2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease

GUIDELINES MADE SIMPLE

A Selection of Tables and Figure

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AMERICAN COLLEGE of CARDIOLOGY

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A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

Writing Committee:

Donna K. Arnett, PhD, MSPH, FAHA, Co-Chair
Roger S. Blumenthal, MD, FACC, FAHA, Co-Chair

Michelle A. Albert, MD, MPH, FAHA
Andrew B. Buroker, Esq
Cheryl Dennison Himmelfarb, PhD, RN, ANP, FAAN, FAHA, FPCNA
Zachary D. Goldberger, MD, MS, FACC, FAHA
Ellen J. Hahn, PhD, RN, FAAN
Amit Khera, MD, MSc, FACC, FAHA, FASPC
Donald Lloyd-Jones, MD, SCM, FACC, FAHA
J. William McEvoy, MBBCh, MEd, MHS
Erin D. Michos, MD, MHS, FACC, FAHA
Michael D. Miedema, MD, MPH
Daniel Muñoz, MD, MPA, FACC
Sidney C. Smith, Jr, MD, MACC, FAHA, FESC, FACP
Salim S. Virani, MD, PhD, FACC, FAHA
Kim A. Williams, Sr, MD, MACC, FAHA, FASNC
Joseph Yeboah, MD, MS, FACC, FAHA
Boback Ziaeian, MD, PhD, FACC, FAHA

The ACC/AHA Task Force on Clinical Practice Guidelines has commissioned this guideline to consolidate existing recommendations and various recent scientific statements, expert consensus documents, and clinical practice guidelines into a single guidance document focused on the primary prevention of ASCVD. However, this guideline also includes newly generated recommendations for aspirin use, exercise and physical activity, and tobacco use, in addition to recommendations related to team-based care, shared decision-making, and assessment of social determinants of health, to create a comprehensive yet targeted ACC/AHA guideline on the prevention of ASCVD.

The following resource contains tables and figures from the 2019 Guideline on the Primary Prevention of Cardiovascular Disease. The resource is only an excerpt from the Guideline and the full publication should be reviewed for more tables and figures as well as important context.

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Clinician Tool

Primary Prevention: Lifestyle Changes and Team-Based Care

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Top 10 Take-Home Messages for the Primary Prevention of Cardiovascular Disease

(1 of 3)

1 *The most important way to prevent atherosclerotic vascular disease, heart failure, and atrial fibrillation is to promote a healthy lifestyle throughout life.*

2 *A team-based care approach is an effective strategy for the prevention of cardiovascular disease. Clinicians should evaluate the social determinants of health that affect individuals to inform treatment decisions.*

3 *Adults who are 40 to 75 years of age and are being evaluated for cardiovascular disease prevention should undergo 10-year atherosclerotic cardiovascular disease (ASCVD) risk estimation and have a clinician–patient risk discussion before starting on pharmacological therapy, such as antihypertensive therapy, a statin, or aspirin. In addition, assessing for other risk-enhancing factors can help guide decisions about preventive interventions in select individuals, as can coronary artery calcium scanning.*

Top 10 Take-Home Messages for the Primary Prevention of Cardiovascular Disease

(2 of 3)

4 *All adults should consume a healthy diet that emphasizes the intake of vegetables, fruits, nuts, whole grains, lean vegetable or animal protein, and fish and minimizes the intake of trans fats, red meat and processed meats, refined carbohydrates, and sugar-sweetened beverages. For adults with overweight/obesity, counseling and caloric restriction are recommended for achieving and maintaining weight loss.*

5 *Adults should engage in at least 150 minutes per week of accumulated moderate-intensity physical activity or 75 minutes per week of vigorous-intensity physical activity.*

6 *For adults with type 2 diabetes mellitus, lifestyle changes, such as improving dietary habits and achieving exercise recommendations, are crucial. If medication is indicated, metformin is first-line therapy, followed by consideration of a sodium-glucose cotransporter 2 inhibitor or a glucagon-like peptide-1 receptor agonist.*

Top 10 Take-Home Messages for the Primary Prevention of Cardiovascular Disease

(3 of 3)

7 *All adults should be assessed at every healthcare visit for tobacco use, and those who use tobacco should be assisted and strongly advised to quit.*

8 *Aspirin should be used infrequently in the routine primary prevention of ASCVD because of lack of net benefit.*

9 *Statin therapy is first-line treatment for primary prevention of ASCVD in patients with elevated low-density lipoprotein cholesterol levels (≥190 mg/dL), those with diabetes mellitus, who are 40 to 75 years of age, and those determined to be at sufficient ASCVD risk after a clinician–patient risk discussion.*

10 *Nonpharmacological interventions are recommended for all adults with elevated blood pressure or hypertension. For those requiring pharmacological therapy, the target blood pressure should generally be <130/80 mm Hg.*

Overarching Recommendations for ASCVD Prevention Efforts

Recommendations for Patient-Centered Approaches to ASCVD Prevention

COR	LOE	Recommendations
I	A	1. A team-based care approach is recommended for the control of risk factors associated with ASCVD.
I	B-R	2. Shared decision-making should guide discussions about the best strategies to reduce ASCVD risk.
I	B-NR	3. Social determinants of health should inform optimal implementation of treatment recommendations for the prevention of ASCVD.

Example Considerations for Addressing Social Determinants of Health to Help Prevent ASCVD Events

Topic/Domain	Example Considerations
Cardiovascular risk	• Adults should be routinely assessed for psychosocial stressors and provided with appropriate counseling. • Health literacy should be assessed every 4 to 6 y to maximize recommendation effectiveness.
Diet	• In addition to the prescription of diet modifications, body size perception, as well as social and cultural influences, should be assessed. • Potential barriers to adhering to a heart-healthy diet should be assessed, including food access and economic factors; these factors may be particularly relevant to persons from vulnerable populations, such as individuals residing in either inner-city or rural environments, those at socioeconomic disadvantage, and those of advanced age*.
Exercise and physical activity	• In addition to the prescription of exercise, neighborhood environment and access to facilities for physical activity should be assessed.
Obesity and weight loss	• Lifestyle counseling for weight loss should include assessment of and interventional recommendations for psychosocial stressors, sleep hygiene, and other individualized barriers. • Weight maintenance should be promoted in patients with overweight/obesity who are unable to achieve recommended weight loss.
Diabetes mellitus	• In addition to the prescription of type 2 diabetes mellitus interventions, environmental and psychosocial factors, including depression, stress, self-efficacy, and social support, should be assessed to improve achievement of glycemic control and adherence to treatment.
High blood pressure	• Short sleep duration (<6 h) and poor-quality sleep are associated with high blood pressure and should be considered. Because other lifestyle habits can impact blood pressure, access to a healthy, low-sodium diet and viable exercise options should also be considered.
Tobacco treatment	• Social support is another potential determinant of tobacco use. Therefore, in adults who use tobacco, assistance and arrangement for individualized and group social support counseling are recommended.

**Advanced age generally refers to age 75 years or older.*

Assessment of Cardiovascular Risk

Risk-Enhancing Factors for Clinician-Patient Risk Discussion

- **Family history of premature ASCVD** (males, age <55 y; females, age <65 y)
- **Primary hypercholesterolemia** (LDL-C, 160–189 mg/dL [4.1–4.8 mmol/L]; non–HDL-C 190–219 mg/dL [4.9–5.6 mmol/L])*
- **Metabolic syndrome** (increased waist circumference [by ethnically appropriate cutpoints], elevated triglycerides [>150 mg/dL, nonfasting], elevated blood pressure, elevated glucose, and low HDL-C [<40 mg/dL in men; <50 mg/dL in women] are factors; a tally of 3 makes the diagnosis)
- **Chronic kidney disease** (eGFR 15–59 mL/min/1.73 m2 with or without albuminuria; not treated with dialysis or kidney transplantation)
- **Chronic inflammatory conditions**, such as psoriasis, RA, lupus, or HIV/AIDS
- **History of premature menopause (before age 40 y) and history of pregnancy-associated conditions that increase later ASCVD risk, such as preeclampsia**
- **High-risk race/ethnicity** (e.g., South Asian ancestry)
- **Lipids/biomarkers**: associated with increased ASCVD risk
  - Persistently elevated,* primary hypertriglyceridemia (≥175 mg/dL, nonfasting)
  - If measured:
    - **Elevated high-sensitivity C-reactive protein** (≥2.0 mg/L)
    - **Elevated Lp(a)**: A relative indication for its measurement is family history of premature ASCVD. An Lp(a) ≥50 mg/dL or ≥125 nmol/L constitutes a risk-enhancing factor, especially at higher levels of Lp(a).
    - **Elevated apoB** (≥130 mg/dL): A relative indication for its measurement would be triglyceride ≥200 mg/dL. A level ≥130 mg/dL corresponds to an LDL-C >160 mg/dL and constitutes a risk-enhancing factor
    - **ABI** (<0.9)

Grundy SM, Stone NJ, Bailey AL, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol, Journal of the American College of Cardiology (2018), doi: https://doi.org/10.1016/j.jacc.2018.11.003.

**Optimally, 3 determinations.*

AIDS indicates acquired immunodeficiency syndrome; ABI, ankle-brachial index; apoB, apolipoprotein B; ASCVD, atherosclerotic cardiovascular disease; eGFR, estimated glomerular filtration rate; HDL-C, high-density lipoprotein cholesterol; HIV, human immunodeficiency virus; LDL-C, low-density lipoprotein cholesterol; Lp(a), lipoprotein (a); and RA, rheumatoid arthritis.

Lifestyle Factors Affecting Cardiovascular Risk

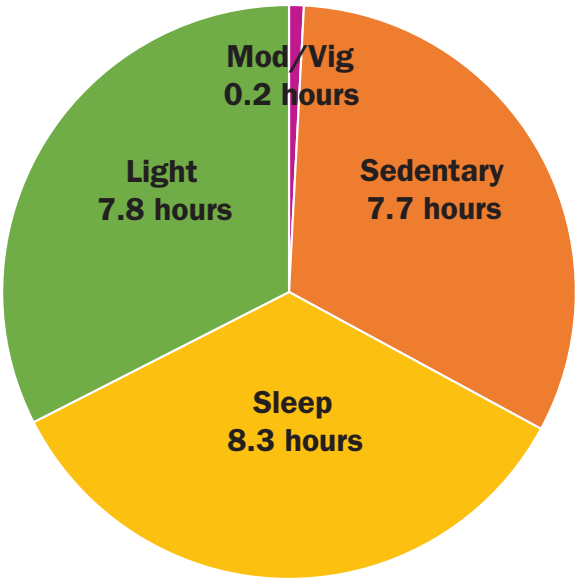
Definitions and Examples of Different Intensity of Physical Activity

Intensity	METs	Examples
Sedentary behavior*	1–1.5	Sitting, reclining, or lying; watching television
Light	1.6–2.9	Walking slowly, cooking, light housework
Moderate	3.0 –5.9	Brisk walking (2.4–4 mph), biking (5–9 mph), ballroom dancing, active yoga, recreational swimming
Vigorous	≥6	Jogging/running, biking (≥10 mph), singles tennis, swimming laps

**Sedentary behavior is defined as any waking behavior characterized by an energy expenditure ≤1.5 METs while in a sitting, reclining, or lying posture. Standing is a sedentary activity in that it involves ≤1.5 METs, but it is not considered a component of sedentary behavior.*

MET indicates metabolic equivalent; and mph, miles per hour.

Hours Per Day Spent in Various States of Activity

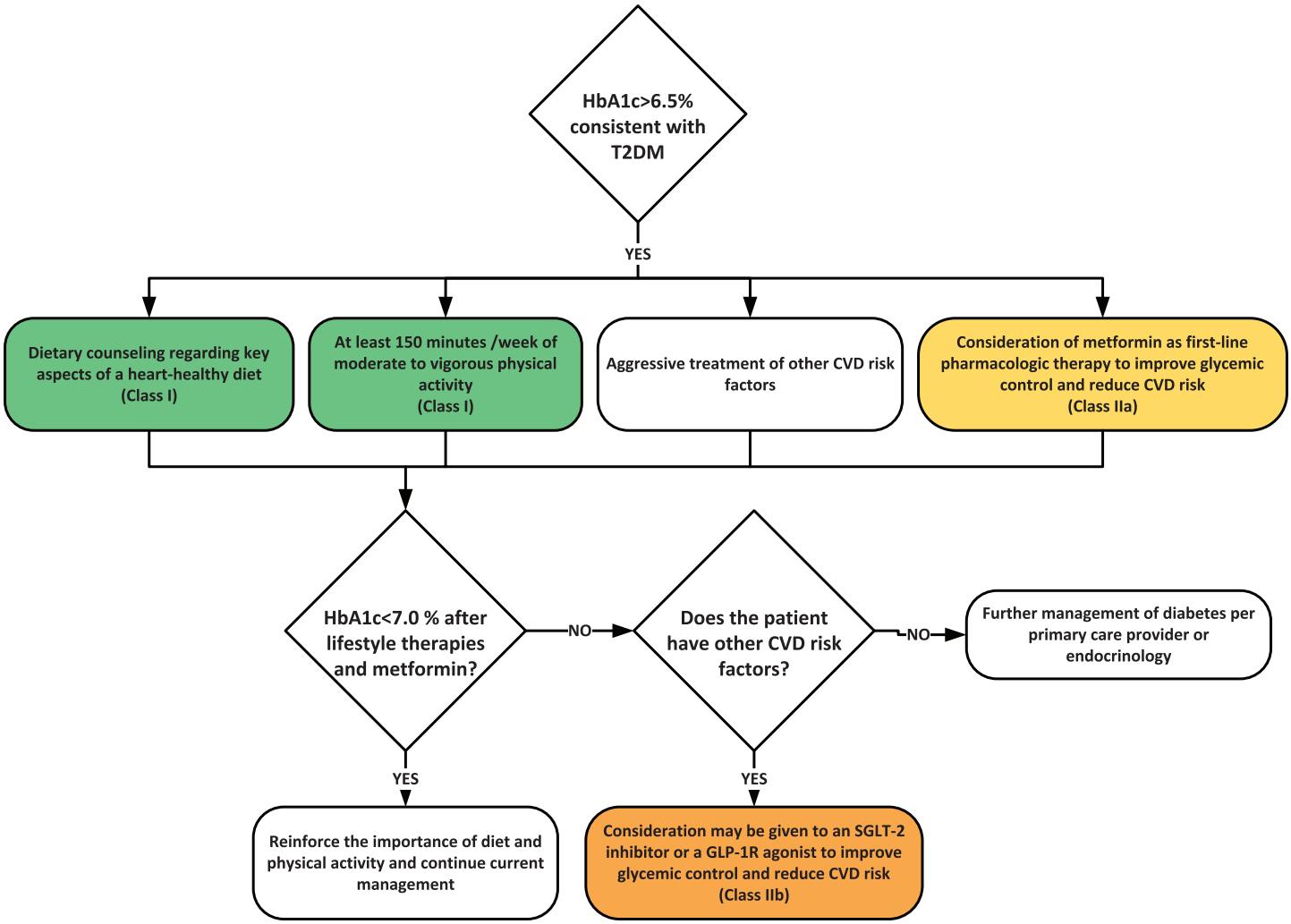


US adults spend >7 hours per day on average in sedentary activities. Replacing sedentary time with other physical activity involves increasing either moderate to vigorous intensity physical activity or light intensity physical activity.

Data derived from NHANES and modified from Young DR, Hivert M-F, Alhassan S, et al. Sedentary behavior and cardiovascular morbidity and mortality: a science advisory from the American Heart Association. Circulation. 2016;134:e262-79.

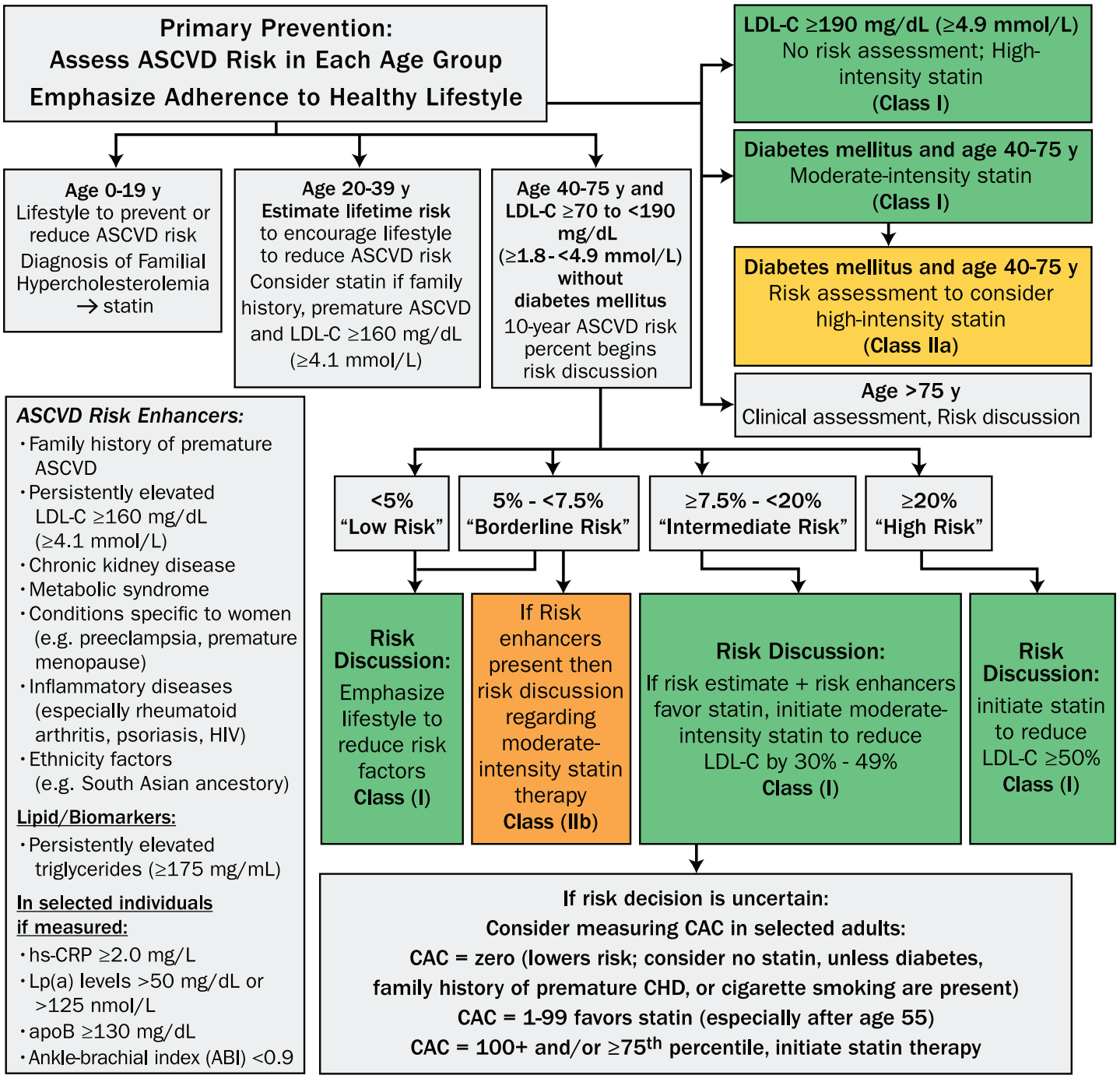
Type II Diabetes Mellitus

Treatment of Type 2 Diabetes for Primary Prevention of Cardiovascular Disease



High Blood Cholesterol

Primary Prevention



Diabetes-Specific Risk Enhancers That Are Independent of Other Risk Factors in Diabetes Mellitus

- Long duration (≥10 years for T2DM or ≥20 years for type 1 diabetes mellitus)
- Albuminuria ≥30 mcg albumin/mg creatinine
- eGFR <60 mL/min/1.73 m2
- Retinopathy
- Neuropathy
- ABI <0.9

Grundy SM, Stone NJ, Bailey AL, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA guideline on the management of blood cholesterol: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines [published online ahead of print November 10, 2018]. Circulation. doi: 10.1161/CIR.0000000000000625

ABI indicates ankle-brachial index; eGFR, estimated glomerular filtration rate; and T2DM, type 2 diabetes mellitus.

Selected Examples of Candidates for Coronary Artery Calcium Measurement Who Might Benefit From Knowing Their Coronary Artery Calcium Score Is Zero

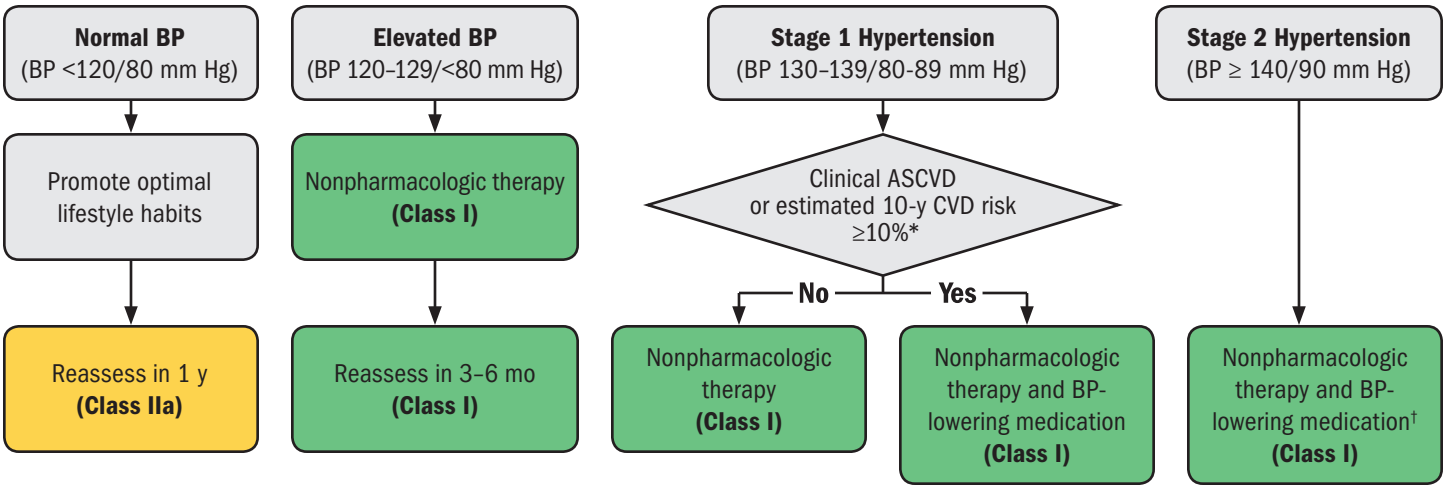
- Patients reluctant to initiate statin who wish to understand their risk and potential for benefit more precisely
- Patients concerned about need to reinstitute statin therapy after discontinuation for statin -associated symptoms
- Older patients (men 55–80 y of age; women 60–80 y of age) with low burden of risk factors who question whether they would benefit from statin therapy
- Middle-aged adults (40–55 y of age) with PCE-calculated 10-year risk of ASCVD 5% to <7.5% with factors that increase their ASCVD risk, although they are in a borderline risk group.

Caveats: If patient is at intermediate risk and if a risk decision is uncertain and a coronary artery calcium score is obtained, it is reasonable to withhold statin therapy unless higher-risk conditions, such as cigarette smoking, family history of premature ASCVD, or diabetes mellitus, are present and to reassess coronary artery calcium score in 5 to 10 years. Moreover, if coronary artery calcium scoring is recommended, it should be performed in facilities that have current technology and expertise to deliver the lowest radiation possible.

ASCVD indicates atherosclerotic cardiovascular disease; LDL-C, low-density lipoprotein cholesterol; and PCE, pooled cohort equations.

High Blood Pressure

BP Thresholds and Recommendations for Treatment



Best Proven Nonpharmacological Interventions for Prevention and Treatment of Hypertension*

	Nonpharmacological Intervention	Dose	Approximate Impact on SBP	
			Hypertension	Normotension
Weight loss	Weight/body fat	Best goal is ideal body weight, but aim for at least a 1-kg reduction in body weight for most adults who are overweight. Expect about 1 mm Hg for every 1-kg reduction in body weight.	-5 mm Hg	-2/3 mm Hg
Healthy diet	DASH dietary pattern	Consume a diet rich in fruits, vegetables, whole grains, and low-fat dairy products, with reduced content of saturated and total fat.	-11 mm Hg	-3 mm Hg
Reduced intake of dietary sodium	Dietary sodium	Optimal goal is <1500 mg/d, but aim for at least a 1000-mg/d reduction in most adults.	-5/6 mm Hg	-2/3 mm Hg
Enhanced intake of dietary potassium	Dietary potassium	Aim for 3500–5000 mg/d, preferably by consumption of a diet rich in potassium.	-4/5 mm Hg	-2 mm Hg
Physical activity	Aerobic	• 90–150 min/wk • 65%–75% heart rate reserve	-5/8 mm Hg	-2/4 mm Hg
	Dynamic resistance	• 90–150 min/wk • 50%–80% 1 rep maximum • 6 exercises, 3 sets/exercise, 10 repetitions/set	-4 mm Hg	-2 mm Hg
	Isometric resistance	• 4 × 2 min (hand grip), 1 min rest between exercises, 30% –40% maximum voluntary contraction, 3 sessions/wk • 8–10 wk	-5 mm Hg	-4 mm Hg
Moderation in alcohol intake	Alcohol consumption	In individuals who drink alcohol, reduce alcohol† to: • Men: ≤2 drinks daily • Women: ≤1 drink daily	-4 mm Hg	-3 mm Hg

Whelton PK, Carey RM, Aronow WS, 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:e127-248"

**Type, dose, and expected impact on BP in adults with a normal BP and with hypertension.*

†In the United States, 1 "standard" drink contains roughly 14 g of pure alcohol, which is typically found in 12 oz of regular beer (usually about 5% alcohol), 5 oz of wine (usually about 12% alcohol), and 1.5 oz of distilled spirits (usually about 40% alcohol).

‡Detailed information about the DASH diet is available via the NHLBI and Dashdiet.org.

BP indicates blood pressure; DASH, Dietary Approaches to Stop Hypertension; NHLBI, National Heart, Lung, and Blood Institute; and SBP, systolic blood pressure.

Tobacco Use

Highlights of Recommended Behavioral and Pharmacotherapy Tobacco Treatment Modalities*

						NOTE: The FDA has issued a removal of black box warnings about neuropsychiatric events.	
Nicotine replacement (NRT): 5 forms (3 OTC, nasal spray/oral inhaler by prescription) Cigarettes smoked per day (CPD) can guide dosing. 1 CPD = approx. 1-2 mg of nicotine Note: Use caution with all NRT products for patients with recent (≤2 weeks) MI, serious arrhythmia, or angina; patients who are pregnant or breastfeeding; and adolescents.						Bupropion (Zyban [GlaxoSmithKline], Wellbutrin SR [GlaxoSmithKline])	Varenicline (Chantix [Pfizer])
Dosing	**Patch: 21 mg, 14 mg, or 7 mg**	**Gum: 2 mg or 4 mg**	**Lozenge: 2 mg or 4 mg**	**Nasal spray: 10 mg/mL**	**Oral inhaler: 10 10-mg cartridge**	**Tablet: 150 mg SR**	**Tablet: 0.5 mg or 1 mg**
Dose and duration can be titrated on the basis of response	Starting dose: 21 mg for >10 CPD; 14 mg for <10 CPD	Starting dose: 4 mg if first tobacco use is ≤30 min after waking; 2 mg if first tobacco use is >30 min after waking; maximum of 20 lozenges or 24 pieces of gum per day. Chew and park gum*		Starting dose: 1-2 doses/h (1 dose = 2 sprays); maximum of 40 doses/d	Starting dose: Puff for 20 min per cartridge every 1-2 h; maximum 6-16 cartridges/d; taper over 3-6 mo†	150 mg once daily (am) for 3 d; then 150 mg twice daily; may use in combination with NRT	0.5 mg once daily (am) for 3 d; then 0.5 mg twice daily for 4 d; then 1 mg twice daily (use start pack followed by continuation pack) for 3-6 mo
Precautions	Local irritation possible; avoid with skin disorders; may remove for sleep if needed	Hiccups/dyspepsia possible; avoid food or beverages 15 min before and after use		Local irritation possible; avoid with nasal or reactive airway disorders	Cough possible; avoid with reactive airway disorders	Avoid with history/ risk of seizures, eating disorders, MAO inhibitors, or CYP 2D6 inhibitor	Nausea common; take with food. Renal dosing required. Very limited drug interactions; near-exclusive renal clearance.

**See Rx for change for greater detail: http://rxforchange.ucsf.edu*

†Chew gum until soft and peppery taste released; then park it between the cheek and teeth for slow nicotine release

Aspirin Use

Recommendations for Aspirin Use

COR	LOE	Recommendations
IIb	A	1. Low-dose aspirin (75-100 mg orally daily) might be considered for the primary prevention of ASCVD among select adults 40 to 70 years of age who are at higher ASCVD risk but not at increased bleeding risk.
III: Harm	B-R	2. Low-dose aspirin (75-100 mg orally daily) should not be administered on a routine basis for the primary prevention of ASCVD among adults >70 years of age.
III: Harm	C-LD	3. Low-dose aspirin (75-100 mg orally daily) should not be administered for the primary prevention of ASCVD among adults of any age who are at increased risk of bleeding.