American Heart Association Guidelines

Effectiveness-Based Guidelines for the prevention of Cardiovascular in Women: 2011 Update

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Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women 2011 Update: A Guideline From the American Heart Association

Executive Writing Committee, Lori Mosca, Emelia J. Benjamin, Kathy Berra, Judy L. Bezanson, Rowena J. Dolor, Donald M. Lloyd-Jones, L. Kristin Newby, Ileana L. Piña, Véronique L. Roger, Leslee J. Shaw, Dong Zhao, Theresa M. Beckie, Cheryl Bushnell, Jeanine D'Armiento, Penny M. Kris-Etherton, Jing Fang, Theodore G. Ganiats, Antoinette S. Gomes, Clarisa R. Gracia, Constance K. Haan, Elizabeth A. Jackson, Debra R. Judelson, Ellie Kelepouris, Carl J. Lavie, Anne Moore, Nancy A. Nussmeier, Elizabeth Ofili, Suzanne Oparil, Pamela Ouyang, Vivian W. Pinn, Katherine Sherif, Sidney C. Smith, Jr, George Sopko, Nisha Chandra-Strobos, Elaine M. Urbina, Viola Vaccarino and Nanette K. Wenger

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Evidence-based vs Effectiveness-based

A major evolution from previous guidelines to the 2011 update is that effectiveness (benefits and risks observed in clinical practice) of preventive therapies was strongly considered and **recommendations were not limited to evidence** that documents efficacy (benefits observed in clinical research)

Hence, in the transformation from “evidence-based” to “effectiveness-based” guidelines for the prevention of cardiovascular disease in women, the panel voted to update recommendations to those therapies that have been shown to have sufficient evidence of clinical benefit for CVD outcomes.

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AHA CVD Prevention Guidelines for Women

CVD Statistics

- The age-adjusted death rate resulting from CHD in women which accounts for half of all CVD deaths was 95.7 per 100,000 females in 2007, a third of what it was in 1980
- The rate of public awareness as the leading cause of death has increased from 30% in 1997 to 54% in 2009

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AHA CVD Prevention Guidelines for Women

CVD Challenges

- In 2007 CVD causes 1 death per minute in the US which represents 421,918 deaths.
- Death rates in US women aged 35 to 54 is increasing, likely due to the obesity epidemic
- Rates are higher for black women: 286.1/100,000 vs 205.7/100,000
- Each year 55,000 more women than men have a stroke
  - Atrial fibrillation is responsible for 15-20%

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AHA CVD Prevention Guidelines for Women

CVD Challenges

- After age 65 a higher percentage of women than men have hypertension
  - The current prevalence in black women is 44%
- 2 of 3 of US women > age 20 are overweight or obese
- Diabetes is present in > 12 million women
- In is more than double in Hispanic women vs white non-Hispanics (12.7 vs 6.45%)

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AHA CVD Prevention Guidelines for Women

CVD Challenges

- Evolving science suggests that the overwhelming majority of recommendations to prevent CVD are similar for women and men
  - Notably aspirin is recommended for primary prevention of MI for men but not for women.
- Stroke accounts for a higher proportion of CVD events than CHD in females whereas the ratio is opposite for males (pregnancy, hormone therapy, atrial fibrillation & hypertension at age 65 or above)

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Class III Interventions

- Not Useful/Effective and May Be Harmful) for CVD or MI prevention (Class III, Level A)
- **Menopausal therapy**
  - Hormone therapy and selective estrogen-receptor modulators (SERMs) should not be used for the primary or secondary prevention of CVD (*Class III, Level of Evidence A).*
- **Antioxidant Supplements**
  - Antioxidant vitamin supplements (eg, vitamin E, C, and beta carotene) should not be used for the primary or secondary prevention of CVD (*Class III, Level of Evidence A).*
- **Folic Acid**
- Folic acid with or without B6 and B12 supplementation should not be used for them primary or secondary prevention of CVD
  - Folic acid supplementation should be used in the childbearing years to prevent neural tube defects

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Class III Interventions

- Not Useful/Effective and May Be Harmful) for CVD or MI prevention (Class III, Level A)
- **Aspirin for MI in women <65 years of age**
- Routine use of aspirin in healthy women 65 years of age is not recommended to prevent MI (*Class III, Level of Evidence B).*

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CVD Prevention Strategies
Risk Assessment

- In the 2007 update, a new algorithm for risk classification in women was adopted that stratified women into 3 categories:
  - At high risk
  - At risk
  - At optimal risk

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AHA CVD Prevention Guidelines for Women

Classification of CVD Risk

- At High Risk
  - Established CHD
  - Cerebrovascular disease
  - Peripheral arterial disease
  - Abdominal aortic aneurysm
  - End-stage or chronic renal disease
  - Diabetes mellitus
  - 10 year Framingham global risk > 20%

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Classification of CVD Risk

- At Risk
  - ≥ 1 major risk factor for CVD including
    - Smoking
    - Poor diet
    - Physical inactivity
    - Obesity, especially central adiposity
    - Family history of premature CVD (< 55 years in male relative and < 65 in female relative)
    - Hypertension
    - Dyslipidemia
    - Subclinical vascular disease (eg, coronary calcification)
    - Metabolic Syndrome
    - Poor exercise capacity or abnormal heart rate recovery after stopping exercise.

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Classification of CVD Risk

- Optimal Risk
  - Framingham global risk < 10% and a healthy lifestyle with NO risk factors

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Classification of CVD Risk

- The AHA recently defined a new concept of “ideal cardiovascular health” defined by the absence of clinical CVD and the presence of all ideal levels of
  - Total cholesterol (200 mg/dL),
  - Blood pressure (120/80 mm Hg),
  - Fasting blood glucose (100 mg/dL),
  - Adherence to healthy behaviors,
    - Having a lean body mass index (25 kg/m2),
    - Abstinence from smoking,
    - Participation in physical activity at recommended levels, and
    - Pursuit of a Dietary Approaches to Stop Hypertension–like eating pattern

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Classification of CVD Risk

When achieved or maintained into middle age, the overall pattern of ideal cardiovascular health is associated with greater longevity; dramatic reductions in short-term, intermediate-term, and lifetime risks for CVD events; greater quality of life in older ages; and lower Medicare costs at older ages

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Classification of CVD Risk

Other modifications to the risk classification algorithm include acknowledgement of the availability of several 10- year risk equations for the prediction of 10-year global CVD risk such as the updated Framingham CVD risk profile and the Reynolds risk score for women.

The panel considered that either of these scores would be appropriate for use, particularly given their inclusion of CVD events beyond just CHD, but did not endorse routine screening with high sensitivity C-reactive protein (hsCRP), which would be required for use of the Reynolds risk score, because there are no data to support the association between a reduction in hs-CRP and improved clinical outcomes.

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AHA CVD Prevention Guidelines for Women

CVD Prevention Strategies

Risk Assessment

- Several lines of evidence support the focus of women's guidelines on long-term risk for CVD rather than solely on 10-year risk for CHD.
- First, observational and clinical trial data indicate that women's risks for stroke and heart failure through middle and older age typically exceed their risk for CHD, in contrast to the pattern observed in men, for whom CHD risk increases earliest
- The focus in the current NCEP ATP-III guidelines on 10-year CHD risk may substantially underestimate clinically relevant overall CVD risk and therefore tends to preclude the warranted, intensive preventive measures for most high-risk women.

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AHA CVD Prevention Guidelines for Women

CVD Prevention Strategies

Risk Assessment

- The 2007 panel believed that a FRS > 20% could be used to identify women at high risk, but that a lower score is not sufficient to ensure that an individual women is at low risk
- Even the presence of a single risk factor at 50 years of age is associated with a substantially increased lifetime absolute risk for CHD & shorter duration of survival

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CVD Prevention Strategies
New Cut point definition for High Risk

The current guidelines recommend use of a new cut point for defining high risk as 10% 10-year risk for all CVD, not just CHD alone.

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CVD Prevention Strategies
Long Term vs 10year Risk Assessment

- A focus on long-term CVD risk, not solely on 10-year CHD risk, is also supported by recent data indicating that 56% of American adults (87 million people), including 47.5 million women overall and 64% of women 60 to 79 years of age, have a 10-year predicted risk for CHD of 10% but a predicted lifetime risk for CVD of 39%

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CVD Prevention Strategies
Long Term vs 10year Risk Assessment

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CVD Prevention Strategies

Risk Assessment: Novel Biomarkers

- The role that novel CVD risk biomarkers (eg, hsCRP or advanced lipid testing) and imaging technologies (eg, coronary calcium scoring assessment) should play in risk assessment and in delineation of appropriate preventive interventions is not yet well defined.
- It should be noted that JUPITER did not test a strategy of routine screening with hsCRP to determine benefit of statin therapy because those with lower hsCRP levels were not studied.
- These approaches should not be used for routine screening of all women. Instead, the AHA and other national groups have recommended that the use of these novel modalities should be reserved for refining risk estimates in intermediate-risk patients when there is uncertainty about the need to start drug therapy

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CVD Prevention Strategies

Risk Assessment: Imaging

- Although recent evidence suggests that using imaging modalities such as coronary calcium scoring and carotid ultrasound to demonstrate the presence of advanced atherosclerosis has the greatest utility for reclassifying risk in those (including women) predicted to be at intermediate risk on the basis of short-term risk equations such as the Framingham risk score, their value in improving clinical outcomes has not been established.

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CVD Prevention Strategies

Risk Assessment: Pregnancy

- Because of its unique cardiovascular and metabolic stress, pregnancy provides a unique opportunity to estimate a woman's lifetime risk.
  - For example, preeclampsia may be an early indicator of CVD risk. A recent large meta-analysis found that women with a history of preeclampsia have approximately double the risk for subsequent ischemic heart disease, stroke, and venous thromboembolic events over the 5 to 15 years after pregnancy. In these patients, the physiological "metabolic syndrome of pregnancy" may provoke pregnancy complications.
  - The latter could be considered a "failed stress test," possibly unmasking early or preexisting endothelial dysfunction and vascular or metabolic disease.
  - Therefore, appropriate referral postpartum by the obstetrician to a primary care physician or cardiologist should occur so that in the years after pregnancy risk factors can be carefully monitored and controlled.

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CVD Prevention Strategies

Risk Assessment: Pregnancy

Healthcare professionals who meet women for the first time later in their lives should take a careful and detailed history of pregnancy complications with focused questions about a history of gestational diabetes mellitus, preeclampsia, preterm birth, or birth of an infant small for gestational age

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Flow diagram for CVD preventive care in women

Evaluation of CVD Risk

- Medical history / family history / pregnancy complication history
- Symptoms of CVD
- Depression screening in women with CVD
- Physical Exam: BP, BMI, Waist size
- Lab tests: including fasting lipoproteins and glucose
- Framingham Risk Assessment if no CVD or diabetes

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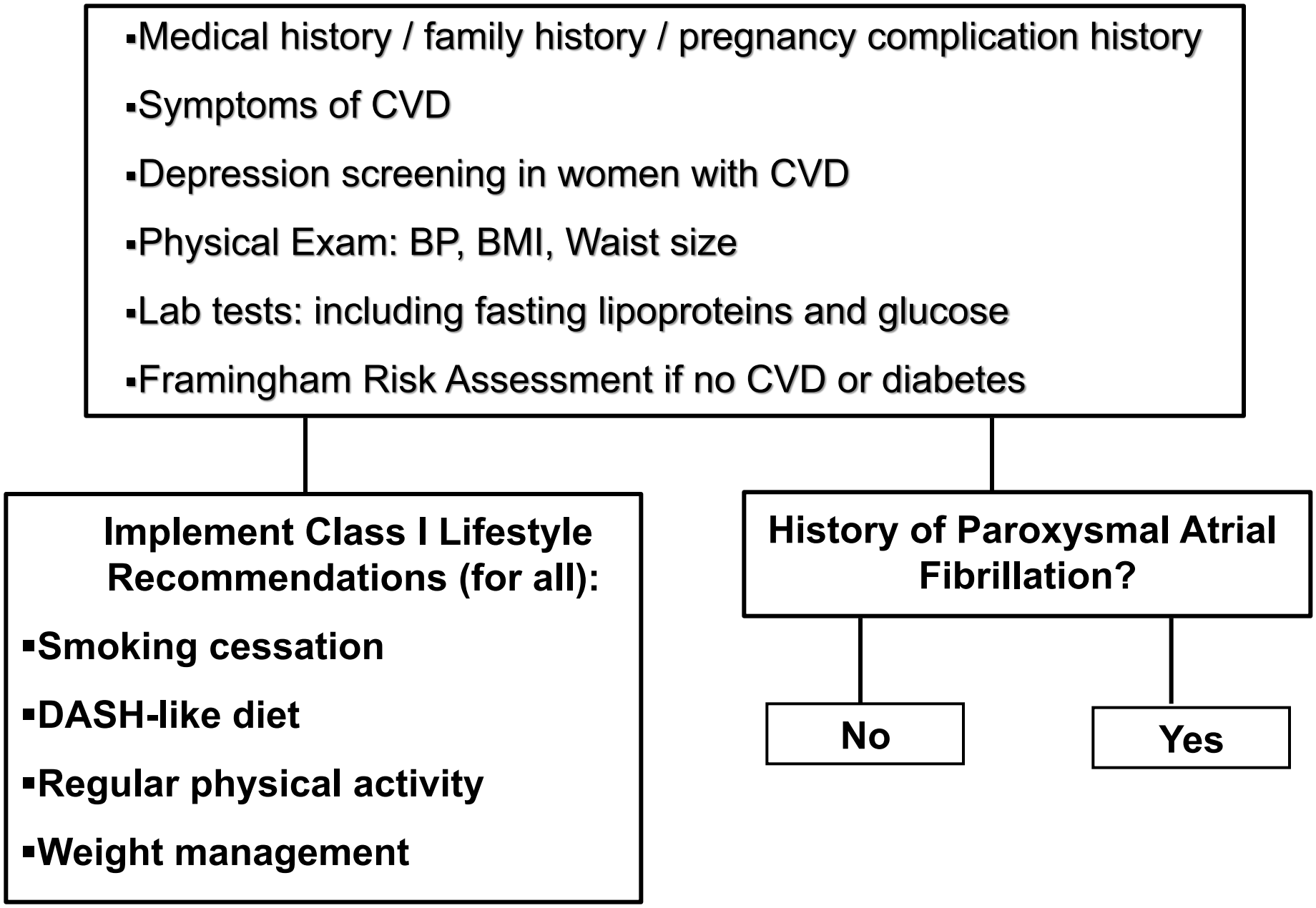

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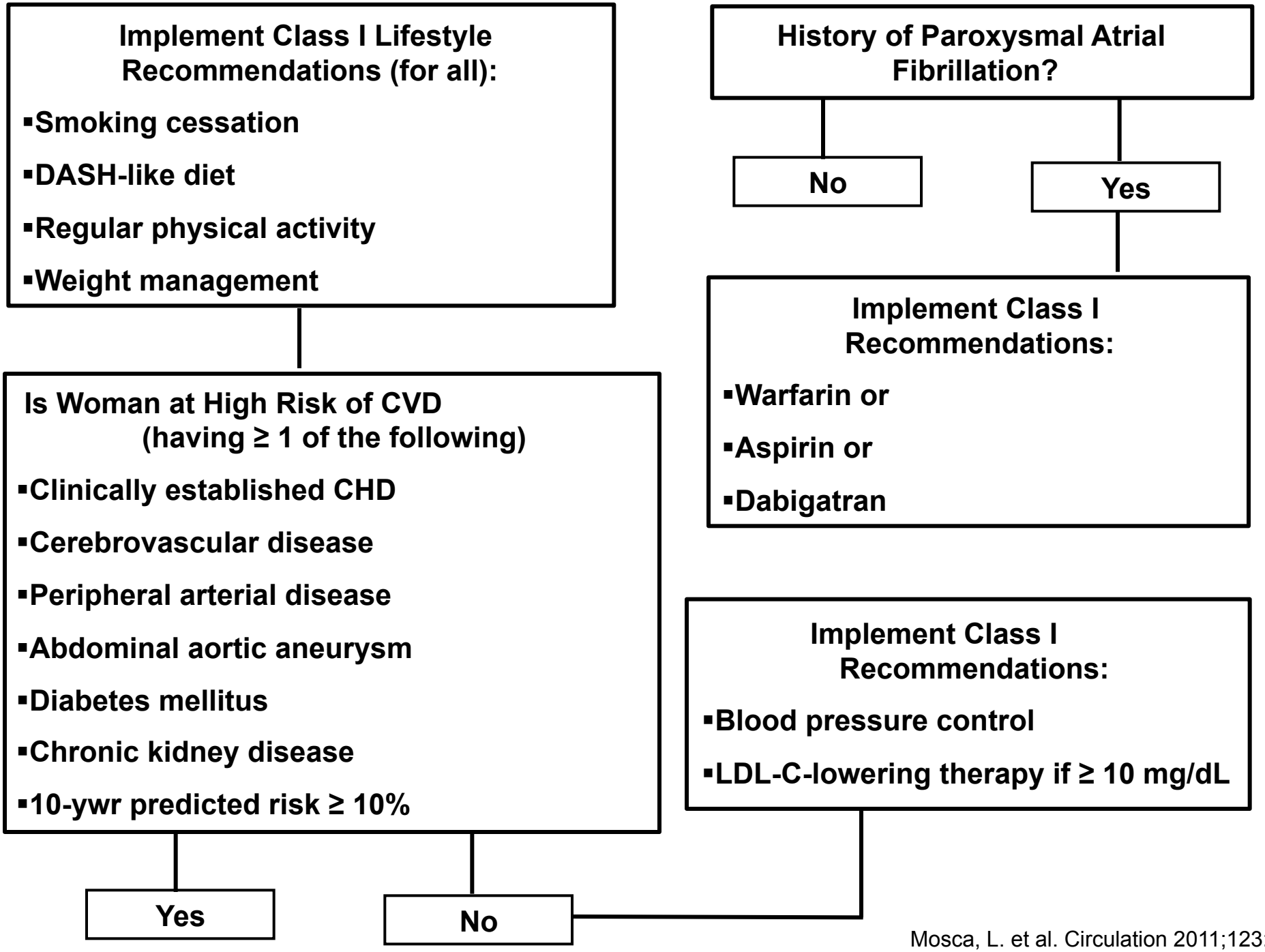

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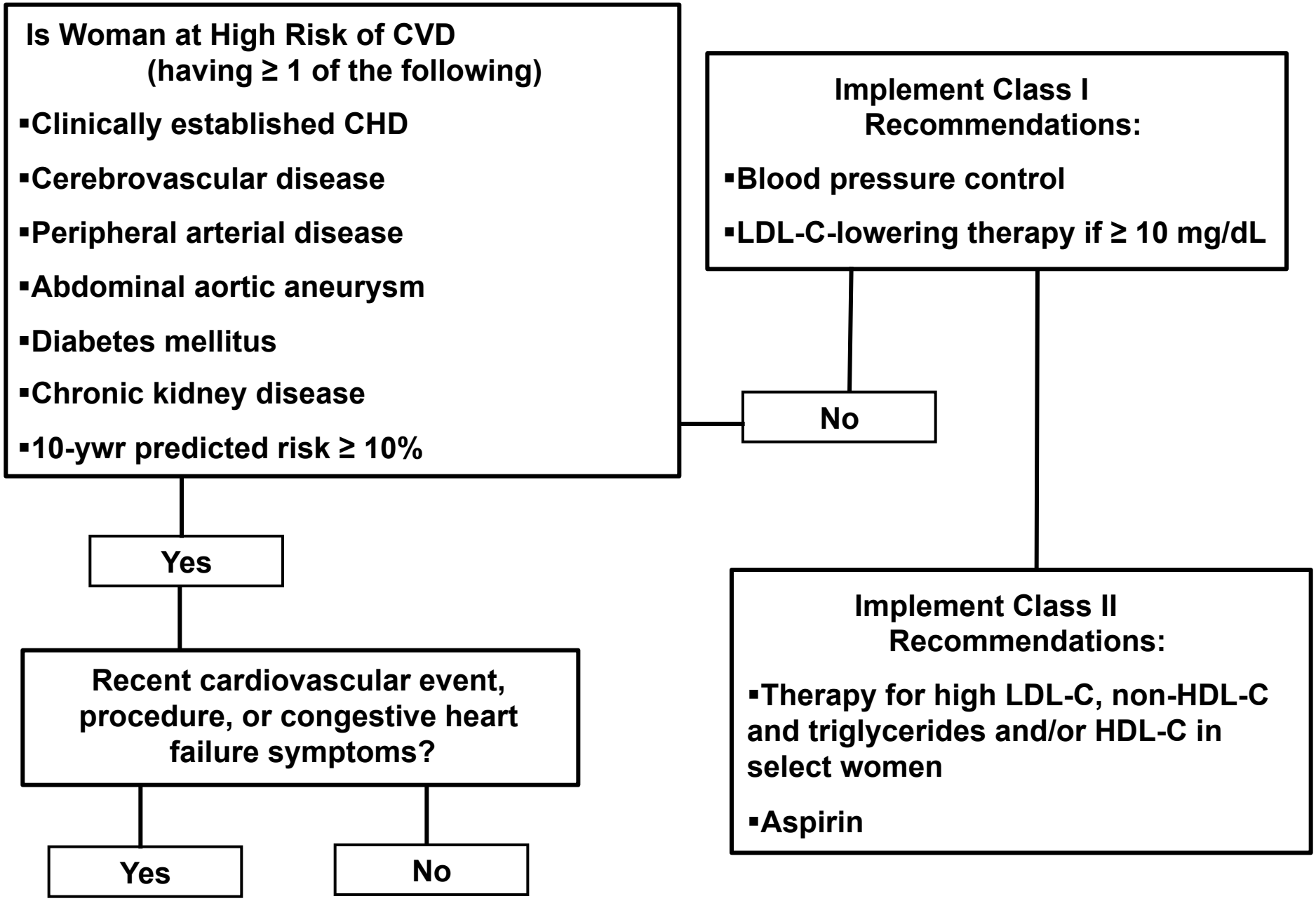

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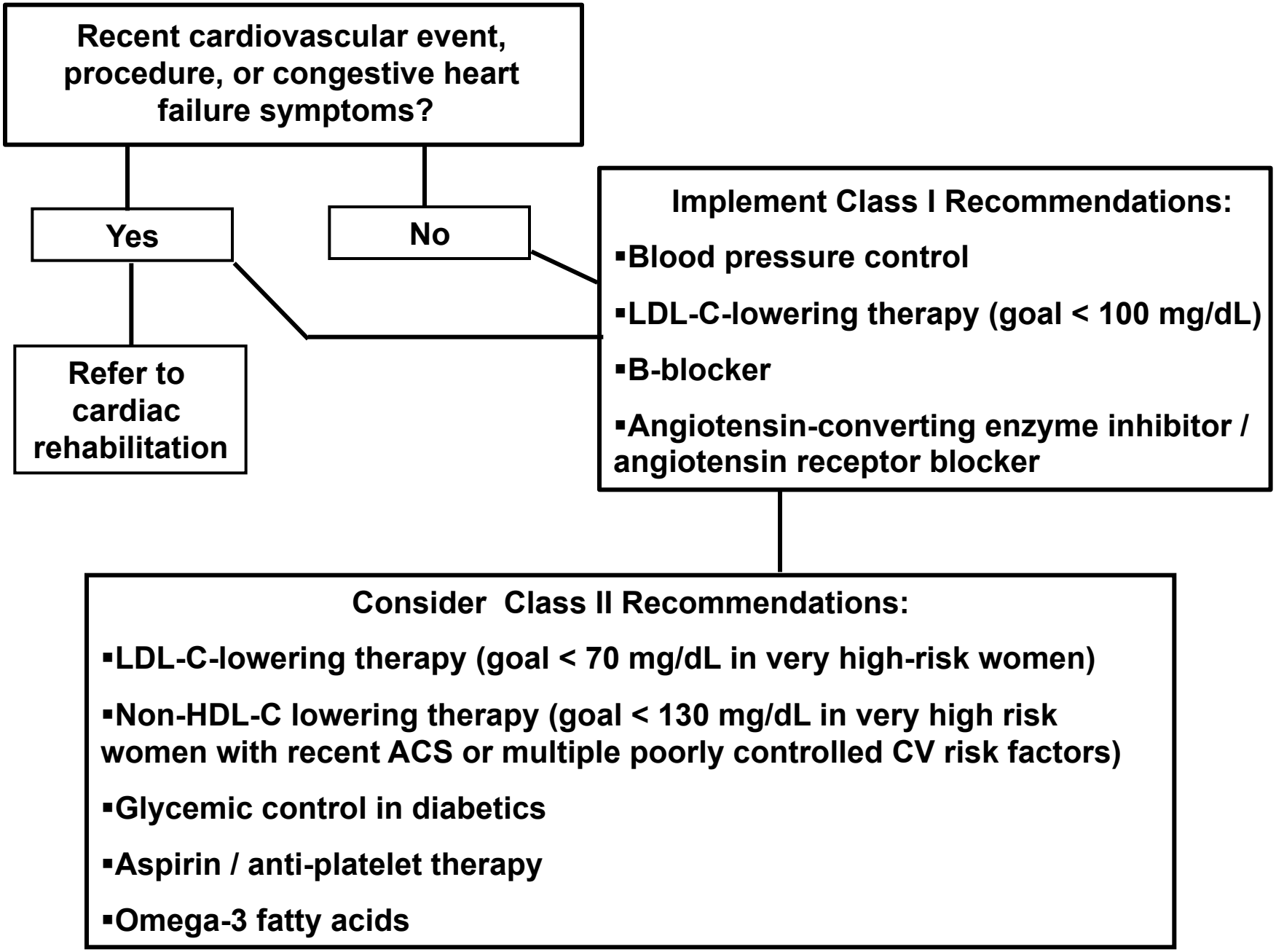

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General Cardiovascular Disease (10-Year Risk)

General Cardiovascular Disease (10-Year Risk)

(Based on D'Agostino RB Sr, Vasan RS, Pencina MJ, Wolf PA, Cobain M, Massaro JM, Kannel WB. General cardiovascular riskprofile for use in primary care: the Framingham Heart Study. Circulation. 2008;117:743–753.)

Outcome: CVD (coronary death, myocardial infarction, coronary insufficiency, angina, ischemic stroke, hemorrhagic stroke, transient ischemic attack, peripheral artery disease, heart failure)

Duration of follow-up: Maximum of 12 years, 10-year risk prediction

Population of interest: Individuals 30 to 74 years old and without CVD at the baseline examination

Predictors:

- Age
- Diabetes
- Smoking
- Treated and untreated systolic blood pressure
- Total cholesterol
- HDL cholesterol

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General Cardiovascular Disease (10-Year Risk)

Estimate of Risk of CVD in Women

Points	Age	HDL-C	TC	SBP not treated	Treated	Smoker	Diabetic
<-3				< 120			
<-2		60+					
<-1		50-59			< 120		
0	30-34	45-49	<160	120-129		No	No
1		35-44	160-199				
2	35-39	< 35		140-149	120-129		
3			200-239		130-139	Yes	
4	40-44		240-279	150-159			Yes
5	45-49		280+	160+	140-149		
6					150-159		
7	50-54						
8	55-59						
9	60-64						
10	65-69						
11	70-74						
12	75+						

General cardiovascular risk profile for use in primary care: the Framingham Heart Study. Circulation. 2008;117:743–753.)

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Estimate of Risk of CVD in Women

Points	Risk	Points	Risk	Points	Risk
-2 or less	Below 1%	6	3.40%	14	11.60%
-1	1.00%	7	3.90%	15	13.50%
0	1.10%	8	4.60%	16	15.60%
1	1.50%	9	5.40%	17	18.10%
2	1.80%	10	6.30%	18	20.90%
3	2.10%	11	7.40%	19	24.0%
4	2.50%	12	8.60%	20	27.50%
5	2.90%	13	10.00%	21+	>30%

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AHA CVD Prevention Guidelines for Women

CVD Prevention Strategies

Risk Assessment: Other Factors

- Other factors that are more prevalent among women and/or may make special contributions to CVD risk in women
- Autoimmune diseases. Systemic lupus erythematosus and rheumatoid arthritis may be unrecognized risk factors in women and have been associated with a significantly increased relative risk for CVD
- Women with such conditions but without clinically evident CVD should be considered at risk and screened for CVD risk factors, whereas women with prior CVD events should be screened for these conditions to allow appropriate secondary CVD prevention efforts and to allow the autoimmune condition to be addressed.

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AHA CVD Prevention Guidelines for Women

Classification of CVD Risk in Women

Risk Status	Criteria
High risk (≥ 1 high risk states)	Clinically manifest CHD Clinically manifest CVD Clinically manifest PVD Abdominal aortic aneurysm End stage kidney disease Diabetes mellitus 10-y predicted CVD risk ≥ 10%

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AHA CVD Prevention Guidelines for Women

Classification of CVD Risk in Women

Risk Status	Criteria
At risk (≥ 1 major risk factor[s]	Cigarette smoking SBP ≥ 120 mm Hg, DBP ≥ 80 mm Hg or treated HTN TC ≥ 200 mg/dL, HDL-C < 50 mg/dL or treated dyslipidemia Obesity, particularly central adiposity Poor diet Physical inactivity Family history of premature CVD occurring in first degree relatives In men < 55 y of age or in women < 65 y of age Metabolic syndrome Poor exercise capacity on treatment on treadmill test and/or abnormal heart rate recovery after stopping exercise Systemic autoimmune collagen vascular disease (eg, lupus, rheumatoid arthritis) History of preeclampsia, gestational diabetes or pregnancy-induced hypertension

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AHA CVD Prevention Guidelines for Women

Classification of CVD Risk in Women

Risk Status	Criteria
Ideal cardiovascular health (all of these)	TC < 200 mg/dL (untreated) BP < 120/< 80 mm Hg (untreated) Fasting blood glucose < 100 mg/dL Body Mass Index < 25 kg/m^2 Abstinence from smoking Physical activity at goal for adults > 20 y of age: ≥ 150 min/week moderate intensity, ≥ 75 min/wk vigorous intensity, or combination Healthy (DASH-like) diet

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AHA CVD Prevention Guidelines for Women

Diversity, Disparities, and Population Representation

Despite the remarkable declines in cardiovascular mortality observed nationally over the past few decades, many population subgroups defined by race, ethnicity, gender, socioeconomic status, educational level, or geography, still show striking disparities in cardiovascular health. The pervasive nature of these disparities and compelling evidence of the adverse impact they have on clinical outcomes and quality of life in black and Hispanic women need to be recognized by clinicians.

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AHA CVD Prevention Guidelines for Women

Diversity, Disparities, and Population Representation

Although guidelines may be applied across all groups, it is important to remember the higher prevalence of risk factors in certain racial/ethnic groups such as hypertension among black women or diabetes mellitus in women of Hispanic descent.

Notably, the highest coronary heart death rates and the highest overall CVD morbidity and mortality occur in black women.

Furthermore, the mortality from coronary artery disease for black women is similar to that of white men.

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AHA CVD Prevention Guidelines for Women

Diversity, Disparities, and Population Representation

- Hispanics, with a burden of cardiovascular risk factors similar to that of non-Hispanic whites, have a lower mortality.
- This observation has been called the “Hispanic paradox” as confirmed in recent data released by the National Center for Health Statistics, which finds Hispanic life expectancy to be 80 years compared with 77.5 years for non-Hispanic whites and 72.3 years for non-Hispanic blacks.
- Although deaths from heart disease have decreased in all groups, Hispanics have the lowest percentage of cardiovascular deaths (21.7%) compared with non-Hispanics (26.3%).

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Diversity, Disparities, and Population Representation

- The life expectancy for Hispanic women was the highest for all groups at 83.1 years compared with 80.4 years for non-Hispanic white women, 76.2 years for non-Hispanic black women,
  - 77.9 years for Hispanic men, and 75.6 years for non-Hispanic white men.
  - The lowest life expectancy was for non-Hispanic black men at 69.2 years

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AHA CVD Prevention Guidelines for Women

Healthcare Professional Implementation

- Achievement of both the desired degree and persistence of CVD preventive care has been disappointing in both women and men. Although improving, the level of public awareness and rates of treatment and control of lipids, hypertension, and diabetes mellitus remain suboptimal
- A meta-analysis of 100 medical adherence studies shows that women are as likely to be nonadherent to medical therapies as men

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AHA CVD Prevention Guidelines for Women

Healthcare Professional Implementation

- Multiple barriers hinder adoption of guidelines, including lack of access to primary care services and lack of knowledge and skill in guideline implementation on the part of internists, family practitioners, and gynecologists.
- For instance, in a study of impediments to CVD prevention, one half of obstetrician-gynecologists and one third of internists surveyed were unaware that tobacco use is the leading cause of MIs in younger women.

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Lifestyle Interventions

- Cigarette Smoking (Class I, Level B)
  - Women should be advised not to smoke and to avoid environmental tobacco smoke.
  - Provide counseling at each encounter, and other pharmacotherapy as indicated in conjunction with a behavioral program or formal smoking cessation program

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Lifestyle Interventions

- Physical Activity (Class I, Level B)
  - Women should be advised to accumulate 150 min/wk of moderate exercise, 75 min/wk of vigorous exercise or an equivalent combination of moderate- and vigorous-intensity aerobic physical activity
  - Aerobic activity should be performed in episodes of at least 10 minutes, preferably spread throughout the week

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Lifestyle Interventions

- Physical Activity (Class I, Level B)
  - Women should also be advised that additional cardiovascular benefits are provided by increasing moderate-intensity aerobic physical activity to 5 h (300 min/wk, 2 ½ h/wk of vigorous-intensity physical activity, or an equivalent combination of both
  - Women should be advised to engage in muscle-strengthening activities that involve all major muscle groups performed on ≥ 2 d/wk
  - Women who need to loose weight or sustain weight loss should be advised to accumulate a minimum of 60 to 90 min of at least moderate-intensity physical activity (eg, brisk walking) on most, and preferably all, days of the week

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Lifestyle Interventions

- Cardiac rehabilitation
  - A comprehensive CVD risk-reduction regimen such as cardiovascular or stroke rehabilitation or a physician-guided home- or community-based exercise training program should be recommended to women with a recent acute coronary syndrome or revascularization, new-onset or chronic angina, recent CVA, PVD (Class I, Level A)
  - Or current/prior symptoms of heart failure and an LVEF ≤ 35% (Class I, Level B)

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Lifestyle Interventions

- Dietary Intake (Class I; Level of Evidence B)
  - Women should be involved to consume a diet rich in fruits and vegetables; to chose whole grain, high-fiber foods; to consume fish, especially oily fish, at least twice a week; to limit intake of saturated fat, cholesterol, alcohol, sodium, and sugar; and avoid *trans*-fatty acids.
  - Note: Pregnant women should be counseled to avoid eating fish with the potential for the highest level of mercury contamination (eg, shark, swordfish, king mackerel, or tile fish)

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Clinical Recommendations

Lifestyle Interventions

- Weight Maintenance (Class I; Level of Evidence B)
  - Women should maintain or lose weight through an appropriate balance of physical activity, caloric intake, and formal behavioral programs when indicated to maintain or achieve an appropriate body weight (eg, BMI < 25 kg/m^2 in US women), waist size (eg, < 35 in), or other target metric of obesity

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Lifestyle Interventions

- Omega-3 Fatty acids (Class IIb; Level of Evidence B)
  - Consumption of omega-3 fatty acids in the form of fish or in capsule form (eg, EPA 1800 mg/d) may be considered in women with hypercholesterolemia and/or hypertriglyceridemia for primary and secondary prevention
  - Note: Fish oil dietary supplements may have widely variable amounts of EPA and DHA (likely the only active ingredients)

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Major Risk Factor Interventions

- Blood Pressure: optimal & lifestyle
  - An optimal BP of <12/80 mm Hg should be encouraged through lifestyle approaches such as weight control, increased physical activity, alcohol moderation, sodium restriction, and increased consumption of fruits, vegetables and low-fat dairy products (Class 1; Level of Evidence B)

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Major Risk Factor Interventions

- Blood Pressure: optimal & lifestyle
  - Pharmacotherapy is indicated when BP is ≥ 140/90 (≥130/80 mm Hg in the setting of chronic kidney disease and diabetes mellitus).
  - Thiazide diuretics should be part of the drug regimen for indications for other agents in specific vascular diseases. Initial treatment of high-risk women with ACS or MI should be with β-blockers and/or ACE inhibitors/ARBs, with addition of other drugs such as thiazides as needed to achieve goal BP
    (Class 1; Level of Evidence A)

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Major Risk Factor Interventions

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  - ACEi are contraindicated in pregnancy and ought to be used with caution in women who may become pregnant.

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Major Risk Factor Interventions

- Lipids - Lipoproteins: (Class I, Level B)
  - Optimal levels
    - LDL-C < 100 mg/dL
    - HDL-C > 50 mg/dL
    - TG < 150 mg/dL
    - Non HDL-C < 130 mg/dL
  - Should be encouraged through lifestyle approaches

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Major Risk Factor Interventions

- Lipids; Pharmacotherapy for LDL-C lowering: high risk women
  - LDL-C lowering therapy is recommended simultaneously with lifestyle therapy in women with CHD to achieve an LDL-C < 100 mg/dL. (Class I, Level A)
  - It is also indicated in women with other atherosclerotic CVD or diabetes mellitus or 10-year absolute risk > 20%. (Class I, Level B)
  - A reduction to < 70 mg/dL is reasonable in very-high risk women (eg, those with recent ACS or multiple poorly controlled CV risk factors) with CHD and may require an LDL-lowering drug combination (Class IIa; Level of Evidence B)

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Major Risk Factor Interventions

- Lipids; Pharmacotherapy for LDL-C lowering: other at- risk women
  - LDL-C lowering therapy with lifestyle therapy is useful if LDL-C is ≥ 130 mg/dL, there are multiple risk factors, and the 10-y absolute risk is 10-20% (Class I; Level of Evidence B)
  - LDL-C lowering therapy with lifestyle therapy is useful if LDL-C is ≥ 160 mg/dL, there are multiple risk factors, even if the 10-y absolute risk is <10% (Class I; Level of Evidence B)
  - LDL-C lowering therapy with lifestyle therapy is useful if LDL-C is 190 mg/dL, regardless of the presence or absence of other risk factors (Class I; Level of Evidence B)
  - In women > 60 y of age and with established CHD risk > 10%, statins could be considered if hs-CRP is > 2 mg/dL, after lifestyle modification and no acute inflammatory process is present (Class IIb; Level of Evidence B)

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Major Risk Factor Interventions

- Lipids – Pharmacotherapy for low HDL-C or elevated non-HDL-C
  - Niacin or fibrate therapy can be useful when HDL-C is low (< 50 mg/dL) or non-HDL-C is elevated (> 130 mg/dL) in high-risk women after LDL-C goal is reached (Class IIb; Level of Evidence B)

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Major Risk Factor Interventions

- Diabetes mellitus
  - Lifestyle and pharmacotherapy can be useful in women with diabetes mellitus to achieve an HbA1c < 7% if this can be accomplished without significant hypoglycemia (Class IIa; Level of evidence B)

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Preventive Drug Interventions

- Aspirin: High risk women
  - Aspirin therapy (75-325 mg/d) should be used in women with CHD unless contraindicated (Class I; Level of Evidence A)
  - Aspirin therapy (75-325 mg/d) is reasonable in women with diabetes mellitus unless contraindicated (Class IIa; Level of Evidence B)
  - If a high-risk woman has an indication but is intolerant of aspirin therapy, clopidogrel should be substituted (Class I; Level of Evidence B)

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Preventive Drug Interventions

- Aspirin: other at-risk women
  - Aspirin therapy can be used in women ≥ 65 y of age (81 mg daily or 100 mg every other day) if BP is controlled and benefit for ischemic stroke and MI prevention is likely to outweigh risk of GI bleeding or hemorrhagic stroke (Class IIa; Level of Evidence B)

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Preventive Drug Interventions

- Aspirin: atrial fibrillation
  - Aspirin 75-325 mg should be used in women with chronic or paroxysmal atrial fibrillation with a contraindication to warfarin or at low risk of stroke (<1%/y or CHADS2 score of < 2) (Class I; Level of Evidence A)

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Preventive Drug Interventions

- Warfarin: atrial fibrillation
  - For women with chronic or paroxysmal atrial fibrillation, warfarin should be used to maintain the INR at 2.0 – 3.0 unless they are considered to be at low risk for stroke (<1%/y or high risk bleeding) (Class I; Level of Evidence A)

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AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Preventive Drug Interventions

- Dabigatran: atrial fibrillation
  - Dabigatran is useful as an alternative to warfarin for the prevention of stroke and systemic thromboembolism in patients with paroxysmal or chronic atrial fibrillation and risk factors for systemic embolization who do not have a prosthetic heart valve or hemodynamically significant valve disease; severe renal failure (CrCl 15 ml/min), or advanced liver disease (impaired baseline clotting function) (Class I; Level of Evidence B)

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Preventive Drug Interventions

- B-blockers
  - B-blockers should be used for up to 12 months (Class I; Level of evidence A) or up to 3 years (Class I; Level of evidence B) in all women after MI or ACS with normal left ventricular function unless contraindicated
  - Long term β-blocker therapy should be used indefinitely for women with left ventricular failure unless contraindications are present years (Class I; Level of evidence A)
  - Long term β-blocker therapy can be considered in other women with coronary or vascular disease and normal left ventricular function (Class IIb; Level of evidence C)

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Preventive Drug Interventions

- ACE inhibitors / ARBs
  - ACEi should be used (unless contraindicated) in women after MI and in those with clinical evidence of heart failure, LVEF ≤ 40%, or diabetes mellitus (Class I; Level of evidence A)
  - In women after MI and in those with clinical evidence of heart failure, an LVEF ≤ 40%, or diabetes mellitus who are intolerant of ACEi, ARBs should be used (Class I; Level of evidence B)
  - ACIi are contraindicated in pregnancy and ought to be used with caution in women who may become pregnant

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Preventive Drug Interventions

- Aldosterone Blockade
  - Use of aldosterone blockade (eg, spironolactone) after MI is indicated in women who do not have significant hypertension, renal dysfunction, or hyperkalemia who are already receiving therapeutic doses of ACE inhibitor and β-blocker and have LVEF ≤ 40% with symptomatic heart failure (Class I; Level of evidence B)

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Weight Management

Weight management approaches, including drug therapy and gastric bypass surgery, appear effective for weight loss but add costs, with decision analytic approaches noting favorable cost-effective ratios in younger and middle-aged obese women

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

Clinical Recommendations

Specific Dietary Intake Recommendations

Fruits and vegetables	≥ 4.5 cups/d
Fish	2/week
Dietary Fiber	30 grams per day
Whole grains	3/day; bran, cereal, berries, avocado
Sugar	≤ 5/wk (≤ 450 kcal/wk from sugar beverages)
Nuts, legumes, seeds	≥ 4/wk
Cholesterol	< 150 mg/day
Saturated Fat	< 7% total energy intake
Alcohol	≤ 1 day (4 oz wine, 12 oz beer, 1.5 oz spirits
Trans-Fatty acids	0
Viscous (soluble) fiber	10-25 grams/day

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AHA CVD Prevention Guidelines for Women

Classification of Evidence

- Classification
  - Class Ia — Intervention is useful and effective
  - Class IIa — Weight of evidence is in favor of efficacy
  - Class IIb — Efficacy is less well established
  - Class III — Intervention is not useful and may be harmful

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Level of Evidence

- Level
  - A — Sufficient evidence from multiple randomized trials
  - B — Limited evidence from a single randomized trial
  - C — Based on expert opinion, case studies or standard of care

Mosca, L. et al. Circulation 2011;123:

AHA CVD Prevention Guidelines for Women

- Other CVD risk-reducing interventions should be prioritized on the basis of the strength of recommendation (Level I >IIa >IIb) and within each class on the basis of the evidence, with the exception of lifestyle which is a top priority for all women (A>B>C)

Mosca, L. et al. Circulation 2011;123: