

guidelines for heart disease prevention in women



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Clinical Recommendations

Refer to original AHA guideline publication found online at <http://www.americanheart.org/presenter.jhtml?identifier=3004546>.

Lifestyle interventions

Cigarette smoking

Consistently encourage women not to smoke and to avoid environmental tobacco. (Class I, Level B)_{GI=1}

Physical activity

Consistently encourage women to accumulate a minimum of 30 minutes of moderate-intensity physical activity (e.g., brisk walking) on most, and preferably all, days of the week. (Class I, Level B)_{GI=1}

Cardiac rehabilitation

Women with a recent acute coronary syndrome or coronary intervention, new-onset or chronic angina should participate in a comprehensive risk-reduction regimen, such as cardiac rehabilitation or a physician-guided home or community-based program. (Class I, Level B)_{GI=2}

Heart-healthy diet

Consistently encourage an overall healthy eating pattern that includes intake of a variety of fruits, vegetables, grains, low-fat or nonfat dairy products, fish, legumes, and sources of protein low in saturated fat (e.g., poultry, lean meats, plant sources). Limit saturated fat intake to <10% of calories, limit cholesterol intake to <300 mg/d, and limit intake of trans fatty acids. (Class I, Level B)_{GI=1}

Weight maintenance/reduction

Consistently encourage weight maintenance/reduction through an appropriate balance of physical activity, caloric intake, and formal behavioral programs when indicated to maintain/achieve a BMI between 18.5 and 24.9 kg/m² and a waist circumference <35 in. (Class I, Level B)_{GI=1}

Psychosocial factors

Women with CVD should be evaluated for depression and referred and treated when indicated. (Class IIa, Level B)_{GI=2}

Omega 3 fatty acids

As an adjunct to diet, omega 3 fatty-acid supplementation may be considered in high-risk* women. (Class IIb, Level B)_{GI=2}

Folic acid

As an adjunct to diet, folic acid supplementation may be considered in high-risk* women (except after revascularization procedure) if a higher-than-normal level of homocysteine has been detected. (Class IIb, Level B)_{GI=2}

Major risk factor interventions

Blood pressure—lifestyle

Encourage an optimal blood pressure of <120/80 mm Hg through lifestyle approaches. (Class I, Level B)_{GI=1}

Blood pressure—drugs

Pharmacotherapy is indicated when blood pressure is ≥140/90 mm Hg or an even lower blood pressure in the setting of blood pressure-related target-organ damage or diabetes. Thiazide diuretics should be part of the drug regimen for most patients unless contraindicated. (Class I, Level A)_{GI=1}

Lipid, lipoproteins

Optimal levels of lipids and lipoproteins in women are LDL-C <100 mg/dL, HDL-C >50 mg/dL, triglycerides <150 mg/dL, and non-HDL-C (total cholesterol minus HDL cholesterol) <130 mg/dL and should be encouraged through lifestyle approaches. (Class I, Level B)_{GI=1}

Lipids—diet therapy

In high-risk women or when LDL-C is elevated, saturated fat intake should be reduced to <7% of calories, cholesterol to <200 mg/dL, and trans fatty acid intake should be reduced. (Class I, Level B)_{GI=1}

Lipids—pharmacotherapy— high risk*

Initiate LDL-C–lowering therapy (preferably a statin) simultaneously with lifestyle therapy in high-risk women with LDL-C ≥100 mg/dL (Class I, Level A)_{GI=1}, and initiate statin therapy in high-risk women with an LDL-C <100 mg/dL unless contraindicated (Class I, Level B)_{GI=1}.

Initiate niacin§ or fibrates therapy when HDL-C is low, or non-HDL-C elevated in high-risk women. (Class I, Level B)_{GI=1}

Lipids—pharmacotherapy—intermediate risk†

Initiate LDL-C–lowering therapy (preferably a statin) if LDL-C level is ≥130 mg/dL on lifestyle therapy (Class I, Level A)_{GI=1}, or niacin§ or fibrates therapy when HDL-C is low or non-HDL-C elevated after LDL-C goal is reached. (Class I, Level B)_{GI=1}

Lipids—pharmacotherapy—lower risk‡

Consider LDL-C–lowering therapy in low-risk women with 0 or 1 risk factor when LDL-C level is ≥190 mg/dL or if multiple risk factors are present when LDL-C is ≥160 mg/dL (Class IIa, Level B) or niacin§ or fibrates therapy when HDL-C is low or non-HDL-C elevated after LDL-C goal is reached. (Class IIa, Level B)_{GI=1}

Diabetes

Lifestyle and pharmacotherapy should be used to achieve near normal Hb_{A1C} (<7%) in women with diabetes. (Class I, Level B)_{GI=1}

Preventive drug interventions

Aspirin—high risk*

Aspirin therapy (75 to 162 mg), or clopidogrel if patient is intolerant to aspirin, should be used in high-risk women unless contraindicated. (Class I, Level A)_{GI=1}

Aspirin—intermediate risk†

Consider aspirin therapy (75 to 162 mg) in intermediate-risk women as long as blood pressure is controlled and benefit is likely to outweigh risk of gastrointestinal side effects. (Class IIa, Level B)_{GI=2}

β-Blockers

β-Blockers should be used indefinitely in all women who have had a myocardial infarction or who have chronic ischemic syndromes unless contraindicated. (Class I, Level A)_{GI=1}

ACE inhibitors

ACE inhibitors should be used (unless contraindicated) in high-risk* women. (Class I, Level A)_{GI=1}

ARBs

ARBs should be used in high-risk* women with clinical evidence of heart failure or an ejection fraction <40% who are intolerant to ACE inhibitors. (Class I, Level B)_{GI=1}

Atrial fibrillation/stroke prevention

Warfarin—atrial fibrillation

Among women with chronic or paroxysmal atrial fibrillation, warfarin should be used to maintain the INR at 2.0 to 3.0 unless they are considered to be at low risk for stroke (<1%/y) or high risk of bleeding. (Class I, Level A)_{GI=1}

Aspirin—atrial fibrillation

Aspirin (325 mg) should be used in women with chronic or paroxysmal atrial fibrillation with a contraindication to warfarin or at low risk for stroke (<1%/y). (Class I, Level A)_{GI=1}

Class III interventions

Hormone therapy

Combined estrogen plus progestin hormone therapy should not be initiated to prevent CVD in postmenopausal women. (Class III, Level A)

Combined estrogen plus progestin hormone therapy should not be continued to prevent CVD in postmenopausal women. (Class III, Level C)

Other forms of menopausal hormone therapy (e.g., unopposed estrogen) should not be initiated or continued to prevent CVD in postmenopausal women pending the results of ongoing trials. (Class III, Level C)

Antioxidant supplements

Antioxidant vitamin supplements should not be used to prevent CVD pending the results of ongoing trials. (Class III, Level A)_{GI=1}

Aspirin—lower risk‡

Routine use of aspirin in lower-risk women is not recommended pending the results of ongoing trials. (Class III, Level B)_{GI=2}

GI indicates generalizability index; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; ACE, angiotensin-converting enzyme; and ARB, angiotensin receptor blocker.

* High risk is defined as CHD or risk equivalent, or 10-year absolute CHD risk >20%.

† Intermediate risk is defined as 10-year absolute CHD risk 10% to 20%.

‡ Lower risk is defined as 10-year absolute CHD risk <10%.

§ Dietary supplement niacin must not be used as a substitute for prescription niacin, and over-the-counter niacin should only be used if approved and monitored by a physician.



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Guidelines

for Cardiovascular Disease Prevention in Women

Cardiovascular disease (CVD) is the largest killer of women in the United States. About 500,000 women die of CVD annually, more than the number of CVD-related deaths in men or the next seven causes of death in women combined. These evidence-based guidelines provide clinical recommendations for the prevention of CVD in women. Risk-reducing interventions were selected and rated following an extensive evaluation of the literature. Recommendations were rated based on methods used in ACC/AHA guidelines (see Table 1). In addition, a generalizability index was used to rate the likelihood that results generated from studies conducted in men would be applicable to women.

Table 1. Classification and Levels of Evidence

Classification

- Class I:** Intervention is useful and effective
- Class IIa:** Weight of evidence/opinion is in favor of usefulness/efficacy
- Class IIb:** Usefulness/efficacy is less well established by evidence/opinion
- Class III:** Intervention is not useful/effective and may be harmful

Level of Evidence

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

Risk Assessment and Stratification

Women are stratified into 3 risk groups (high, intermediate, and lower risk) based on the absolute 10-year probability of a coronary event (using the Framingham Risk Score for women) and clinical diagnoses (see Table 2).

Framingham Point Score Estimate of 10-Year Risk for Women

Age	Points
20-34	-7
35-39	-3
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	12
70-74	14
75-79	16

Total Cholesterol (mg/dL)	Points				
	Age 20-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79
<160	0	0	0	0	0
160-199	4	3	2	1	1
200-239	8	6	4	2	1
240-279	11	8	5	3	2
≥280	13	10	7	4	2

Smoking	Points				
	Age 20-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79
Nonsmoker	0	0	0	0	0
Smoker	9	7	4	2	1

HDL (mg/dL)	Points
≥60	-1
50-59	0
40-49	1
<40	2

Systolic BP (mmHg)	If Untreated	If Treated
<120	0	0
120-129	1	3
130-139	2	4
140-159	3	5
≥160	4	6

Point Total	10-Year Risk %
<9	<1
9	1
10	1
11	1
12	1
13	2
14	2
15	3
16	4
17	5
18	6
19	8
20	11
21	14
22	17
23	22
24	27
≥25	≥30



Table 2. Spectrum of CVD Risk in Women

Risk Group	Framingham Global Risk (10-y Absolute CHD Risk)	Additional Clinical Factors Determining Risk Level
High risk	>20%	<ul style="list-style-type: none"> Established CHD Cerebrovascular disease*
		<ul style="list-style-type: none"> Peripheral arterial disease Abdominal aortic aneurysm Diabetes mellitus Chronic kidney disease†
Intermediate risk	10% to 20%	<ul style="list-style-type: none"> Subclinical CVD‡ (e.g., coronary calcification) Metabolic syndrome Multiple risk factors§ Markedly elevated levels of a single risk factor First-degree relative(s) with early-onset (age: <55 y in men and <65 y in women) atherosclerotic CVD
Lower risk	<10%	<ul style="list-style-type: none"> May include women with multiple risk factors, metabolic syndrome, or one or no risk factors
Optimal risk	<10%	<ul style="list-style-type: none"> Optimal levels of risk factors and heart-healthy lifestyle

CHD indicates coronary heart disease; CVD, cardiovascular disease.

* Cerebrovascular disease may not confer high risk for CHD if the affected vasculature is above the carotids. Carotid artery disease (symptomatic or asymptomatic with >50% stenosis) confers high risk.

† As chronic kidney disease deteriorates and progresses to end-stage kidney disease, the risk of CVD increases substantially.

‡ Some patients with subclinical CVD will have >20% 10-year CHD risk and should be elevated to the high-risk category.

§ Patients with multiple risk factors can fall into any of the 3 categories by Framingham scoring.

|| Most women with a single, severe risk factor will have a 10-year risk <10%.

Clinical Recommendations

A full listing of clinical recommendations for the prevention of CVD in women is shown overleaf. Recommendations are grouped in the following categories: lifestyle interventions, major risk factor interventions, preventive drug interventions, atrial fibrillation/stroke prevention, and a class III category, which outlines interventions that are not recommended for CVD prevention in women.

Implementing the Guidelines

Strategies to implement the guidelines and prioritize risk-reducing therapies in clinical practice are outlined below.

CVD Prevention Strategies for Clinical Practice

- Assess and stratify women into high, intermediate, lower, or optimal risk categories.
- Lifestyle approaches (smoking cessation, regular exercise, weight management, and heart-healthy diet) to prevent CVD are Class I recommendations for all women and a top priority in clinical practice.
- Other CVD risk-reducing interventions should be prioritized on the basis of strength of recommendation (Class I > Class IIa > Class IIb) and within each class of recommendation on the basis of the level of evidence, with the exception of lifestyle, which is a top priority for all women (A>B>C).
- Highest priority for risk intervention in clinical practice is based on risk stratification: (high risk > intermediate risk > lower risk > optimal risk).
- Avoid interventions designated as Class III.

Priorities for Prevention in Practice Based on Risk Classification

Women at High Risk (>20% risk)

Class I Recommendations:

- Smoking cessation/environmental smoke avoidance
- Physical activity/cardiac rehabilitation
- Diet therapy
- Weight maintenance/reduction
- Blood pressure control
- Lipid control/statin therapy
- Aspirin therapy (75-162 mg)
- Beta-blocker therapy unless contraindicated
- ACE inhibitor therapy (ARBs if contraindicated)
- Glycemic control in diabetics

Class IIa Recommendation:

- Evaluation/referral for depression

Class IIb Recommendations:

- Omega 3 fatty-acid supplementation
- Folic acid supplementation

Women at Intermediate Risk (10% to 20% risk)

Class I Recommendations:

- Smoking cessation/environmental smoke avoidance
- Physical activity
- Heart-healthy diet or lipid-lowering diet
- Weight maintenance/reduction
- Blood pressure control
- Lipid control

Class IIa Recommendation:

- Aspirin therapy (75-162 mg)

Women at Lower Risk (<10% risk)

Class I Recommendations:

- Smoking cessation/environmental smoke avoidance
- Physical activity
- Heart-healthy diet or lipid-lowering diet
- Weight maintenance/reduction
- Treat individual CVD risk factors as indicated

Stroke Prevention Among Women with Atrial Fibrillation

Class I Recommendations:

- High-intermediate risk of stroke
 - Warfarin therapy

- Low risk of stroke (<1%/year) or contraindication to warfarin
 - Aspirin 325 mg therapy

Class III (Not Recommended for CVD Prevention):

- Hormone therapy in postmenopausal women
- Antioxidant supplements
- Aspirin therapy in low-risk women

ACE indicates angiotensin-converting enzyme; ARB, angiotensin receptor blocker.