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Guidelines for the Reduction of Cardiovascular Disease in Women

Gina P. Lundberg, Sandra B. Dunbar, and Nanette K. Wenger Q9

ABSTRACT

Since 1984, more women than men have died each year from cardiovascular disease. Various organizations, such as the American Heart Association and the American College of Cardiology, have published prevention guidelines for heart disease and stroke that may improve care for women. In this article, we review these guidelines, the results of new studies on emerging risk factors, and new approaches for reducing cardiovascular disease in women.

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Heart disease and stroke remain the primary causes of death for women in the United States. Although overall mortality rates for U.S. women have continued to decrease since 2000 (Mozaffarian et al., 2015), mortality rates in younger women ages 35 through 50 years have changed little and may actually be on the rise (Ford & Capewell, 2007). Atherosclerotic cardiovascular disease (ASCVD) is typically associated with older women. However, in younger women, less progress in prevention, a plateau in ASCVD incidence, and an emergence of risk factors warrant greater attention from clinicians and researchers.

The critical need for attention to prevention is underscored by these data: only 23.5% of women in the United States older than 20 years meet five or more of the criteria for ideal cardiovascular (CV) health (Go et al., 2014). These criteria include non-smoking, ideal body mass index (BMI), physical activity level, total cholesterol, blood pressure, and fasting glucose levels, and a healthy diet. In 2010, 64% of women in the United States, 80% of non-Hispanic Black women, and 78% of Mexican American women were overweight or obese (Go et al., 2014).

In 2011, the American Heart Association (AHA) published "Effectiveness-Based Guideline for Prevention of Cardiovascular Disease in Women—2011 Update" (Mosca et al., 2011). Subsequently, the American College of Cardiology (ACC) and the AHA released guidelines for the evaluation of ASCVD risk with use of pooled cohort risk equations (Goff et al., 2014) and guidelines for the management of cholesterol (Stone et al., 2014), hypertension (Go et al., 2014), and lifestyle to reduce CV risk (Eckel et al., 2014). Q2 These guidelines differ substantially from the 2011 AHA guidelines (Mosca et al., 2011), and a number of the 2011 recommendations have been updated. New guidelines have also been published on diagnostic testing for heart disease in women (Mieres et al., 2014) and prevention of stroke in women (Bushnell et al., 2014). In this article, we review the guidelines and emerging data that apply to the risk of cardiovascular disease (CVD) and ASCVD (which includes CVD and stroke) in women.

Guidelines for the Prevention of CVD in Women Q1

"Effectiveness-Based Guideline for Prevention of Cardiovascular Disease in Women—2011 Update"

Released by the AHA in 2011, "Effectiveness-Based Guideline for Prevention of Cardiovascular Disease in Women—2011 Update" (Mosca et al., 2011) was designed to highlight evidence related to the effectiveness of therapies for control of major cardiovascular risk factors in women and to encourage the application of effective therapies. The effectiveness-based approach also encompassed the benefits and risks observed in clinical practice, that is, therapies for which there was evidence of clinical improvement in

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Despite the decline in mortality rates, heart disease and stroke remain the primary causes of death for women in the United States.

cardiovascular outcomes in women. Women were classified into three groups: *high risk, at risk,* or *ideal cardiovascular health*. High-risk status was characterized by clinical evidence of coronary heart disease (CHD), cerebrovascular disease, peripheral arterial disease, abdominal aortic aneurysm, and coronary risk equivalents of chronic kidney disease and diabetes mellitus (DM). Women with a 10-year predicted cardiovascular risk of 10% or greater were classified as high risk.

The presence of at least one major risk factor was used to define the population of at-risk women: cigarette smoking, hypertension, dyslipidemia, obesity, poor diet, physical inactivity, family history of premature CVD, and metabolic syndrome. Additional characteristics included evidence of subclinical atherosclerosis, such as coronary calcification, carotid plaque, or increased carotid intima–media thickness (CIMT); poor exercise capacity on treadmill testing and/or abnormal heart rate recovery after termination of exercise; and evidence of systemic autoimmune collagen disease. It was recommended that women with these at-risk characteristics be screened for cardiovascular risk factors. Pregnancy-related complications, including pre-eclampsia, gestational diabetes, or pregnancy-induced hypertension, were also included as risk factors because these abnormal responses to the cardiovascular and metabolic stress of pregnancy appear to be early indicators of cardiovascular risk. Appropriate referral of women with these complications by the obstetric provider for risk factor assessment and surveillance is warranted, and a detailed history of pregnancy-related complications was advocated as part of the routine cardiovascular risk assessment of all women.

The classification of ideal cardiovascular health was based on the absence of clinical CVD; ideal, untreated levels of total cholesterol, blood pressure, and fasting blood glucose; and adherence to heart-healthy behaviors, including normal BMI, smoking abstinence, participation in physical activity at recommended goals, and a heart-healthy diet. The recommended evaluation for cardiovascular risk in women included a medical history, family history, and a history of pregnancy complications; assessment of symptoms of CVD; and depression screening for women with documented CVD. Recommendations for the physical examination included blood pressure, BMI, and waist measurement; laboratory tests, including fasting lipoprotein and glucose levels; and a Framingham Risk Assessment (a gender-specific algorithm to estimate 10-year cardiovascular risk) if no evidence for CVD, chronic kidney disease, or DM was present. Although data about direct CVD outcomes for interventions such as screening for depression in women with CVD were deficient, they were included in the evaluation algorithm. These interventions may directly affect CVD risk with regard to lack of adherence to preventive therapies, heart-risky behaviors, or other mechanisms. In 2014, the AHA specifically addressed depression in women with documented coronary artery disease (CAD; Lichtman et al., 2014).

The guidelines further included lifestyle recommendations for smoking cessation, healthy diet, regular physical activity, and weight management for all women. For women at high risk for CVD, priorities included blood pressure control, control of low-density lipoprotein cholesterol (LDL-C), beta blocker therapy, and angiotensin-converting enzyme inhibitor/angiotensin receptor–blocker therapy. Glycemic control in diabetic women and aspirin or antiplatelet therapy in high-risk women were also critical recommendations. For at-risk women, the initial recommendations included implementation of healthy lifestyle, blood pressure and cholesterol control, and consideration of aspirin therapy.

ACC/AHA "Guideline on the Assessment of Cardiovascular Risk," 2013

Released in 2013 by the ACC and the AHA, "Guideline on the Assessment of Cardiovascular Risk" (Goff et al., 2014) addressed new elements for risk stratification that included the accepted standard evaluation of gender- and race-specific, pooled cohort risk equations. The rationale for adding risk assessment to the 2013 guideline was the need to match the intensity of preventive efforts to an individual's absolute risk of ASCVD (Goff et al., 2014). New guidelines for primary prevention are the pooled cohort risk equations for estimation of risk for adults ages 40 through 79 years. Particularly relevant to women, these equations are race and sex specific and are based on data derived from a number of contemporary studies. Also introduced in the guidelines was the term *ASCVD*, which allowed for the risk of stroke and myocardial infarction

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