



# WOMEN AND HEART DISEASE

2/16/2023

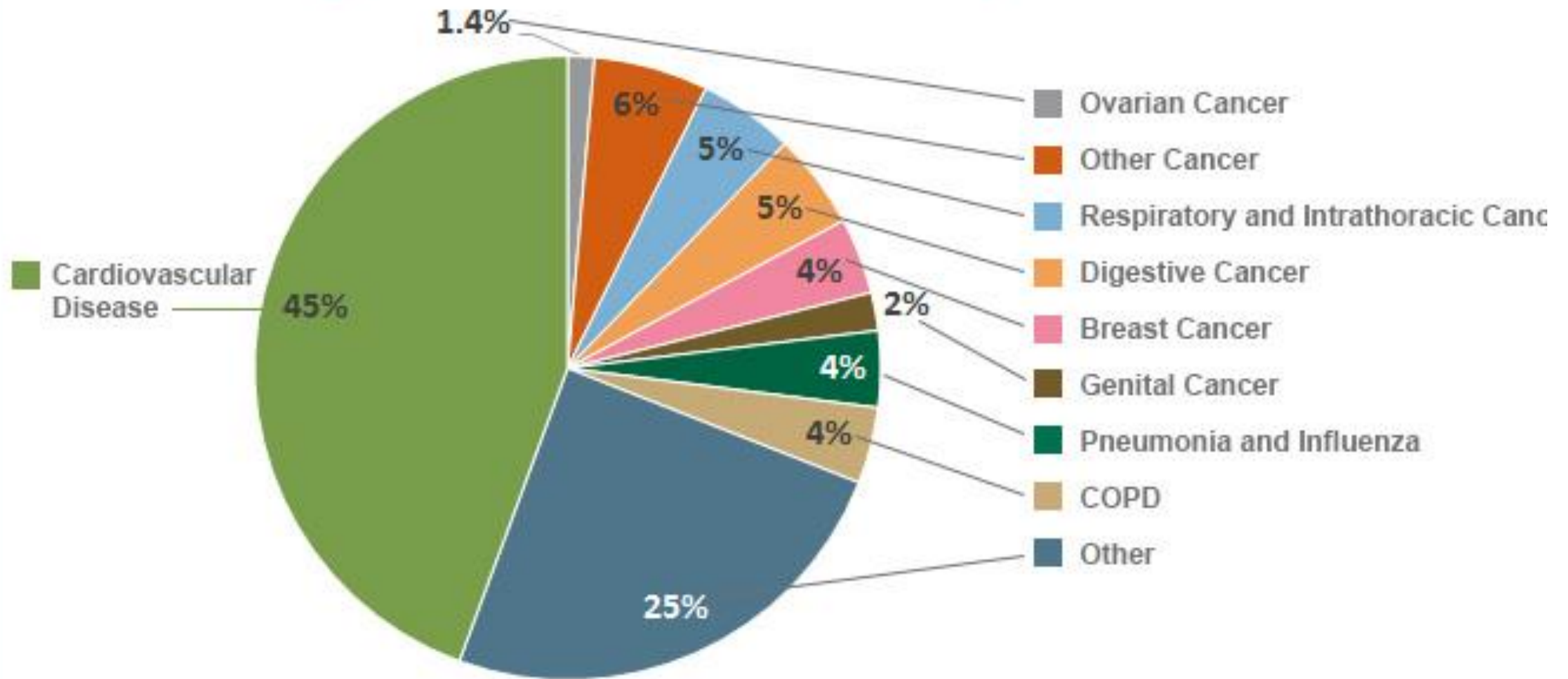
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# WOMEN AND HEART DISEASE

- Cardiovascular disease ( CVD) is the leading cause of death for women in the US
- Although mortality rates for heart disease in the US have been steadily reducing, women aged 35-44 have not experienced the same decline
- This disparity may be explained by unhealthy lifestyle choices, lack of awareness and access to care

# Leading Causes of Death Among Women: Actual



# RESEARCH

- There are few trials that include enough women, so data found in men is applied to men, such assumptions are not always true
- Complex relationship between social determinants of health and CV disease.
- Increasing awareness of cardiovascular disease in women has stalled with no major progress in almost 10 years, and little progress has been made in the last decade in increasing physician awareness or use of evidence-based guidelines to care for female patients

# ROLE OF PHYSICIANS

- Women and physicians do not put enough emphasis on cardiovascular disease in women, and a social stigma regarding body weight may be a primary barrier to these important discussions
- Increasing awareness of cardiovascular disease in women has stalled with no major progress in almost 10 years, and little progress has been made in the last decade in increasing physician awareness or use of evidence-based guidelines to care for female patients.

- Physicians often did not discuss cardiovascular disease because the patient had a more immediate health issue or did not fully report their symptoms, indicating that prevention prior to symptoms was not a priority.
- Only 22 percent of primary care physicians and 42 percent of cardiologists felt well prepared to assess cardiovascular risk in women. Additionally, only 16 percent of primary care physicians and 22 percent of cardiologists fully implemented guidelines for risk assessment

# ROLE OF THE PATIENT

- 45 percent of women were unaware that heart disease is the number one killer of women in the U.S. Awareness level was lower in women with lower levels of education and income and in ethnic minorities.
- Nearly 71 percent of women almost never brought up the issue of heart health with their physician, assuming their doctor would raise the issue



- While 74 percent reported having at least one risk factor for heart disease, just 16 percent were told by their doctor that they were at risk
- Sixty-three percent of women admitted to putting off going to the doctor at least sometimes and 45 percent of women canceled or postponed an appointment until they lost weight
- Many women reported being embarrassed or overwhelmed by their heart disease and many also cited difficulties in losing weight or finding time to exercise.

# ISCHEMIC HEART DISEASE IN YOUNG WOMEN

- Heart disease mortality rates in young women (35-54) continue to increase
- The burden of cardiovascular disease (CVD) risk factors is disproportionately higher in women of ethnic and racial minorities
- Black women have the highest rates of obesity of any racial group in the United States, recently exceeding 50%, as well as a higher prevalence of modifiable CVD risk factors resulting in higher rates of diabetes
- Black women also have a persistent, 2-fold increased rate of chronic hypertension during pregnancy compared with White women.<sup>3</sup> Compounding the problem, pregnancy-related CVD mortality in the United States is rising compared with other developed nations.

# ACUTE CORONARY SYNDROMES

- The prevalence of acute coronary syndromes is lower among young women than other age groups, but there are concerning trends that merit attention.

Younger patients hospitalized with acute myocardial infarction (AMI) are increasingly prevalent; the proportion attributable to young patients (aged 35 to 54 years) has increased from 27% to 32% over the past 2 decades, with the greatest increase in young women (21% to 31%)

# Heart Attack Symptoms: Men Vs. Women

## MEN

Nausea or vomiting



Jaw, neck or back pain



Squeezing chest pressure or pain



Shortness of breath



## WOMEN

Nausea or vomiting



Jaw, neck or upper back pain



Chest pain, but not always



Pain or pressure in the lower chest or upper abdomen



Shortness of breath



Fainting



Indigestion



Extreme fatigue



# PRESENTATION OF MYOCARDIAL INFARCTION (MI)

- MI presentation varies by age and sex. Young women are 50% more likely than similar aged men to present without chest pain when they have MI, with 1 in 5 women perceiving their symptoms as being related to anxiety or stress as opposed to MI.
- It is important to stress that although MI presentation without chest pain is more frequent in women than men, most women, and particularly most young women, do experience chest pain with AMI.
- Young women admitted with AMI often have more comorbidities compared with similarly aged men, with a higher prevalence of diabetes, hypertension, and/or chronic kidney disease.

- Some risk factors are more potent for young women; for example, smoking is more strongly associated with STEMI incidence among women aged 18 to 49 years vs similarly aged men and older women.
- Young women and men presenting with MI have different psychosocial profiles, with significantly greater prevalence of depression and stress, poorer physical and mental health status, and lower quality of life among young women

# MANAGEMENT OF MI

- Medical and invasive treatment of acute coronary syndromes are underutilized overall in women, but young women with AMI are much less likely to receive guideline-recommended therapies vs young men or even older women, This includes lipid-lowering medications, dual antiplatelet therapy, beta-blockers, and angiotensin-converting enzyme inhibitor/angiotensin receptor blockers
- Women who receive an invasive strategy are less likely to achieve a door-to-balloon time of <90 minutes
- True sex differences may be even larger than reported, considering that young women are less likely to be diagnosed with and treated for AMI even when cardiac troponin is abnormal in the emergency department

# SPONTANEOUS CORONARY ARTERY DISSECTION

- Spontaneous coronary artery dissection (SCAD) is an increasingly recognized cause of AMI and sudden cardiac death in young and middle-aged women who are often otherwise healthy and with few or no conventional HD risk factors
- More than 90% of SCAD events occur in women, and although SCAD has been reported in individuals from late teens to the eighth decade, it is the number 1 cause of myocardial infarction (MI) in women <50 years old and the most frequent cause of pregnancy-associated MI.<sup>19</sup> AMI secondary to SCAD complicates 1:16,000 pregnancies in the United States



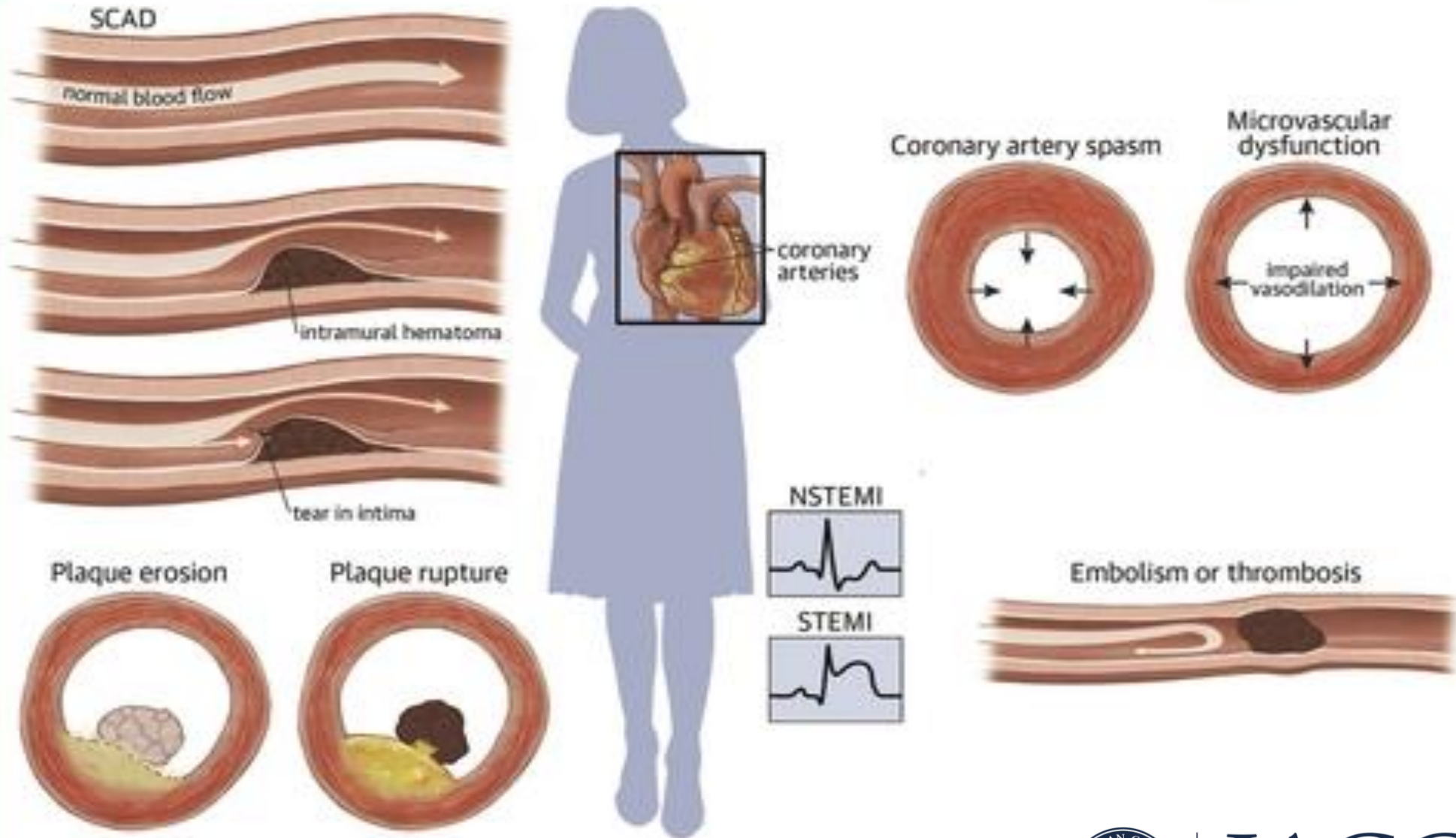
- Undiagnosed AMI can be deadly, and many young women with SCAD often do not “look the part,” leading to delayed or missed diagnoses.
- SCAD etiology is confirmed by coronary angiography showing either an intimal flap or, more frequently, abrupt smooth tapering of the vessel due to intramural hematoma
- Conservative management now prevails as the recommended approach for patients who are stable. Patients with high-risk anatomy or ongoing ischemia may require revascularization either with percutaneous coronary intervention or coronary artery bypass grafting.
- Hypertension has been associated with both initial and recurrent SCAD; blood pressure control and consideration of beta-blockers as agents of choice are routinely recommended and have been shown to reduce recurrent SCAD.

# MYOCARDIAL INFARCTION WITH NONOBSTRUCTIVE CORONARY ARTERIES

- Definition of MINOCA requires presence of universal AMI criteria in the setting of nonobstructive CAD (defined as  $\leq 50\%$  stenosis), with no overt cause such as pulmonary embolism. About 5% to 15% of AMI patients have MINOCA.
- The degree of coronary atherosclerosis may range from none to mild–moderate. MINOCA is more prevalent in women (40%-60%) than MI with obstructive CAD (MI-CAD,  $\sim 25\%$ ) and occurs at younger ages than MI-CAD. Approximately one-half of MINOCA patients are aged  $< 60$  years at the time of MI, and  $\sim 25\%$  present at  $< 50$  years.
- Outcomes among MINOCA patients are better than in MI-CAD, but MINOCA may present as a fatal event.<sup>28</sup> Recurrent MI occurs in  $\sim 7\%$  of MINOCA patients over 4 years, but only about one-half of recurrent MIs present as MINOCA

- There is an ~40% increase in all-cause mortality vs patients with stable angina who have nonobstructive CAD.<sup>31</sup> MINOCA patients are not revascularization candidates, so new strategies are needed to improve their quality of life and clinical outcomes
- MINOCA has multiple causes, including mild-to-moderate atherosclerosis with positive remodeling of the coronary artery, coronary artery spasm, plaque microrupture and/or erosion, coronary embolism, and microthrombosis, among others
- Studies indicate that women with MINOCA are likely to benefit from statins and angiotensin-converting enzyme inhibitor/angiotensin receptor blockers, but not dual antiplatelet therapy.

# CENTRAL ILLUSTRATION: Clinical Presentations of Underlying Etiologies Contributing to Myocardial Infarction With Nonobstructive Coronary Arteries



Minissian MB, et al. J Am Coll Cardiol. 2022;80(10):1014-1022.



**JACC**  
JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

# CORONARY ARTERY SPASM

- Coronary spasm is a cause of MI in young patients (both women and men) but is often challenging to diagnose because it may not be apparent at initial angiography and may present as MINOCA.
- Patients with coronary spasm tend to be younger and male, and have more antecedent angina than patients with obstructive CAD, which may be atypical in character.<sup>34,35</sup>
- T typically presents as rest angina occurring at night and early morning hours.
- The CV health of pre-gestational women in the United States has declined, and that of pregnant women is suboptimal and lower than among age-matched nonpregnant women.

# HEART DISEASE IN POSTMENOPAUSAL WOMEN

- The risk for cardiovascular disease is much lower in women than men until women reach the age of 50 years of age, then risk rises dramatically after menopause.
- Previous studies have demonstrated that higher androgen and lower estrogen levels are associated with risk factors for heart disease in post-menopausal women, affecting lipids, endothelial dysfunction and vasoreactivity

# signs and symptoms

While some women have no symptoms, other commonly reported symptoms include:

## ANGINA

Dull, heavy to sharp chest pain or discomfort, pain in the neck/jaw/throat or pain in the upper abdomen or back.

## HEART ATTACK

Chest pain or discomfort, upper back pain, indigestion, heartburn, nausea/vomiting, extreme fatigue, upper body discomfort, and shortness of breath.

## ARRHYTHMIA

Fluttering feelings in the chest (palpitations).

## HEART FAILURE

Shortness of breath, fatigue, swelling of the feet/ankles/legs/abdomen.

## STROKE

Sudden weakness, paralysis (inability to move) or numbness of the face/arms/legs, especially on one side of the body. Possible confusion, trouble speaking or understanding speech, difficulty seeing in one or both eyes, shortness of breath, dizziness, loss of balance or coordination, loss of consciousness, or sudden and severe headache.

If you or someone in your presence is experiencing symptoms of angina, heart attack or stroke,  
**CALL 911 IMMEDIATELY!**

For non-emergent heart-related symptoms, schedule an appointment with your primary doctor or heart doctor as soon as possible.



# MI MORTALITY

- Women hospitalized with MI have consistently been reported to have greater in-hospital mortality rates than men,<sup>8,17</sup> with these differences being particularly pronounced in the youngest age groups (eg, an ~2-fold greater odds of mortality in women with STEMI aged <45 years vs only ~30% in those aged >45 years).
- Despite improving trends globally among the general U.S. population, IHD mortality rates in women aged 35 to 54 years continue to stagnate or increase, a trend that is particularly prominent among African American women.
- Differences in MI mortality rates between sexes remain, with women receiving less guideline-recommended pharmacotherapy and invasive coronary management.
- MI mortality rates in women are potentially modifiable through improved concordance with guideline-indicated care. Although many women will experience obstructive CAD as the etiology for their IHD, women have higher rates of MINOCA, SCAD, coronary vasospasm, and CMD compared with men. Women with pre-existing CAD considering pregnancy need to be appropriately assessed and advised regarding both maternal and neonatal risk before conception



# CALL TO ACTION

- Traditional CV risk factors are highly prevalent among US women. Furthermore, racial and ethnic differences exist, with rates of hypertension highest among non-hispanic black women, while low-density lipoprotein cholesterol is highest among non-hispanic white women.
- Rates of diabetes are highest among hispanic women, and rates of overweight and obesity are highest among non-hispanic black and hispanic women. Rates of control for these risk factors are suboptimal.

## RISK FACTORS FOR WOMEN

Early menarche (<11 years of age), premature menopause (<40 years of age), polycystic ovarian syndrome, hypothalamic amenorrhea, hypertensive disorders of pregnancy, gestational diabetes, preterm delivery, low- or high-birth weight fetus, oral contraceptives, and hormone replacement

Conditions that disproportionally affect women and are associated with an increased risk for CVD include systemic inflammatory and autoimmune disorders such as systemic lupus erythematosus, rheumatoid arthritis, and scleroderma. Depression and anxiety also carry an increased risk of CVD and are more frequent among women.

# SUMMARY

- Studies suggest a need to destigmatize cardiovascular disease for women and counteract stereotypes with increased objective risk factor evaluation education to improve treatment by physicians
- National action campaigns should work to make cardiovascular disease 'real' to American women and destigmatize the disease by promoting the use of cardiovascular risk assessment to counter stereotypes with facts and valid assessments
- Education must emphasize the benefits of prevention (80-90% of CVD is preventable)

- Prevention efforts are recommended to include increased awareness for health professionals regarding the impact of prevention on CVD risk factors as outcomes. Awareness campaigns should be culturally sensitive and appropriate with translations for the relevant audiences.
- Interdisciplinary collaboration between cardiologists, vascular neurologists, primary care clinicians, obstetricians, gynecologists, and other relevant health professionals is necessary to improve the recognition of women's risk for CVD.
- Enhancing basic and translational research, which advances knowledge related to women's cv health, is warranted.
- It is important to engage communities to optimize CV health across the life course, including school-based programs involving parents and empowering families and community-based programs including under-represented groups where they live and work.

# heart healthy tips for women

Don't  
smoke



Keep  
**blood pressure**  
120/80 or lower

Exercise five days a  
week for 30 minutes  
at a time or in  
divided increments



Eat a **heart healthy**  
**diet**, preferably  
Mediterranean in  
nature

Maintain a **normal**  
**body weight** and  
**waist circumference** of  
less than 35 inches



Limit alcohol intake  
to **one drink daily**  
**maximum**

Source: Susan Butler, RN, Women's Heart Health coordinator, Wake Forest Baptist Health



THANK YOU

