

Long-Term Care Updates

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Updated Guidelines for the Prevention of Recurrent Stroke

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Introduction

Nearly 795,000 patients experience stroke in the U.S. each year, 23% of which are recurrent cases. Additionally, an estimated 240,000 cases of transient ischemic attack (TIA) are reported each year.¹ Almost 75% of these events occur in patients older than 65 years of age.² While stroke and TIA recurrence rates are high, these events can be prevented by employing appropriate secondary prevention measures. The American Heart Association (AHA) and American Stroke Association (ASA) recently updated their evidence-based guidelines for the prevention of stroke in patients with stroke and TIA.¹

This newsletter will summarize the major lifestyle- and cardiovascular risk factor-related recommendations provided by the AHA/ASA 2021 guidelines.

2021 vs 2014 Guidelines

Before its 2021 update, the AHA/ASA last published guidelines for the prevention of stroke in patients with a history of stroke or TIA in 2014. New to the updated guidelines, the AHA/ASA addresses the management of substances of abuse other than alcohol and focuses on prevention of stroke and TIA through management of etiology (i.e., congenital heart disease, moyamoya disease, migraine, cardiac tumors, carotid web, malignancy, vasculitis, fibromuscular dysplasia, dolichoectasia, embolic stroke of undetermined source (ESUS), and other genetic disorders). Recommendations related to preventing stroke or TIA by managing the specific etiology of these events are detailed and patient-specific and will only be generally addressed in the summary below. To review these specific recommendations, see Section 5 of the updated guideline, available [HERE](#). The updated guideline also includes new information and recommendations to improve patient adherence, interprofessional collaboration, behavioral interventions, and socioeconomic inequalities.

A summary of the major recommendations follows. Specific recommendations include a class of recommendation and level of evidence rating. This rating system is described in the table below.

Table. AHA/ASA Class of Recommendation and Level of Evidence Rating System.

Class (Strength) of Recommendation	Level (Quality) of Evidence
Class I (Strong): Benefit >>> Risk	Level A: More than one high-quality RCT or meta-analysis
Class 2a (Moderate): Benefit >> Risk	Level B-R: One or more moderate-quality RCTs or meta-analyses of moderate-quality RCTs
Class 2b (Weak): Benefit \geq Risk	Level B-NR: Non-randomized studies
Class 3: No benefit (Moderate): Benefit = Risk	Level C-LD: Limited data available
Class 3: Harm (Strong): Risk > Benefit	Level C-EO: Expert Opinion

Lifestyle Modification-Related Recommendations

Advise patients to avoid tobacco, excessive alcohol consumption, and stimulants (e.g., amphetamines, amphetamine derivatives, cocaine, or khat). If the patient is a smoker, offer nicotine replacement, bupropion, or varenicline (class I, level A). If the patient is unable to quit, advise to reduce smoking to lower the risk of recurrent stroke (class I, level B-NR). Recommend the patient avoid environmental smoking exposure to lower the risk of recurrent stroke (class I, level B-NR). If alcohol consumption is greater than 2 drinks per day for men and 1 drink per day for women, advise to reduce or eliminate alcohol consumption (class I, level B-NR). In the case of stimulants use such as amphetamines, recommend discontinuation (class I, level C-EO). In the case of substance use disorders, refer patients to specialized services to help their dependency (class I, level C-EO). Advise patients to follow Mediterranean diet including monounsaturated fat, plant-based foods, and fish (class 2a, level B-R). If the patient has high blood pressure (BP) and sodium intake is not restricted, advise the patient to reduce sodium intake by \geq 1 gram/day (2.5 grams/day table salt) (class 2a, level B-R). Recommend physical activity, especially aerobic activity, as tolerated by the patient.

Cardiovascular Risk Factor-Related Recommendations

Hypertension

Patients with hypertension and history of stroke or TIA should be treated with a thiazide diuretic, angiotensin-converting enzyme inhibitor, or angiotensin II receptor blockers to reduce recurrent stroke risk (class I, level A). Aim for a target BP < 130/80 mmHg for most patients to reduce the risk of recurrent stroke and vascular events

(class I, level B-R). In patients with an average BP of $\geq 130/80$ mmHg, risk of recurrent stroke, ICH, and other vascular events can be reduced with the use of antihypertensive therapy (class 2a, level B-R).

Hyperlipidemia Treatment for Secondary Prevention of Stroke

Atorvastatin 80 mg daily is indicated to reduce stroke recurrence in patients with ischemic stroke with no known coronary heart disease, no major cardiac sources of embolism, and LDL-C >100 mg/dL (class I, level A). Maximally tolerated statin with ezetimibe, if needed, is recommended to achieve LDL-C of <70 mg/dL in patients with ischemic stroke or TIA and atherosclerotic disease to reduce the risk of major cardiovascular events (class I, level A). Use of a PCSK inhibitor is reasonable in patients who are taking maximally tolerated statin and ezetimibe therapy and still have an LDL-C >70 mg/dL (class 2a, level B-NR).

Treatment of Hypertriglyceridemia

In patients with fasting triglycerides between 135 to 499 mg/dL and LDL-C of 41 to 100 mg/dL, on moderate- or high-intensity statin therapy, with HbA1c $<10\%$, and with no history of pancreatitis, atrial fibrillation, or severe heart failure, treatment with icosapent ethyl (IPE) 2 grams twice daily is reasonable to reduce risk of recurrent stroke. In patients with triglycerides >500 mg/dL, recommend implementation of a very low-fat diet, avoidance of refined carbohydrates and alcohol, and consumption of omega-3 fatty acids to lower the risk of ASCVD events. If it is necessary to prevent pancreatitis, fibrate therapy is recommended (class 2a, level B-NR).

Managing Diabetes

In patients with diabetes, treatment should be individualized. In most patients who are <65 years of age with no comorbid conditions, achieving an HbA1c $\leq 7\%$ is recommended to reduce risk for microvascular complications (class I, level A). An HbA1c of 7.5-8% is recommended by the American Geriatrics Society in elderly patients with moderate comorbidities and life expectancy less than 10 years. The American Diabetes Association recommends a more relaxed HbA1c goal of 8-8.5% for older patients with complex medical issues. Glucose lowering agents with proven cardiovascular benefits should be included to reduce the risk for future major adverse cardiovascular events such as stroke, myocardial infarction (MI), and cardiovascular death (class I, level B-R). Multidimensional care, including lifestyle counseling, nutrition therapy, and diabetes self-management education is recommended to achieve glycemic control (class I, level C-EO). In patients with prediabetes, lifestyle modification is recommended. Metformin is recommended for patients with a body mass index (BMI) ≥ 35 kg/m², those <60 years of age, or women with a history of gestational diabetes to control blood sugar and to prevent progression to diabetes (class 2b, level B-R). In patients ≤ 6 months after TIA or ischemic stroke with insulin resistance, HbA1c $<7.0\%$, and without heart failure or bladder cancer, treatment with pioglitazone may be considered to prevent recurrent stroke (class 2b, level B-R).

Managing Obesity

In patients who are overweight or obese, weight loss is recommended to improve the ASCVD risk. These patients should be referred to an intensive, multicomponent, behavioral lifestyle-modification programs to achieve sustained weight loss (class I, level B-R). Calculation of BMI is recommended when stroke occurs and annually thereafter to screen for and classify obesity (class I, level C-EO).

Managing Obstructive Sleep Apnea

In patients with obstructive sleep apnea (OSA), treatment with positive airway pressure (e.g., continuous positive airway pressure [CPAP]) can be beneficial for improved sleep apnea, BP, sleepiness, and other apnea related outcomes (class 2a, level B-R). In patients with no OSA, evaluation of OSA may be considered (class 2b level B-R).

General Recommendations Relate to Antiplatelet/Anticoagulant Therapy

With very few exceptions, antiplatelet or anticoagulant therapy is recommended for most patients. Combination therapy including both an antiplatelet agent and anticoagulant is not indicated for secondary prevention. Also, dual therapy is not recommended for long-term use, and should only be considered short-term for specific patients (i.e., patients with early arriving minor stroke and high-risk TIA or severe symptomatic intracranial stenosis). In patients with atrial fibrillations, anticoagulation is recommended if not contraindicated. If the cause of stroke is unknown, monitoring for occult atrial fibrillation is recommended. In patients with severe stenosis ipsilateral to a nondisabling stroke or TIA who are candidates for intervention should have the stenosis fixed, likely relatively early after their ischemic stroke. The choice between carotid endarterectomy and carotid artery stenting should be driven by specific patient comorbidities and features of their vascular anatomy. However, aggressive medical management of risk factors and short-term dual antiplatelet therapy are preferred if patients have severe intracranial stenosis in the vascular territory of ischemic stroke or TIA. These patients should not receive angioplasty and stenting as a first-line therapy for preventing recurrence. Patients can now have percutaneous closure of patent foramen if they meet certain criteria including 18–60 years of age, non-lacunar stroke, no other identified cause, and high-risk patent foramen ovale features. There is no benefit in using anticoagulants or ticagrelor in patients with embolic stroke of uncertain sources, so these patients should not be treated empirically with antithrombotic medications.

References

1. Kleindorfer DO, Towfighi A, Chaturvedi S, et al. 2021 Guideline for the Prevention of Stroke in Patients with Stroke and Transient Ischemic Attack. *American Heart Association/American Stroke Association. Stroke.* 2021;52(7). <https://www.ahajournals.org>. Accessed August 7, 2021
2. Stalker of our aging population. *Medical University of South Carolina.* <https://mushealth.org/medical-services/geriatrics-and-aging/healthy-aging/stroke>. Accessed August 5, 2021

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