Post-print of the Key Points Interpretation of the 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients with Chronic Coronary Disease

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Abstract

Chronic coronary artery disease refers to chronic cardiac or vascular disorders caused by insufficient blood flow into or out of the heart, with persistently high morbidity and mortality rates, leading to substantial personal, economic, and social burdens. In July 2023, six academic organizations including the American Heart Association (AHA) and the American College of Cardiology (ACC) jointly released the "2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients With Chronic Coronary Disease." This guideline provides an evidence-based and patient-centered approach to the comprehensive management of patients with chronic coronary artery disease, covering content related to the epidemiology of chronic coronary artery disease, as well as recommendations for patient evaluation, diagnosis and risk stratification, treatment, management of special populations, patient follow-up, and related considerations. It emphasizes the importance of healthy diet, regular physical exercise, and tobacco avoidance for cardiovascular health, and updates therapeutic recommendations for medications such as sodium-glucose cotransporter 2 inhibitors and glucagon-like peptide-1 receptor agonists, providing clinicians with the latest evidence-based recommendations. This article provides a key-point interpretation of the management strategies in this guideline, aiming to provide a basis for the formulation and updating of relevant domestic guidelines, continuously standardizing and improving specialized diagnosis, treatment, and care for patients with chronic coronary artery disease, in order to provide evidence-based guidance for clinical practice and improve the prognosis of patients with chronic coronary artery disease.

Full Text

Interpretation of Key Points of the 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients with Chronic Coronary Disease

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Abstract

Chronic coronary disease (CCD) refers to chronic cardiac or vascular disorders resulting from insufficient blood flow to or from the heart. The incidence and mortality rates of CCD remain high, imposing substantial personal, economic, and societal burdens. In July 2023, the American Heart Association (AHA) and American College of Cardiology (ACC), along with four other academic organizations, jointly released the *2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients with Chronic Coronary Disease*. This guideline provides an evidence-based, patient-centered approach to comprehensive CCD management, covering epidemiology, patient assessment, diagnosis and risk stratification, treatment, special population management, follow-up, and related considerations. It emphasizes the importance of healthy diet, regular physical exercise, and tobacco avoidance for cardiovascular health, and updates therapeutic recommendations for medications including sodium-glucose cotransporter-2 inhibitors (SGLT2i) and glucagon-like peptide-1 receptor agonists (GLP-1RA), offering clinicians the latest evidence-based recommendations. This article provides a focused interpretation of the guideline' s management strategies, aiming to inform the development and updating of domestic guidelines, continuously standardize and improve specialized diagnosis and care for CCD patients, and provide evidence-based guidance for clinical practice to improve patient outcomes.

Keywords: Coronary disease; Chronic coronary disease; Cardiovascular diseases; Management; Guideline interpretation; American Heart Association

Introduction

Cardiovascular disease is the leading cause of death worldwide [1]. In China, accelerated population aging, unhealthy lifestyles, and a large population with cardiovascular risk factors have contributed to continuously rising incidence and mortality rates, with no inflection point in disease burden yet observed [2]. In contrast, US coronary heart disease mortality peaked in 1968 and declined by nearly 75% by 1998, showing a clear inflection point [1]. Nevertheless, approximately 20.1 million Americans currently live with chronic coronary disease, and 11.1 million suffer from chronic stable angina, with one-quarter of myocardial infarctions occurring in CCD patients with prior myocardial infarction [3]. Healthcare expenditures for CCD remain high, and the number and complexity of comorbidities among CCD patients continue to increase, posing serious threats to public health.

In July 2023, the American Heart Association (AHA), American College of Cardiology (ACC), American College of Chest Physicians (ACCP), American Society for Preventive Cardiology (ASPC), National Lipid Association (NLA), and Preventive Cardiovascular Nurses Association (PCNA) jointly released the *2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients with Chronic Coronary Disease* [4] (hereinafter referred to as the 2023 CCD Guideline). This guideline updates and integrates the *2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS Guideline for the Diagnosis and Management of Patients with Stable Ischemic Heart Disease* [5] and its *2014 Focused Update* [6], providing an evidence-based, patient-centered approach to comprehensive CCD management. It addresses healthy social determinants of health (SDOH), incorporates shared decision-making and multidisciplinary team care principles, and details CCD epidemiology, assessment, diagnosis and risk stratification, treatment, revascularization decisions, special population management, follow-up, evidence gaps, and future research directions. The guideline emphasizes healthy diet, regular physical exercise, and tobacco avoidance, updates recommendations for SGLT2i and GLP-1RA, and provides cost-value recommendations to improve cardiovascular health while prioritizing patient interests. This article interprets key management strategies from the 2023 CCD Guideline to facilitate its implementation in primary care settings within China' s tiered healthcare system, establish a foundation for high-quality CCD care, and improve patient outcomes.

Definition and Scope of Chronic Coronary Disease

The 2023 CCD Guideline [4] defines CCD as a spectrum of presentations with or without typical coronary artery disease signs and symptoms, emphasizing that the CCD patient population is heterogeneous. This includes patients discharged after stabilization from acute cardiovascular events such as acute coronary syndrome or coronary revascularization; patients with left ventricular systolic dysfunction and known/suspected coronary artery disease or ischemic cardiomyopathy; patients with stable angina symptoms (or ischemic equivalents such as

dyspnea or arm pain with exertion) regardless of imaging findings; patients with evidence of coronary vasospasm or microvascular angina; and patients diagnosed through stress testing or coronary CT angiography (CTA). This definition highlights the stable, chronic nature of CCD and reflects the continuum from acute to chronic coronary disease, applicable in outpatient settings. This framework also benefits Chinese primary care physicians in developing holistic understanding and comprehensive management approaches for coronary artery disease.

Core Management Principles

The 2023 CCD Guideline [4] outlines three fundamental principles for CCD management. First, recognizing the heterogeneous CCD population with non-uniform risk for future cardiovascular events, clinicians should prioritize individualized risk assessment when making treatment decisions. Second, symptom relief and quality of life improvement are essential therapeutic goals; in various contexts and through shared decision-making, clinicians may prioritize treatments that improve symptoms even if they do not necessarily improve cardiovascular outcomes. Third, multidisciplinary team management is essential, with effective collaboration between primary care physicians and cardiac specialists. CCD management (including lifestyle modification, pharmacotherapy, symptom management, and initial evaluation) can be effectively performed by primary care clinicians, enabling Chinese primary care physicians to manage CCD patients within the tiered healthcare system to achieve the goals of "primary care first, two-way referral, vertical integration, and acute-chronic separation."

Patient-Centered, Team-Based Care

The 2023 CCD Guideline [4] emphasizes a team-based, patient-centered management model that considers SDOH and cost factors. To optimize individualized treatment, multiple factors must be considered [7-8] [Figure 1: see original paper].

Comprehensive Risk Assessment. CCD patients require thorough risk evaluation, including ischemic event risk and potential treatment complications. As a heterogeneous disease spectrum rather than a single condition, CCD warrants enhanced attention and assessment from primary care physicians in China.

Symptom and Quality of Life Evaluation. Careful assessment of CCD symptoms, functional limitations, and quality of life is crucial. Chinese primary care physicians should emphasize both clinical symptoms and long-term prognosis and quality of life.

Social Determinants of Health (SDOH). SDOH—including healthcare access, economic stability, and social context—are key drivers of persistent health disparities and inequities [9-12]. SDOH affects all stages of CCD management, including secondary prevention, treatment, access to care, follow-up, and self-management [13]. Clinicians should ensure health equity in cardiovascular care by viewing each patient through an SDOH lens and conducting routine SDOH

assessments, including mental health evaluation, psychosocial stress, health literacy, sociocultural influences (language, religion, body image), economic pressure, transportation, insurance status, food security, community/environmental exposures, and feasible options for regular physical activity and social support [9,14-15]. Comprehensive care plans should be developed based on identified barriers or needs, informing patients and families about patient-centered treatment decisions and lifestyle recommendations. China' s traditional primary care model has focused primarily on biochemical disease factors while neglecting social and psychological dimensions. Therefore, Chinese primary care physicians should consider patients' individual circumstances, including their environment and social support, to achieve rational diagnosis and healthcare delivery.

Patient Education. Patient education is defined as "the process by which health professionals and others impart information to patients to modify their health behaviors or improve their health status."The 2023 CCD Guideline [4] recommends continuous, individualized education for CCD patients on symptom management, lifestyle modification, SDOH risk factors, and medication adherence to enhance awareness and promote behavioral change. Chinese primary care physicians should strengthen physician-patient communication, emphasizing active patient participation in CCD management and ensuring patients understand their disease and treatment options to improve adherence.

Team-Based Approach. A team-based approach helps patients and clinicians navigate the entire care process. A patient-centered, team-based model focusing on shared decision-making is essential for monitoring and managing CCD symptoms throughout the disease course and can be applied effectively to all aspects of CCD management. Continuous communication among care team members, patients, and caregivers is indispensable for optimizing outcomes and meeting patient needs, creating interconnected relationships [Figure 2: see original paper]. Shared decision-making is a collaborative process that educates patients about risks, benefits, treatment and testing options, and aligns treatment decisions with patient values and goals, particularly when evidence is uncertain or major risk-benefit trade-offs exist. In China' s primary care settings, clinicians must consider patients' social attributes, expectations, and preferences, prioritizing patient needs and enhancing their role in medical decision-making to achieve optimal collaboration and treatment outcomes.

Lifestyle and Behavioral Recommendations

The 2023 CCD Guideline [4] recommends non-pharmacological therapy for all CCD patients, including healthy diet and exercise, as lifestyle modification is the optimal approach to prevent symptom deterioration. Chinese primary care institutions should leverage their strengths in lifestyle management, educating CCD patients that lifestyle improvements enhance both quality of life and prognosis.

Healthy Dietary Patterns In CCD patients, healthy dietary choices improve management of cardiovascular risk factors and target pathophysiological mechanisms underlying acute cardiovascular events [16-17]. Population-based studies support increased consumption of whole grains and fiber, and reduced intake of saturated fat, sodium, refined carbohydrates, and sugar-sweetened beverages [18-20] [Figure 3: see original paper]. In contrast, over-the-counter nutritional or dietary supplements lack sufficient evidence for reducing acute cardiovascular event risk in CCD patients [21]. Therefore, the guideline does not recommend non-prescription dietary supplements, including fish oil, omega-3 fatty acids, or vitamins, given the lack of cardiovascular benefit.

Smoking Cessation Smoking is a major cause of cardiovascular disease and events [22], damaging endothelial function, promoting atherosclerosis, and enhancing thrombosis [23]. The guideline recommends assessing tobacco use at every visit and advising smoking cessation for all CCD patients who smoke. Behavioral intervention combined with nicotine replacement therapy is recommended for regular smokers. Short-term e-cigarette use may be considered for smoking cessation after consulting healthcare professionals, though this carries risk of long-term e-cigarette dependence. While e-cigarettes increase quit success compared to nicotine replacement therapy, they are not recommended as first-line therapy due to lack of long-term safety data and risks of continued use.

Physical Activity All CCD patients without contraindications should be encouraged to adopt regular physical activity, including reducing sedentary time and engaging in aerobic and resistance exercise. Transitioning from a sedentary lifestyle to even low-intensity physical activity improves metabolic and cardiovascular health [24-26]. For CCD patients without contraindications, the 2023 CCD Guideline [4] recommends: $ $150 minutes/week of moderate-intensity aerobic exercise or $ $75 minutes/week of vigorous-intensity aerobic exercise to improve functional capacity and quality of life while reducing hospitalization and mortality; resistance (strength) training $ $2 days/week to improve muscle strength, functional capacity, and cardiovascular risk factor control; and low-intensity physical activity (e.g., walking) to reduce sedentary time and improve functional capacity while lowering cardiovascular risk. However, exercise is contraindicated in severely ill and unstable patients, including those with unstable angina, other high-risk cardiovascular conditions (severe arrhythmias, decompensated heart failure, active thromboembolic disease), or unstable/life-threatening non-cardiovascular conditions (active infection, uncontrolled diabetes, end-stage cancer, unstable psychological conditions).

Cardiac rehabilitation is a comprehensive, team-based, evidence-based approach providing proven beneficial lifestyle, behavioral, and medical therapies for cardiovascular disease patients. The 2023 CCD Guideline [4] recommends cardiac rehabilitation for all eligible CCD patients to significantly improve cardiovascular outcomes. Currently, China faces challenges in providing continuous cardiac rehabilitation services for CCD patients due to inadequate referral mechanisms

and clinical pathways, requiring further system improvement.

Pharmacological Recommendations

Medication recommendations for symptom management and cardiovascular event prevention represent important updates in the 2023 CCD Guideline [4]. Chinese primary care physicians should provide individualized pharmacotherapy based on clinical context and comprehensive patient assessment, discussing out-of-pocket costs with patients to prevent cost-related medication non-adherence.

Novel Glucose-Lowering Agents SGLT2i and GLP-1RA, previously used for type 2 diabetes, benefit CCD patients (with or without diabetes) through different pathways by reducing weight, improving glycemic control, slowing kidney disease progression, and lowering cardiovascular event risk. The guideline recommends these agents for specific CCD patients (including non-diabetic individuals) to improve prognosis. However, clinical implementation has been slow [27], highlighting the need for greater interdisciplinary collaboration among cardiovascular specialists in managing CCD patients with type 2 diabetes.

Beta-Blockers Beta-blockers provide cardiovascular protection by reducing heart rate and myocardial contractility. The 2023 CCD Guideline [4] presents updated recommendations: long-term beta-blocker therapy is not recommended to improve prognosis in CCD patients without myocardial infarction in the past year, left ventricular ejection fraction $ $50%, or other indications (angina, uncontrolled hypertension, or arrhythmias). Calcium channel blockers (CCB) or beta-blockers are recommended as first-line anti-anginal therapy. When determining beta-blocker indications for CCD patients with or without prior myocardial infarction or left ventricular systolic dysfunction, both cardiovascular specialists and Chinese primary care physicians should consider these distinctions and comprehensively evaluate patient conditions. Beta-blocker therapy should not be overlooked due to overlapping effects and close relationships with other diseases, and comprehensive screening of symptoms and comorbidities is recommended [28-29].

Novel Cholesterol-Lowering Agents Statins remain first-line therapy for lipid lowering in CCD patients. The 2023 CCD Guideline [4] recommends considering novel medications for CCD patients with persistently elevated cholesterol or statin intolerance, including adjunctive therapies such as ezetimibe, PCSK9 inhibitors, inclisiran, and bempedoic acid. Plasma low-density lipoprotein cholesterol (LDL-C) is the primary cause of atherosclerotic disease and the target of lipid management. Regardless of the lipid-lowering regimen used, primary care physicians should recognize that lipid monitoring is essential for assessing individual response to therapy and monitoring long-term adherence and persistence.

Antiplatelet Therapy Antiplatelet drugs help prevent thrombosis in patients with heart attack, stroke, chest pain, or other cardiovascular diseases. Some patients receive dual antiplatelet therapy (two antiplatelet agents). The 2023 CCD Guideline [4] recommends short-term dual antiplatelet therapy as safe and effective in patients at high bleeding risk but low ischemic risk. As a dynamically evolving disease, CCD management requires antithrombotic strategies to be adjusted according to different stages and risk populations rather than remaining static. Chinese healthcare institutions at all levels should implement dynamic management of CCD patients.

Follow-Up Recommendations

Quality of life is an important consideration in CCD management. The 2023 CCD Guideline [4] recommends comprehensive annual risk assessment and quality of life improvement for CCD patients.

First, assessment should include all medical and social factors related to cardiac health: evaluating new or worsening symptoms, functional status changes, or quality of life decline; assessing adherence and appropriateness of recommended lifestyle and medical interventions, including physical activity, nutrition, weight management, stress reduction, smoking cessation, immunization status, blood pressure and glucose control, and anti-anginal, antithrombotic, and lipid-lowering therapies.

Second, clinicians should carefully analyze risk assessment results with patients, promoting active patient participation in treatment decisions through education on symptom management and therapeutic options.

Third, clinicians should ensure patients follow current dietary, physical activity, and other lifestyle recommendations and receive appropriate therapy, continuously monitoring for disease complications or adverse treatment reactions.

Additionally, routine follow-up screening with coronary CTA or stress testing with or without imaging is not recommended for asymptomatic patients receiving guideline-directed therapy without functional status changes. Routine periodic invasive coronary angiography and regular left ventricular function assessment should not be performed to guide treatment decisions in clinically stable CCD patients. At least annual clinical follow-up is recommended, with in-person visits supplemented by telehealth when clinically appropriate [30]. As telehealth remains underdeveloped in China, primary care institutions should establish widely accessible, standardized, integrated, and bidirectional electronic health record systems for CCD patients to standardize follow-up processes and enhance continuity of primary care services.

Conclusion

The 2023 CCD Guideline [4] integrates the latest evidence-based recommendations with a patient-centered approach to comprehensively manage CCD pa-

tients, using a framework of shared decision-making, team-based care, and cost-value considerations to address established diagnostic, risk stratification, and therapeutic methods, novel therapies, and intersections between CCD and other comorbidities. As tiered healthcare system development remains a priority in China, this interpretation covers CCD overview, management principles, therapeutic recommendations, lifestyle advice, pharmacological recommendations, and follow-up guidance to facilitate guideline implementation and dissemination in primary care settings and standardize CCD management. However, due to limited high-quality domestic evidence, some recommendations are based primarily on foreign research. Future high-level, multicenter clinical studies by Chinese cardiovascular experts are needed to generate robust domestic evidence and ensure guidelines provide actionable guidance for healthcare teams and patients to achieve the shared goals of reducing mortality and improving quality of life.

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Note: Figure translations are in progress. See original paper for figures.