Arch Intern Med* 2002;162:705-12.
117. Sisk JE, Hebert PL, Horowitz CR, et al. Effects of nurse management on the quality of heart failure care in minority communities: a randomized trial. *Ann Intern Med* 2006;145:273-83.
118. King I. *A Theory for Nursing: Systems, Concepts, Process*. New York, NY: John Wiley & Sons, 1981.
119. Moore SM, Charvat JM, Gordon NH, et al. Effects of a CHANGE intervention to increase exercise maintenance following cardiac events. *Ann Behav Med* 2006;31:53-62.
120. Bandura A. *Social Foundations of Thought and Actions*. Englewood Cliffs, NJ: Prentice-Hall, 1986.
121. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 1977;84:191-215.
122. Ewart C. A social problem-solving approach to behavior change in coronary heart disease. In: Shumaker S, Schron E, Ockene J, editors. *The Handbook of Health Behavior Change*. New York, NY: Springer, 1989:152-90.
123. Marlatt G, Gordon J. *Relapse Prevention: A Self-Control Strategy for the Maintenance of Behavior Change*. New York, NY: Guilford Press; 1984.
124. Dunbar SB, Clark PC, Deaton C, et al. Family education and support interventions in heart failure: a pilot study. *Nurs Res* 2005;54:158-66.
125. Little P, Everitt H, Williamson I, et al. Observational study of effect of patient centredness and positive approach on outcomes of general practice consultations. *BMJ* 2001;323:908-11.
126. Holman HR, Lorig KR. Overcoming barriers to successful aging: self-management of osteoarthritis. *West J Med* 1997;167:265-8.
127. Bodenheimer T, Lorig K, Holman H, et al. Patient self-management of chronic disease in primary care. *JAMA* 2002;288:2469-75.
128. Swendeman D, Ingram BL, Rotheram-Borus MJ. Common elements in self-management of HIV and other chronic illnesses: an integrative framework. *AIDS Care* 2009;21:1321-34.
129. Bechtel C, Ness DL. If you build it, will they come? Designing truly patient-centered health care. *Health Aff (Millwood)* 2010;29:914-20.
130. American Pharmacists Association, National Association of Chain Drug Stores Foundation. *Medication Therapy Management in Pharmacy Practice: Core Elements of an MTM Service Model Version 2.0*. Available at: <http://www.accp.com/docs/positions/misc/CoreElements.pdf>. Accessed June 18, 2010.
131. Smith M, Bates DW, Bodenheimer T, et al. Why pharmacists belong in the medical home. *Health Aff (Millwood)* 2010;29:906-13.
132. The Pew Internet and American Life Project. *Trends 2005: Internet: the mainstreaming of online life. 2005*. Available at: <http://pewresearch.org/assets/files/trends2005-internet.pdf>. Accessed June 11, 2011.
133. Ferguson T. From patients to end users. *BMJ* 2002;324:555-6.
134. Sieving PC. Factors driving the increase in medical information on the web—one American perspective. *J Med Internet Res* 1999;1:E3.
135. Hobbs J, Wald J, Jagannath YS, et al. Opportunities to enhance patient and physician e-mail contact. *Int J Med Inform* 2003;70:1-9.
136. Moyer CA, Stern DT, Dobias KS, et al. Bridging the electronic divide: patient and provider perspectives on e-mail communication in primary care. *Am J Manag Care* 2002;8:427-33.
137. Lewers DT. *Guidelines for patient-physician electronic mail. Monograph on the Internet*. Chicago, IL: American Medical Association. Available at: <http://www.ama-assn.org/meetings/public/annual00/reports/bot/bot2a00.rtf>. Accessed December 15, 2011.
138. Tang PC, Lee TH. Your doctor's office or the Internet? Two paths to personal health records. *N Engl J Med* 2009;360:1276-8.

139. Ammenwerth E, Schnell-Inderst P, Machan C, et al. The effect of electronic prescribing on medication errors and adverse drug events: a systematic review. *J Am Med Inform Assoc* 2008;15:585-600.
140. Harris Interactive. Harris Polls: few Americans using "E-" medical records. Available at: <http://www.harrisinteractive.com/NewsRoom/HarrisPolls/tabid/447/mid/1508/articleId/414/ctl/ReadCustom%20Default/Default.aspx>. Accessed December 9, 2010.
141. Jossi F. Personal health records. *Healthc Inform* 2006;23:52, 54.
142. U.S. Department of Health and Human Services. Surgeon general with Microsoft HealthVault expands consumer benefits for the my family health portrait offering. Available at: <http://www.hhs.gov/news/press/2010pres/02/20100224a.html>. Accessed May 20, 2010.
143. Croft DR, Peterson MW. An evaluation of the quality and contents of asthma education on the World Wide Web. *Chest* 2002;121:1301-7.
144. Khosrow-Pour M, editor. *Emerging Trends and Challenges in Information Technology Management: 2006 Information Resources Management Association International Conference*, Washington, DC, USA, May 21-24, 2006, Volume 1. Hershey, PA: Idea Group Publishing, 2006.
145. Raisinghani MS, Young E. Personal health records: key adoption issues and implications for management. *Int J Electron Healthc* 2008;4:67-77.
146. Peterson MW, Fretz PC. Patient use of the internet for information in a lung cancer clinic. *Chest* 2003;123:452-7.
147. Mandl KD, Kohane IS, Brandt AM. Electronic patient-physician communication: problems and promise. *Ann Intern Med* 1998;129:495-500.
148. Diaz JA, Griffith RA, Ng JJ, et al. Patients' use of the Internet for medical information. *J Gen Intern Med* 2002;17:180-5.
149. Dickerson S, Reinhart AM, Feeley TH, et al. Patient Internet use for health information at three urban primary care clinics. *J Am Med Inform Assoc* 2004;11:499-504.
150. Horowitz CR, Rein SB, Leventhal H. A story of maladies, misconceptions and mishaps: effective management of heart failure. *Soc Sci Med* 2004;58:631-43.
151. Riegel B, Dickson VV. A situation-specific theory of heart failure self-care. *J Cardiovasc Nurs* 2008;23:190-6.
152. Khraim FM, Carey MG. Predictors of pre-hospital delay among patients with acute myocardial infarction. *Patient Educ Couns* 2009;75:155-61.
153. Evangelista LS, Rasmusson KD, Laramée AS, et al. Health literacy and the patient with heart failure—implications for patient care and research: a consensus statement of the Heart Failure Society of America. *J Card Fail* 2010;16:9-16.
154. Jurgens CY, Hoke L, Byrnes J, et al. Why do elders delay responding to heart failure symptoms? *Nurs Res* 2009;58:274-82.
155. Morrow DG, Weiner M, Young J, et al. Improving medication knowledge among older adults with heart failure: a patient-centered approach to instruction design. *Gerontologist* 2005;45:545-52.
156. Morrow DG, Weiner M, Deer MM, et al. Patient-centered instructions for medications prescribed for the treatment of heart failure. *Am J Geriatr Pharmacother* 2004;2:44-52.
157. Salas M, In't Veld BA, van der Linden PD, et al. Impaired cognitive function and compliance with antihypertensive drugs in elderly: the Rotterdam Study. *Clin Pharmacol Ther* 2001;70:561-6.
158. Pressler SJ, Subramanian U, Kareken D, et al. Cognitive deficits in chronic heart failure. *Nurs Res* 2010;59:127-39.
159. Vogels RL, Oosterman JM, van Harten B, et al. Profile of cognitive impairment in chronic heart failure. *J Am Geriatr Soc* 2007;55:1764-70.
160. Farran CJ. Family caregiver intervention research: where have we been? Where are we going? *J Gerontol Nurs* 2001;27:38-45.
161. Schulz R, Beach SR. Caregiving as a risk factor for mortality: the Caregiver Health Effects Study. *JAMA* 1999;282:2215-9.
162. Hwang B, Luttk ML, Dracup K, et al. Family caregiving for patients with heart failure: types of care provided and gender differences. *J Card Fail* 2010;16:398-403.
163. Pressler SJ, Gradus-Pizlo I, Chubinski SD, et al. Family caregiver outcomes in heart failure. *Am J Crit Care* 2009;18:149-59.
164. Hoffman C, Rice D, Sung HY. Persons with chronic conditions: their prevalence and costs. *JAMA* 1996;276:1473-9.
165. Barr MS. The patient-centered medical home: aligning payment to accelerate construction. *Med Care Res Rev* 2010;67:492-9.
166. Hendryx MS, Ahern MM, Lovrich NP, et al. Access to health care and community social capital. *Health Serv Res* 2002;37:87-103.
167. Shi L, Macinko J, Starfield B, et al. The relationship between primary care, income inequality, and mortality in U.S. States, 1980-1995. *J Am Board Fam Pract* 2003;16:412-22.
168. Starfield B, Shi L. The medical home, access to care, and insurance: a review of evidence. *Pediatrics* 2004;113:1493-8.
169. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Q* 2005;83:457-502.
170. Hjordt Dahl P, Borchgrevink CF. Continuity of care: influence of general practitioners' knowledge about their patients on use of resources in consultations. *BMJ* 1991;303:1181-4.
171. Saultz JW. Defining and measuring interpersonal continuity of care. *Ann Fam Med* 2003;1:134-43.
172. He W, Sengupta M, Velkoff VA, DeBarros KA. 65+ in the United States: 2005. Current Population Reports, P23-209. U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau. Washington, DC: U.S. Government Printing Office, 2005. Available at: <http://www.census.gov/prod/2006pubs/p23-209.pdf>. Accessed June 18, 2011.
173. Lakatta EG, Levy D. Arterial and cardiac aging: major shareholders in cardiovascular disease enterprises: part I: aging arteries: a "set up" for vascular disease. *Circulation* 2003;107:139-46.
174. Lakatta EG, Wang M, Najjar SS. Arterial aging and subclinical arterial disease are fundamentally intertwined at macroscopic and molecular levels. *Med Clin North Am* 2009;93:583-604.
175. Vogeli C, Shields AE, Lee TA, et al. Multiple chronic conditions: prevalence, health consequences, and implications for quality, care management, and costs. *J Gen Intern Med* 2007;22 Suppl 3:391-5.
176. American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), American College of Physicians (ACP), American Osteopathic Association (AOA). Joint principles of the patient-centered medical home. Available at: <http://www.medicalhomeinfo.org/downloads/pdfs/jointstatement.pdf>. Accessed June 18, 2011.
177. Berenson RA, Hammons T, Gans DN, et al. A house is not a home: keeping patients at the center of practice redesign. *Health Aff (Millwood)* 2008;27:1219-30.
178. Casalino LP, Rittenhouse DR, Gillies RR, et al. Specialist physician practices as patient-centered medical homes. *N Engl J Med* 2010;362:1555-8.
179. Rodgers GP, Conti JB, Feinstein JA, et al. ACC 2009 survey results and recommendations: addressing the cardiology workforce crisis: a report of the ACC board of trustees workforce task force. *J Am Coll Cardiol* 2009;54:1195-208.

Key Words: ACCF Health Policy Statements ■ patient-centered care ■ patient-centered medical home.

**APPENDIX 1. AUTHOR RELATIONSHIPS WITH INDUSTRY AND OTHER ENTITIES (RELEVANT)—
 ACCF 2012 HEALTH POLICY STATEMENT ON PATIENT-CENTERED CARE IN CARDIOVASCULAR MEDICINE**

Committee Member	Employment	Consultant	Speaker's Bureau	Ownership/Partnership/Principal	Personal Research	Institutional, Organizational, or Other Financial Benefit	Expert Witness
Mary Norine Walsh, <i>Chair</i>	St. Vincent Heart Center of Indiana—Medical Director HF, Cardiac Transplantation, Nuclear Cardiology	None	None	None	None	None	None
Alfred A. Bove,* <i>Vice Chair</i>	Temple University Hospital—Professor of Medicine (Emeritus)	• Health Station Networks, Inc. • Insight Telehealth†	None	• Health Station Networks, Inc. • Insight Telehealth†	None	None	None
Russell R. Cross	Children's National Medical Center—Director, Cardiology Quality and Outcomes Program	None	None	None	None	None	None
Keith C. Ferdinand	Association of Black Cardiologists—Chief Science Officer	None	None	None	None	None	None
Daniel E. Forman	Brigham and Women's Hospital—Professor of Medicine	None	None	None	None	None	None
Andrew M. Freeman	National Jewish Health—Co-Director of Nuclear Cardiology; Director of Ambulatory Electrocardiography; Co-Director of Echocardiography	None	None	None	None	None	None
Suzanne Hughes	Summa Health System—Director, System Population Health	None	None	None	None	None	None
Elizabeth Klodas*	Cardiovascular Imaging Consultants—Director of Cardiovascular Imaging	None	None	• TruHealth†	None	None	None
Michelle Koplan	B'nai B'rith Camp—Executive Director	None	None	None	None	None	None
William R. Lewis*	Metro Health Medical Center—Chief of Clinical Cardiology	None	None	None	None	None	None
Brian MacDonnell	SunTrust Bank—EVP & Area LOB Manager	None	None	None	None	None	None
David C. May	Cardiovascular Specialists, PA—President	None	None	None	None	None	None
Joseph V. Messer	Cardiovascular Associates of Glenbrook & Evanston, LLC—Professor of Medicine	None	None	None	None	None	None
Susan J. Pressler	University of Michigan—Professor of Nursing	None	None	None	None	None	None
Mark L. Sanz	International Heart Institute of Montana—Director of Cardiology	None	None	None	None	None	None
John A. Spertus*	MidAmerica Heart Institute of St. Luke's Hospital—Director of Outcomes Research	• United Healthcare Scientific Advisory Board	None	• Health Outcomes Sciences	None	None	None

Committee Member	Employment	Consultant	Speaker's Bureau	Ownership/Partnership/Principal	Personal Research	Institutional, Organizational, or Other Financial Benefit	Expert Witness
Sarah A. Spinler	University of the Sciences in Philadelphia, Philadelphia College of Pharmacy—Professor of Clinical Pharmacy	None	None	None	None	None	None
Louis Evan Teichholz	Hackensack University Medical Center Division of Cardiology—Professor of Medicine Cardiology	None	None	None	None	None	None
John B. Wong*	Tufts Medical Center and Tufts University School of Medicine Division of Cardiology—Chief, Division of Clinical Decision Making, Professor of Medicine	• Foundation for Informed Medical Decision Making	None	None	• Foundation for Informed Medical Decision Making	None	None
Katherine Doermann Byrd	American College of Cardiology Foundation—Associate Director, Strategic Quality Alliance Bridge Products	None	None	None	None	None	None

This table represents the relationships of committee members with industry and other entities that were determined to be relevant to this document. These relationships were reviewed and updated in conjunction with all meetings and/or conference calls of the writing committee during the document development process. The table 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 ≥\$10,000 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. Relationships that exist with no financial benefit are also included for the purpose of transparency. Relationships in this table are modest unless otherwise noted. Please refer to <http://www.cardiosource.org/Science-And-Quality/Practice-Guidelines-and-Quality-Standards/Relationships-With-Industry-Policy.aspx> for definitions of disclosure categories or additional information about the ACCF Disclosure Policy for Writing Committees.

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*Recused from writing initial text and voting on the document recommendations because of relationships with industry relevant to this document. †No financial benefit.

APPENDIX 2. PEER REVIEWER RELATIONSHIPS WITH INDUSTRY AND OTHER ENTITIES (RELEVANT)—ACCF 2012 HEALTH POLICY STATEMENT ON PATIENT-CENTERED CARE IN CARDIOVASCULAR MEDICINE

Committee Member	Representation	Consultant	Speaker's Bureau	Ownership/Partnership/Principal	Personal Research	Institutional, Organizational, or Other Financial Benefit	Expert Witness
Paul L. Douglass	Official Reviewer—ACCF Board of Trustees	None	None	None	None	None	None
Thomas A. Haffey	Official Reviewer—ACCF Board of Governors	None	None	None	None	None	None
Janet F. Wyman	Official Reviewer—Clinical Quality Committee	None	None	None	None	None	None
Nancy C. Berg	Content Reviewer—ACCF Clinical Electrophysiology and Electrocardiography Committee	None	None	None	None	None	None
Kim K. Birtcher	Content Reviewer—ACCF Cardiovascular Team Council	• Jones & Bartlett Learning	None	None	None	None	None

Committee Member	Representation	Consultant	Speaker's Bureau	Ownership/ Partnership/ Principal	Personal Research	Institutional, Organizational, or Other Financial Benefit	Expert Witness
Joseph P. Drozda Jr.	Content Reviewer— Clinical Quality Committee	None	None	None	None	None	None
James W. Fasules	Content Reviewer— ACCF Advocacy Steering Committee	None	None	None	None	None	None
Eileen M. Handberg	Content Reviewer— Patient-Centered Care Committee	None	None	None	None	None	None
Wayne L. Miller	Content Reviewer— ACCF Heart Failure Committee	None	None	None	None	None	None
C. Venkata S. Ram	Content Reviewer— ACCF Peripheral Vascular Disease Committee	None	• Advanced Health Media	None	None	None	None
Mark L. Sanz	Content Reviewer— Clinical Quality Committee	None	None	None	None	None	None
Peter P. Toth	Content Reviewer— ACCF Peripheral Vascular Disease Committee	None	None	None	None	None	None
Krishnaswami Vijayaraghavan	Content Reviewer— ACCF Board of Governors	None	None	None	None	None	None
Robert N. Vincent	Content Reviewer— Adult Congenital/ Pediatric Cardiology Council	None	None	None	None	None	None
John R. Windle	Content Reviewer— Clinical Quality Committee	None	None	None	None	• WebMD*	None
William A. Zoghbi	Content Reviewer— Patient-Centered Care Committee	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. 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% or more of the voting stock or share of the business entity, or ownership of \geq \$10,000 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.

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