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**Guideline for
Secondary Prevention for Patients with
Coronary and Other Atherosclerotic Vascular Disease**

Adopted by Capital Health Plan

Quality Improvement Committee 9/8/09, 5/10/11, 5/14/13, 5/12/2015, 5/9/2017, 5/14/2019

Secondary Prevention of Cardiovascular Disease

2019 Summary

Patients with established cardiovascular disease (CVD) have a high risk of subsequent cardiovascular events, including myocardial infarction (MI), stroke, and death. Therapeutic lifestyle changes in the form of increased physical activity, dietary modification/weight loss, and smoking cessation are of proven benefit and may improve outcomes beginning within a matter of weeks. In addition, adjunctive drug therapies of proven benefit include aspirin and statins, whose benefits are at least additive.

I. Identifying Patients at High Risk:

- A. Adults with multiple risk factors that confer a 10-year risk of CVD \geq 7.5 percent, as well as those with atherosclerotic CVD, should be treated with evidence-based doses of high-intensity statin, regardless of baseline low-density lipoprotein (LDL).
- B. Adults with hypertension should have a goal blood pressure established, therapeutic lifestyle changes (weight control, physical activity, dietary sodium restriction, avoidance of excess alcohol intake) recommended, and appropriate drug therapy (discussed separately).
- C. Most patients with diabetes, as well as many with Metabolic Syndrome, are at high risk.
- D. Adults with chronic kidney disease (CKD), those with estimated glomerular filtration rate (eGFR) < 60 mL/min per $1.73m^2$, are at high risk.

II. Older adults: Age is a major risk factor for all clinical manifestations of CVD. As the relative benefits of both therapeutic lifestyle changes and adjunctive drug therapies appear to be similar across all ages up to about 85 years, the absolute benefits are larger in older adults. Offering preventative strategies to older adults should be with the caveat that randomized trials have enrolled and followed patients into their 80's, but there are far more patients in middle than older ages. Maintaining a high quality of life may be more important than life quantity for some older adults. The clinician should also be aware of the greater potential for drug-drug interaction in the context of higher rates of chronic kidney disease and the many drug therapies utilized by older adults.

III. Secondary Prevention Interventions:

A. Lifestyle Modifications

Modification	Recommendation
Weight Reduction	Achieve/maintain normal body weight (<i>Target Body Mass Index, 18.5 to 24.9 kg/m²</i>). Patients above this threshold with a waist circumference of ≥ 35 inches in women or ≥ 40 inches in men should undergo evaluation for the metabolic syndrome and be provided with strategies for implementation of weight reduction measures
Diet	Adults should consume a Mediterranean Diet and/or a plan that emphasizes intake of vegetables, fruits, whole grains, low fat dairy, poultry, oily fish, legumes, nontropical vegetable oils and nuts, and a limited intake of sweets, sugar-sweetened beverages, red meat, trans fats, and saturated fats.
Dietary Sodium Reduction	Reduce dietary sodium intake to no more than 2400 mg per day in patients who would benefit from lowered blood pressure
Physical Activity	After a risk assessment, engage in regular moderate-intensity aerobic physical activity at least 2.5 hours per week or 1.25 hours per week of vigorous-intensity aerobic physical activity. Activity should be performed in episodes of at least 10 minutes each and spread throughout the week. Cardiac Rehab programs can be beneficial for eligible patients with recent CV events.
Moderation of Alcohol Consumption	Adults should limit consumption to no more than 1-2 drinks per day. Small to moderate consumption of alcohol may lower CVD risk.
Smoking Cessation	Complete smoking cessation and avoidance of environmental tobacco smoke Florida Quit Line – toll free- (877) 822-6669 Other options are available online at www.capitalhealth.com

Mobile phone messaging, such as TEXTING, may be a helpful adjunct to healthy lifestyle motivation when conducted within HIPPA and privacy guidelines.

B. Medications for Risk Factor Modification

1. Dyslipidemia

All patients with atherosclerotic CVD, as well as those with a 10-year risk $>7.5\%$, should be recommended lifestyle interventions and prescribed an evidence-based dose of a high-intensity statin, regardless of the baseline LDL-C.

Statins lower the risk of death by 15-20 percent and lower the risk of non-fatal cardiovascular events to an even greater degree. The primary goal for patients at high risk of CVD events is to achieve the largest LDL-C reduction possible with statin therapy. Generally, this is accomplished with intensive rather than moderate dose therapy.

High Dose Statins	
Atorvastatin	40-80 mg / day
Rosuvastatin	20-40 mg / day

Moderate Dose Statins	
Atorvastatin	10-20 mg / day
Rosuvastatin	5-10 mg / day
Pravastatin	40 mg / day
Simvastatin	40 mg / day

If patients do not meet their LDL-C goal with statin therapy, other agents, such as ezetimibe or a PCSK9 inhibitor, may be added.

Adding an additional agent should involve shared decision-making between the patient and the provider.

2. Hypertension

As a general guideline, The American College of Cardiology recommends blood pressure be controlled for ages 18 – 85 years of age to <140/ <90. However, UpToDate authors suggest individualizing blood pressure goals.

Considerations for individualizing antihypertensive therapy

Indication	Antihypertensive drugs
Compelling indications (major improvement in outcome independent of blood pressure)	
Systolic heart failure	ACE inhibitor or ARB, beta blocker, diuretic, aldosterone antagonist*
Postmyocardial infarction	ACE inhibitor, beta blocker, ARB, aldosterone antagonist
Proteinuric chronic kidney disease	ACE inhibitor or ARB

Angina pectoris	Beta blocker, calcium channel blocker
Atrial fibrillation rate control	Beta blocker, nondihydropyridine calcium channel blocker
Atrial flutter rate control	Beta blocker, nondihydropyridine calcium channel blocker

Likely to have a favorable effect on symptoms in comorbid conditions

Benign prostatic hyperplasia	Alpha blocker
Essential tremor	Beta blocker (noncardioselective)
Hyperthyroidism	Beta blocker
Migraine	Beta blocker, calcium channel blocker
Osteoporosis	Thiazide diuretic
Raynaud phenomenon	Dihydropyridine calcium channel blocker

Contraindications

Angioedema	ACE inhibitor
Bronchospastic disease	Beta blocker
Depression	Reserpine
Liver disease	Methyldopa
Pregnancy (or at risk for)	ACE inhibitor, ARB, renin inhibitor
Second- or third-degree heart block	Beta blocker, nondihydropyridine calcium channel blocker

May have adverse effect on comorbid conditions

Depression	Beta blocker, central alpha-2 agonist
Gout	Diuretic
Hyperkalemia	Aldosterone antagonist, ACE inhibitor, ARB, renin inhibitor
Hyponatremia	Thiazide diuretic
Renovascular disease	ACE inhibitor, ARB, or renin inhibitor

ACE: angiotensin-converting enzyme; ARB: angiotensin receptor blocker.

* A benefit from an aldosterone antagonist has been demonstrated in patients with NYHA class III-IV heart failure or decreased left ventricular ejection fraction after a myocardial infarction.

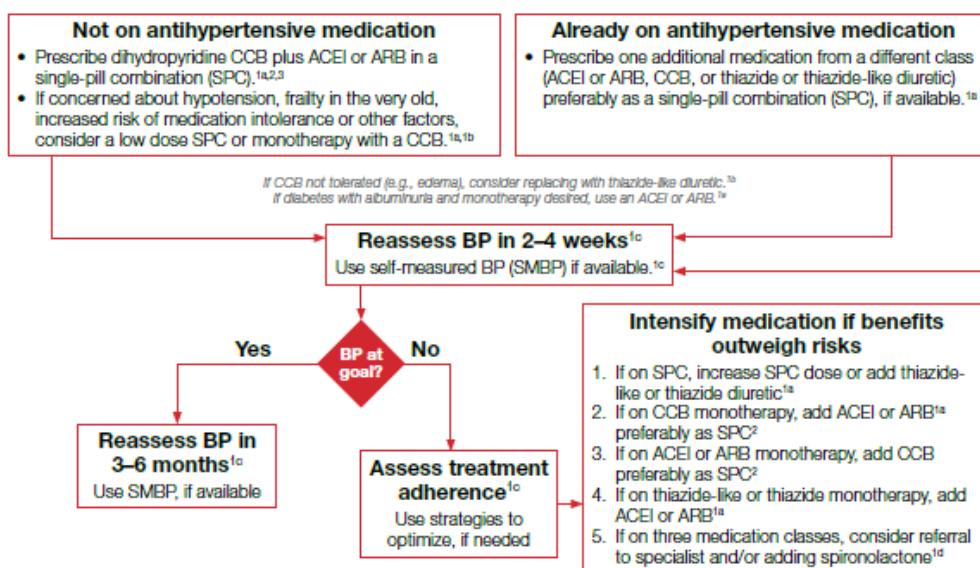
Adapted from: *The seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure. JAMA 2003; 289:2560.*
Graphic 63628 Version 11.0

Hypertension medication treatment protocol¹

For adults without CHF, CAD, pregnancy, CKD stage 3 or albuminuria ≥ 300 mg/d or ≥ 300 mg/g albumin-to-creatinine ratio*

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Check labs at clinician's discretion.



Generic medication summary

Antihypertensive medication	Sample generic options	Dose once daily (initial) ^a	Dose once daily (intensified) ^a	Estimated Cost (30-day supply) ^b
CCB and ACEI (SPC) (if ACEI not tolerated due to cough, go to next row)	amlodipine/benazepril	(a) 2.5/10 mg (b) 5/10 mg (c) 5/20 mg	(a) 5/10 mg or 5/20 mg (b) 5/20 mg or 10/20 mg (c) 10/20 mg or 10/40 mg	\$15–20
CCB and ARB (SPC) (if cost an issue, use CCB monotherapy (amlodipine) and go to next row)	(a) amlodipine/olmesartan (b) amlodipine/valsartan	(a) 5/20 mg (b) 5/40 mg or 5/80 mg	(a) 5/40 mg or 10/20 mg or 10/40 mg (b) 5/80 mg or 10/80 mg	(a) \$29–40 (b) \$50–60
Add thiazide-like or thiazide diuretic	(a) indapamide (preferred) (b) chlorthalidone (preferred) (c) hydrochlorothiazide	(a) 1.25 mg (b) 12.5 mg = $\frac{1}{2}$ 25 mg tab (c) 12.5 mg	(a) 2.5 mg (b) 25 mg (c) 25 mg	(a) \$4 (b) \$8–16 (c) \$4
Add spironolactone (optional)	spironolactone	12.5 mg = $\frac{1}{2}$ 25 mg tab	25 mg	\$3–\$12

* This protocol should not be used in patients with CHF, CAD, pregnancy, CKD stage 3 or albuminuria or ≥ 300 mg/g albumin-to-creatinine ratio or the equivalent in first morning void. Simultaneous use of an ACEI, ARB, and/or renin inhibitor is not recommended.^{1a}



Disclaimer

Adherence to this protocol may not achieve goal blood pressure in every situation. Furthermore, this information should not be interpreted as setting a standard of care, or be deemed inclusive of all proper methods of care, nor exclusive of other methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding the appropriateness of any specific therapy must be made by the physician and the patient in light of all the clinical factors, including labs, presented by the individual patient. This protocol reflects the best available evidence at the time that it was prepared. The results of future studies may require revisions to the recommendations in this protocol to reflect new evidence, and it is the clinician's responsibility to be aware of such changes.

References

1. Whelton PK, Carey RM, Aronow WS, Casey DE Jr, Collins KJ, Dennison Himmelfarb C, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol*. 2018;71(19).
 - 1a. See page e168, evidence statement, and e189, evidence statement plus supporting text.
 - 1b. See page e210, "In the very old...," and page e169, "However, caution is advised in initiating antihypertensive pharmacotherapy with 2 drugs in older patients because hypotension or orthostatic hypotension may develop in some patients ...".
 - 1c. See page e162, Figure 4, including text within figure.
 - 1d. See page e194, "Treatment of resistant hypertension".
 - 1e. See page e164, for evidence statement.
2. Jamerson K, Weber MA, Bakris GL, et al. Benazepril plus amlodipine or hydrochlorothiazide for hypertension in high-risk patients. *N Engl J Med*. 2008;359(23):2417-28.
3. Feldman RD, Zou GY, Vandervoort MK, Wong CJ, Nelson SA, Feagan BG. A simplified approach to the treatment of uncomplicated hypertension: a cluster randomized, controlled trial. *Hypertension*. 2009;53:646-653. doi:10.1161/HYPERTENSIONAHA.108.123455.
4. Online.epocrates.com (2019). Epocrates Online Drugs. Available at: <https://online.epocrates.com/drugs> (accessed March 25, 2019).
5. Cost is approximation only for patients without insurance coverage based on available U.S. retail pharmacy information and GoodRx as of March 28, 2019.

C. Other Adjunctive Therapies

1. *Antiplatelet Therapy-* Long-term aspirin therapy reduces the risk of subsequent occlusive vascular events. For most patients with stable coronary artery disease (CAD), the UpToDate team suggestion is to not substitute or add oral anticoagulant therapy to aspirin therapy in an attempt to lower the risk of subsequent CHD events. However, a regimen of rivaroxaban 2.5 mg orally twice per day and aspirin may be considered for some stable atherosclerotic CHD patients who are at high risk of cardiovascular events and at low risk for bleeding.
2. *Beta Blockers-* Should be used as routine therapy in patients with acute MI or in those with heart failure due to systolic dysfunction.
3. *ACE/ARB-* Many patients with established CVD will benefit from ACE inhibitor or ARB therapy. The most common indications are attainment of goal blood pressure, the treatment of acute MI, or the presence of HF, left ventricular ejection fraction below 40%, diabetes, or proteinuric kidney disease.
4. *Aldosterone Blockers-* Recommended for post MI patients without significant renal dysfunction or hyperkalemia who are receiving therapeutic doses of ACE Inhibitor and beta-blocker and who have left ventricular EF ≤40% and who have either diabetes or heart failure.
5. *Flu Vaccine-* Individuals with established CVD and high-risk primary prevention may have increased risks for complication of influenza infection. Recommend an annual flu vaccination to all patients.
6. *Fish oil and marine omega-3 fatty acids-* Observational studies in healthy adults and randomized trials in patients with established coronary heart disease (CHD) indicate that modest fish oil consumption (approximately 250 mg/day EPA+DHA) may reduce the risk of CHD death and sudden cardiac death, with little if any risk.

D. Therapies without established benefit

1. Antioxidant vitamins
2. Homocysteine and folic acid
3. Postmenopausal hormone therapy
4. Chelation
5. Phospholipase A₂ inhibitors
6. Methotrexate

Patient Education: Patient education regarding risk factors and their management is central to secondary prevention. Education should be individualized to optimize care and promote wellness. Education that respects the individual's level of understanding should focus on medication management and cardiovascular risk reduction with the inclusion of therapeutic options, appropriate exercise, self-monitoring, and how to recognize and take appropriate action on worsening cardiovascular symptoms.

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