

Race/Ethnicity in Atrial Fibrillation and Stroke: Epidemiology and Pharmacotherapy

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Atrial fibrillation (AF) is the most common cardiac arrhythmia in the United States, affecting approximately 1% of adults and with prevalence increasing with age. AF is associated with a 4- to 5-fold higher risk of ischemic stroke and a 2-fold higher risk of death after adjustment for other cardiovascular risk factors.¹ Compared with non-Hispanic whites, Americans self-identified as African-American or black, Asian, and/or Hispanic have been reported to have significantly lower adjusted prevalences of AF. However, despite an apparently much lower prevalence of AF, US blacks have a risk of first-ever stroke that is almost twice that of whites. In 2010, the Centers for Disease Control (CDC) Behavioral Risk Factor Surveillance System estimated a history of stroke by race/ethnicity as 2.4% for non-Hispanic whites compared with 4.0% for non-Hispanic blacks, 1.4% for Asian/Pacific Islanders, 2.5% for Hispanics of any race, 5.8% for American Indian/Alaska Natives, and 4.1% for Other races/multiracial Americans.¹ This paradox of apparently lower AF prevalence despite higher stroke risk for African Americans and some other minorities will gain in importance as the population ages and the nonwhite percentage increases.^{2,3}

Reporting of data by race/ethnicity is complicated by the imprecision of the classifications. The US Food and Drug Administration (FDA) encourages self-reporting of race/ethnicity by study participants and recommends opportunities for individuals to designate a multiracial identity.⁴ The FDA 2005 racial categories, based on standards developed by the Office of Management and Budget, were designated as American Indian/Alaska Native, Asian, black/African American, Native Hawaiian/Other Pacific Islander, and white, reflecting a sociocultural

construct rather than true, scientifically derived designations.⁴ At the same time the FDA proposed that after racial self-identification, ethnicity be defined as Hispanic/Latino or Not Hispanic/Latino to include Americans whose families report their origins from the many countries in Central/South America and the Caribbean where Spanish is not the first language.⁴ Where possible in this review we adhere to the FDA subgroups, although various studies have used multiple other definitions of race/ethnicity and these terms are clearly not based on any scientific or genetic criteria, but reflect personal beliefs and family traditions. Also, inevitably populations will merge and mix, blurring the boundaries between genetics and self-identified race/ethnicity.

In this review we survey the epidemiology and pharmacotherapy for prevention of thromboembolism associated with non-valvular atrial fibrillation (NVAf) and stroke in racial/ethnic minorities, with particular focus on African Americans. Specific attention is given to evolving risk factors that may pose special hazards for minority patients, and risk-stratification models that may help clinicians identify patients who would benefit from anticoagulation to reduce the risk of a thromboembolic event. In addition, data from relevant clinical trials are reviewed to better clarify the influence of racial/ethnic factors on the management of anticoagulation, and genetic variants that may influence responses to therapy in white patients versus minorities. Furthermore, this review highlights the impact of social and cultural factors on treatment and the need for research to elucidate the importance of such factors in diverse populations. In addition, conflicting reports of disparities in anticoagulation care and outcomes and possible gaps in care, particularly in African-American patients, are discussed. Finally, the results of clinical trials of newer oral anticoagulants in racially and ethnically diverse subjects are examined.

EPIDEMIOLOGY OF NONVALVULAR ATRIAL FIBRILLATION AND ISCHEMIC STROKE

Multiple sources of data indicate lower prevalence of AF in African Americans and other minorities. A 2008 survey of adult members (N = 430,317; race/ethnicity data available for

80.5%) of a health maintenance organization indicated that the adjusted prevalence of AF in black (3.8%), Asian (3.9%), and Hispanic (3.6%) members was much lower than in non-Hispanic white members (8.0%; $P < 0.001$ for all comparisons).² Similarly, National Hospital Discharge Survey/National Hospital Care Survey (NHDS/NHCS) 1996–2001 data on AF as a primary discharge diagnosis demonstrated 71.2% white admissions compared with 5.6% black and 2.0% other races.¹ By age 80, the cumulative prevalence of AF is 21% in white men and 17% in white women, compared with 11% for African Americans of both sexes.¹ Nevertheless, despite an apparently lower incidence, AF remains an important stroke risk factor in all subpopulations.

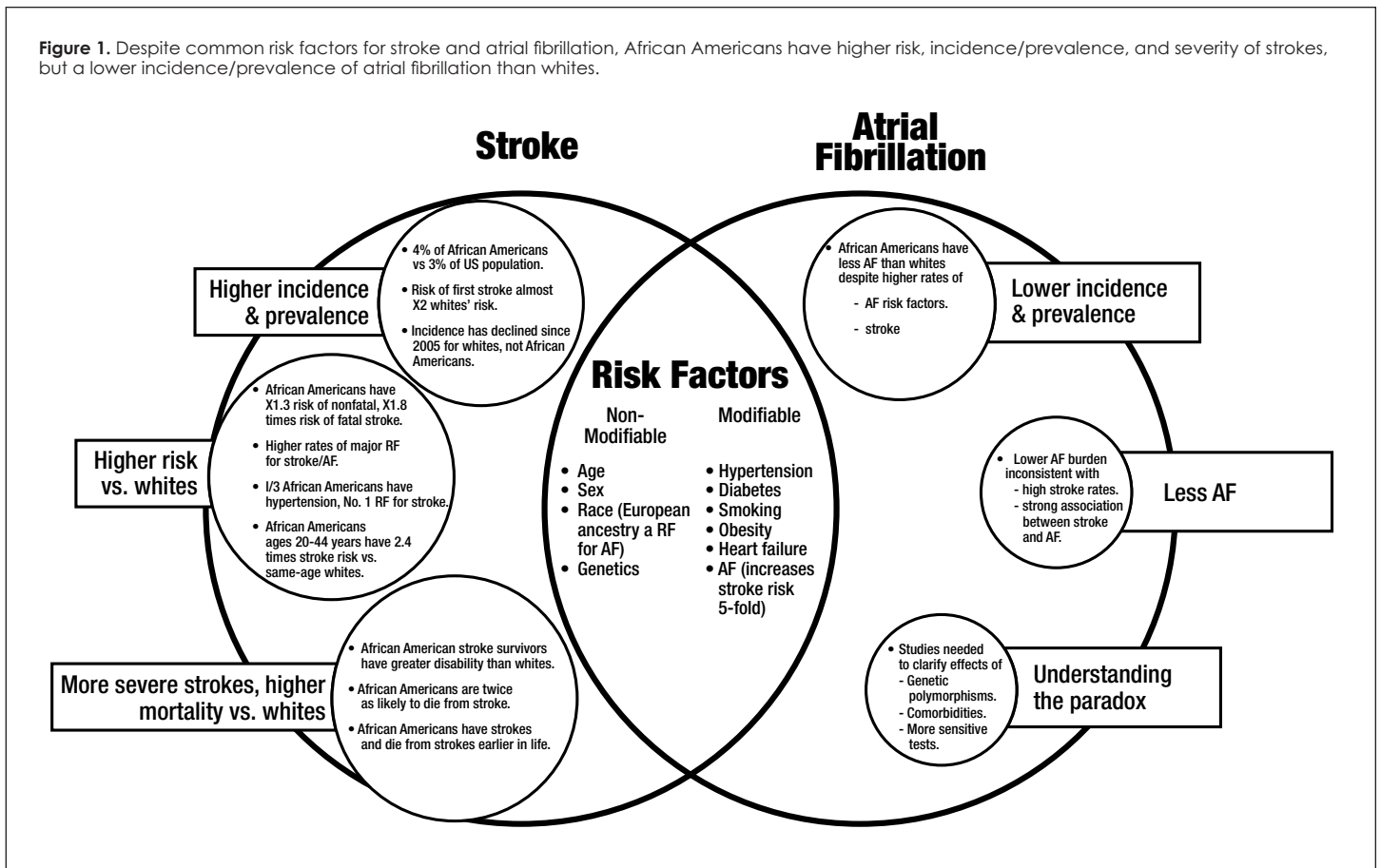
National survey data indicated that blacks were only one-third as likely as whites to be aware that they had AF, which is often asymptomatic.¹ In addition, NHDS/NHCS 1996–2001 data showed that blacks admitted with AF were much younger than patients of other races.¹ Nevertheless, although African Americans appear to have lower rates of AF compared with whites, they have a higher prevalence, as Figure 1 shows, of many AF risk factors, including hypertension, heart failure, diabetes, and elevated body mass index (BMI).^{1–3,5–8}

According to American Heart Association (AHA) 2012 estimates, approximately 795,000 Americans experience stroke each year and 610,000 strokes are first events.¹

Importantly, black Americans are more than twice as susceptible as whites.¹ The overwhelming majority of strokes are ischemic; only 10% are caused by intracerebral hemorrhage and another 3% result from subarachnoid hemorrhage.¹ Among adults ages 25–44 years, blacks and American Indian/Alaska Natives have higher risk ratios than whites for all three stroke subtypes.¹ Further, a survey from 1995 to 1998 showed that mortality rates, standardized for age, were higher for blacks than whites across the three stroke subtypes.¹ Finally, according to 2002 death certificate data, blacks, American Indian/Alaska Natives, and Asian/Pacific Islanders died from stroke at younger mean ages than whites, and Hispanics had a lower mean age at stroke death than non-Hispanics.¹

Extrapolation from the ongoing Greater Cincinnati/North Kentucky Stroke Study indicates that a decrease in ischemic stroke incidence, beginning in 2005, for whites has not been matched by a similar decline for blacks.¹ On the other hand, an 18% increase in hospital admissions for intracranial hemorrhage (ICH) over the decade beginning in the mid-1990s coincided with a quadrupling of warfarin use and has been attributed to prescribing behavior and patterns of care.¹ Higher incidences of ICH were recorded in Mexican Americans, blacks, and Native Americans, as well as Latin American, Japanese, and Chinese population groups, than in whites.¹

Figure 1. Despite common risk factors for stroke and atrial fibrillation, African Americans have higher risk, incidence/prevalence, and severity of strokes, but a lower incidence/prevalence of atrial fibrillation than whites.



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