New risk assessment tool to predict stroke in patients with atrial fibrillation

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A more accurate and reliable stroke prediction model has been developed to help physicians decide whether to start blood-thinning treatment for patients with atrial fibrillation, as described in the current online issue of the *Journal of the American Heart Association*.

Atrial fibrillation affects millions of Americans. Because the heart-rhythm disturbance promotes the formation of blood clots that can travel to the brain and block an artery, atrial fibrillation independently increases the risk of ischemic stroke four-to-five-fold. The condition is highly age-dependent and affects 10 percent of those over age 80.

The findings are a result of the Anticoagulation and Risk Factors in Atrial Fibrillation Study conducted within the national Cardiovascular Research Network and led by Kaiser Permanente and Massachusetts General Hospital.

"While predicting ischemic stroke and major bleeding are both relevant to the anticoagulation decision, formal decision analyses indicate that for most patients with atrial fibrillation, risk of ischemic stroke is the more important," said senior author Alan Go, MD, of the Kaiser Permanente Division of Research. "Among study participants, 46 percent were categorized by the ATRIA score as having less than a one percent per year risk. Such low risk indicates a small net benefit from anticoagulation therapy."

The new model was particularly good at calculating risk in primary

prevention patients, the large group whose stroke risk is most uncertain and where personalizing the anticoagulation decision is most pressing, and in predicting severe strokes.

To predict atrial fibrillation stroke risk factors, the new model incorporates common clinical features (including older age, prior ischemic stroke, diabetes, heart failure, hypertension, coronary artery disease, peripheral arterial disease, female gender, excess urinary protein excretion and kidney dysfunction) and employs a broader range of age categories to calculate a risk score. This score will help physicians and their patients weigh the benefits and risks of starting blood-thinning treatment.

Researchers found strong increased stroke risk across the entire age range, with individuals older than 85 at nearly double the risk of those aged 75 to 84 years. However, individuals who had experienced a prior stroke were at elevated risk regardless of age. Age, prior stroke and their interaction proved to be the dominant risk factors.

"Researchers have long known that warfarin, a blood-thinner and anticoagulant, is highly effective in preventing ischemic strokes, but treatment can be difficult to control and often leads to hemorrhage," said lead author Daniel Singer, MD, of Massachusetts General Hospital. "Balancing the benefits of warfarin against its most severe risks is critical to making the best therapeutic decisions for individual atrial fibrillation patients. The current risk assessment formulas recommended by leading clinical practice guidelines have only moderate ability to predict which patients will have a stroke."

Looking to the future, the researchers say that recent reports highlight the promising performance of biomarkers in predicting stroke in patients with atrial fibrillation above and beyond demographic and clinical characteristics. The ATRIA score appears to provide an improved

clinical risk factor model on which to add such biomarkers, with the goal of optimal risk prediction.

Provided by Kaiser Permanente

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