

Emboli from the heart most often lodge in the intracranial internal carotid artery, the MCA, the posterior cerebral artery (PCA), or one of their branches; infrequently, the anterior cerebral artery (ACA) is involved. Emboli large enough to occlude the stem of the MCA (3–4 mm) or internal carotid terminus lead to large infarcts that involve both deep gray and white matter and some portions of the cortical surface and its underlying white matter. A smaller embolus may occlude a small cortical or penetrating arterial branch. The location and size of an infarct within a vascular territory depend on the extent of the collateral circulation.

The most significant cause of cardioembolic stroke in most of the world is nonrheumatic (often called nonvalvular) atrial fibrillation. MI, prosthetic valves, rheumatic heart disease, and ischemic cardiomyopathy are other considerations ([Table 427-2](#)). Cardiac disorders causing brain embolism are discussed in the chapters on heart diseases, but a few pertinent aspects are highlighted here.

Nonrheumatic atrial fibrillation is the most common cause of cerebral embolism overall. The presumed stroke mechanism is thrombus formation in the fibrillating atrium or atrial appendage, with subsequent embolization. Patients with atrial fibrillation have an average annual risk of stroke of ~5%. The risk of stroke can be estimated by calculating the CHA₂DS₂-VASc score ([Table 427-3](#)). Left atrial enlargement is an additional risk factor for formation of atrial thrombi. Rheumatic heart disease usually causes ischemic stroke when there is prominent mitral stenosis or atrial fibrillation. Recent MI may be a source of emboli, especially when transmural and involving the anteroapical ventricular wall, and prophylactic anticoagulation following MI with left ventricular thrombus has been shown to reduce ischemic stroke risk. Mitral valve prolapse is not usually a source of emboli unless the prolapse is severe.

TABLE 427-3 Recommendations on Chronic Use of Antithrombotics for Various Cardiac Conditions