



Women & Heart disease

Symptoms and treatment guidelines

Abstract: Coronary heart disease is the leading cause of death for women. Many women and some NPs are not aware of women's risk of myocardial infarction (MI) or that women's MI symptoms often differ from men's. NPs need to educate women about their risk and follow practice guidelines.

By Margaret Wells, PhD, NP, and Melanie Kalman, PhD, RN

Heat disease is the leading cause of death for men and women in the United States.¹ Cardiovascular disease (CVD), a subset of heart disease, is estimated to affect nearly half of all women, and in 2008, almost 500,000 women died from CVD.² Since 1979, mortality from heart disease in men has declined by more than 17%; in the same time period, heart disease mortality in women has declined by only 2.5%.³ Women have a higher rate of myocardial infarction (MI) complications such as heart rupture, cardiogenic shock, and atrial fibril-

lation than men.⁴ Thirty-eight percent of women die within 1 year after their first MI compared to 25% of men.⁵

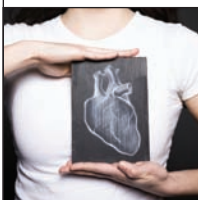
When a woman presents with an MI, symptoms can be different from symptoms a man would experience, and female patients are often misdiagnosed.^{6,7} It is imperative that all healthcare providers understand the importance of educating female patients on the risks of CVD, and understand the signs and symptoms of MI in order to accurately diagnose and treat female patients.

Key words: coronary heart disease, cardiovascular disease, women and heart disease



■ **Providers' lack of knowledge and adherence to guidelines**

Many healthcare providers lack knowledge about women's risk regarding CVD and do not always follow treatment recommendations. In a study among a stratified random sample of 500 physicians, which included 300 primary care providers (PCPs), 100 cardiologists, and 100 obstetricians/gynecologists (OB/GYNs) drawn from a national database, less than one in five knew that women have a



Almost half of American women do not know that they should contact emergency services if they have symptoms of an MI.

higher rate of death from CVD than men.³ In this study, an experimental case study design was used to examine treatment decisions such as level of risk assignment and application of preventive treatment recommendations. The physicians were more likely to assign women a lower-risk category than men despite a similar calculated risk. Approximately 60% of both PCP and OB/GYNs and 80% of cardiologists stated they were aware of the American Heart Association (AHA) Evidence-Based Guidelines for Women, yet only 39% of PCPs, 21% of OB/GYNs, and 41% of cardiologists stated that they incorporated these guidelines into practice. Few of the physicians recommended lifestyle interventions for women assessed as low risk. It is imperative that all women be educated about CVD risk in order to adopt a healthier heart lifestyle and to reduce their lifetime risk of CVD.^{8,9} Marma and colleagues claim that that while 82% of adults in the United States are at a low 10-year risk, only one third are at a low lifetime risk.⁸

Symptoms of MI in women

Common MI symptoms

- Chest sensation or pain (78%)
- Unusual fatigue (67%)
- Breathing difficulties (58%)
- Radiating pain to back, jaw, or arm (50%)

Less common MI symptoms

- Feeling flushed or in a cold sweat (40%)
- Dizziness (39%)
- Nausea (38%)

Source: McSweeney JC, Cody M, O'Sullivan P, Elberson K, Moser DK, Garvin BJ. Women's early warning symptoms of acute myocardial infarction. *Circulation*. 2003;108(21):2619–2623.

In another study that assessed healthcare professionals' knowledge of heart disease in women, a significant knowledge deficit was found.¹⁰ The sample consisted of 1,285 healthcare professionals including physicians, nurse practitioners (NPs), physician assistant (PAs), and others who attended a 1-hour continuing-education program supplemented with materials based on the Heart Truth Professional Education Campaign. On the pretest, healthcare professionals overall correctly answered 64% of questions based on the AHA guidelines for CVD prevention in women. Responses from NPs and PAs were combined, and this population correctly answered approximately 68% of the pretest questions. There was a statistically significant improvement in posttest knowledge scores of 28% for all healthcare workers and approximately 20% for the NP and PA samples. Although there were improvements in knowledge of sex-specific prevention and treatment issues in CVD after an intervention, knowledge gaps about specific interventions such as when to use HMG-CoA reductase inhibitor (statin) therapy still remained.

■ **Women's lack of knowledge**

Women are less knowledgeable than men regarding their cardiovascular risk factors.¹¹ Although women's knowledge of CVD is increasing, it is still unacceptably low. From 1997 to 2006 there was an increase in women's knowledge about heart disease but there has not been an increase in knowledge from 2006 until now. Almost half of American women do not know that CVD is the leading cause of death for women and that they should contact emergency services if they have symptoms of an MI. Moreover, racial and ethnic minorities, who are at the greatest risk for CVD, are least knowledgeable about this subject.¹² This lack of awareness about typical MI symptoms means, if a woman experiences these symptoms, she will be less likely to recognize their seriousness and more likely to delay seeking treatment.^{12,13} Mortality and morbidity rates are reduced if coronary reperfusion therapy is administered promptly.¹⁴

■ **MI symptoms in women**

Women who are experiencing an MI often present with unique symptoms that healthcare professionals may not always recognize as indicative of an MI. Historically, women's cardiac symptoms are thought of as atypical—and women are more likely to be misdiagnosed because of these symptoms.^{7,15} Up until the late 1980s, research surrounding

CVD mainly used male subjects, and the resulting profile of cardiac symptoms is skewed toward a male diagnostic.

Acute MI symptoms in women are often different than those typically seen in males.⁶ While both men and women listed chest pain in the top two symptoms experienced when having an MI, men's chest pain was sharp and crushing; women's chest pain felt more like an ache. Women also experience unexplained, unusual fatigue, pain radiating to the back, jaw, shoulder, or arm, and breathing difficulties (see *Symptoms of MI in women*). When comparing women's symptoms to men's, chest pain and shortness of breath were the top two symptoms for men, but chest pain and fatigue were the top two symptoms for women. These differences may explain why women have more unrecognized MIs than men or are mistakenly diagnosed and discharged from EDs without appropriate treatment.¹⁶ The literature states that MIs are unrecognized in women between 26% and 54% of the time.¹⁷

Many women experience prodromal symptoms for up to a year before an MI, including unusual fatigue, anxiety, chest discomfort, indigestion, shortness of breath, sleep disturbances, and weakness.^{7,16,18} Women are less likely to have classic angina, and more likely to have angina that continues with rest, pain that awakens them from sleep, nonspecific changes on ECG, nausea, and sensations in the neck throat, back, and jaw (see *Prodromal symptoms of MI in women*).^{19,20} It is important that the NP identifies these symptoms as prodromal symptoms of an MI, rather than attributing these symptoms to anxiety or depression and foregoing further testing.

Practice guidelines

Although recognizing acute MI and prodromal symptoms in women is very important, classifying a woman's CVD risk and implementing risk reduction interventions is equally important and should be included during regular office visits. In February 2004, the AHA published the first evidence-based guidelines that addressed the unique risks women face regarding CVD.²¹ In 2007, the AHA updated these guidelines to reflect changes in the evidence.²²

Most recently, in February 2011, the AHA published new guidelines and CVD risk in women is now classified as high risk, at risk, and ideal cardiovascular health.²³ These guidelines are called the "Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women—2011 Update." The recommendations in the guidelines are based on evidence in addition to effectiveness or benefits and risks observed in clinical practice.

Prodromal symptoms of MI in women

Common

- Fatigue (70%)
- Anxiety (36%)
- Chest discomfort (may be mild) (37%)
- Indigestion (40%)
- Shortness of breath especially with exercise (42%)
- Sleeping difficulties (48%)

Less common

- Discomfort in the shoulder area
- Dizziness
- Changes in headache: more severe or more frequent
- Vision problems


Source: McSweeney JC, Cody M, O'Sullivan P, Elberson K, Moser DK, Garvin BJ. Women's early warning symptoms of acute myocardial infarction. *Circulation*. 2003;108(21):2619-2623.

Women with ideal cardiovascular health have no clinical CVD, and maintain ideal levels of cholesterol (<200 mg/dL), blood pressure (<120/80), body mass index (<25 kg/m²) and fasting blood glucose (<100 mg/dL). Women in this category also adhere to a healthy lifestyle by eating a balanced diet, exercising regularly, and abstaining from smoking.

A heart-healthy lifestyle is recommended for all women regardless of risk category. According to the *Physical Activity Guidelines for Americans*, women should exercise a minimum of 150 minutes per week at a moderate intensity such as brisk walking.²⁴ A heart-healthy diet is rich in fruits and vegetables, whole grains, and includes fish at least twice a week. Diets should limit saturated fats, sugar, alcohol, and sodium. Trans fats should be completely avoided.

Women at ideal risk have a Framingham global risk less than 10%, a healthy lifestyle, and no risk factors. Women who

Chest pain and shortness of breath were the top two symptoms for men, but chest pain and fatigue were the top two symptoms for women.



are at risk have one or more major risk factor for CVD such as cigarette smoking, obesity, physical inactivity, family history of premature CVD, hypertension, or dyslipidemia. Women at risk may have evidence of subclinical vascular disease, metabolic syndrome, or poor exercise capacity. In addition, women with systemic autoimmune collagen-vascular disease such as lupus are considered at risk as well as those with a history of pre-eclampsia, gestational diabetes, or

pregnancy-induced hypertension. Women identified as at risk should initiate lifestyle changes as well as other recommendations. According to the 2011 guidelines²³, lifestyle therapy should be initiated in women with low-density lipoprotein cholesterol (LDL-C) >130 mg/dL. In some instances, statins should be considered. Both at-risk and high-risk women should attain an optimal blood pressure of less than 120/80. Further, women with diabetes should attain a glycosylated hemoglobin (A1C) less than 7%.²³

Women are considered high risk when they have known disease such as CVD, peripheral vascular disease, kidney disease, or diabetes. Women at high risk have the greatest



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chance for a CVD event such as an MI. The new guidelines state that women at high risk should receive lipid lowering therapy to achieve LDL-C <100 mg/dl and in very high risk women <70 mg/dl.²³ Angiotensin II receptor blockers should be used in women after an MI or those in heart failure. Beta-Blockers and aldosterone blockade should be used in some women after an MI.

There is some controversy surrounding the use of aspirin in women. The use of aspirin in women younger than 65 who are in ideal cardiovascular health should be avoided due to the risk of bleeding. Aspirin therapy should be considered in high risk women and women older than 65 years. New to the guidelines this year is the need to treat women with atrial fibrillation using either aspirin, warfarin, or dabigatran (dabigatran is indicated for nonvalvular atrial fibrillation).²³ This was added because more women die of stroke than men and stroke accounts for a higher proportion of CVD events than CDH in females.²³ Atrial fibrillation is a risk for ischemic stroke and many women with atrial fibrillation do not receive adequate anticoagulation therapy, which puts them at greater risk of having a stroke.²³

Certain interventions have been shown to have no benefit and may be harmful in the prevention of heart disease (these are labeled class III interventions).²³ Other interventions to avoid include antioxidant supplements such as vitamin E, C, and beta carotene for primary or secondary prevention. Folic acid replacement with or without B₆ and B₁₂ supplementation should not be used for primary or secondary prevention.²³ Finally, postmenopausal hormone replacement therapy should be avoided for primary or secondary CVD prevention. There

is controversy with this topic and postmenopausal women who are on HRT or request to start therapy should be informed of their options and risks associated with the therapy. If together, the NP and the patient decide that HRT is the best option, the treatment should be carefully monitored.

Conclusion

The prevalence of ideal cardiovascular health in U.S. populations, including both men and women, is only about 5%.²⁵ The Goals and Metrics Committee of the Strategic Planning Task Force of the AHA recommends the following impact goal: "By 2020, to improve the cardiovascular health of all Americans by 20% while reducing deaths from CVDs and stroke by 20%."²⁶ To achieve these goals in women, several actions must take place. NPs need to be aware that female patients are more likely to die of heart disease than any

other disease, and they need to impart this information to their patients. Prevention and risk stratification are paramount in achieving the goals. Teaching patients about heart healthy lifestyles can be time-consuming and motivating patients to make necessary changes can be very difficult. Yet NPs must follow the most recent guidelines and encourage patients to make healthy lifestyle choices because this is the basis of prevention and treatment strategies. Finally, NPs need to recognize prodromal MI symptoms in women as well as acute MI symptoms. This information also needs to be conveyed to women so they can recognize these symptoms and respond accordingly. **NP**

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