

# A prediction rule identified patients with atrial fibrillation at low risk for stroke while taking aspirin

van Walraven C, Hart RG, Wells GA, et al. A clinical prediction rule to identify patients with atrial fibrillation and a low risk for stroke while taking aspirin. *Arch Intern Med.* 2003;163:936-43.

## QUESTION

What is the accuracy of an age-independent clinical prediction rule for identifying patients with nonvalvular atrial fibrillation (AF) who are at low risk for all-cause stroke or transient ischemic attack (TIA) while taking aspirin?

## DESIGN

Analysis of data from 6 randomized controlled trials (RCTs) to derive and validate a clinical prediction rule.

## SETTING

United States, Canada, Denmark, and the Netherlands.

## PATIENTS

2501 patients (mean age 70 y, 67% men, 93% white) with nonvalvular AF who were participating in 1 of 6 RCTs. All patients had had no stroke or TIA for at least 6 to 24 months before entering in the trials and received aspirin at dosages between 75 to 325 mg/d. In most studies, patients were excluded if they had clinical indications for or contraindications to oral anticoagulation or aspirin therapy, or if they had a recent acute

coronary syndrome or cardiac revascularization. Patients were randomly divided into derivation and validation groups.

## DESCRIPTION OF PREDICTION GUIDE

Recursive partitioning methods were used to identify patients in the derivation group with low risk for stroke or TIA, defined as a stroke or TIA rate lower than or equal to that observed in an age- and sex-matched cohort from the Framingham Heart Study. 3 distinct prediction rules were derived and tested in the validation group. 1 rule (a categorical and algorithmic decision rule) identified patients in the validation group with low stroke or TIA risk and was selected.

## MAIN OUTCOME MEASURES

Rate of all-cause stroke (ischemic or hemorrhagic) or TIA.

## MAIN RESULTS

Overall, 166 patients (6.6%) had a stroke or TIA during 4689 person-years (PYs) of observation for an incident rate of 3.5 events per 100 PYs. In the derivation group, 4 factors identified patients with low risk for

stroke or TIA: 1) no previous stroke or TIA, 2) no treated hypertension or systolic blood pressure  $\geq$  140 mm Hg, 3) no previous myocardial infarction or angina, and 4) no diabetes. In the derivation group, patients classified as having low risk for stroke or TIA had 1.0 events per 100 PYs, compared with an age- and sex-matched rate of 1.2 events per 100 PYs. In the validation group, patients classified as having low risk for stroke or TIA had 1.1 events per 100 PYs, compared with an age- and sex-matched rate of 1.2 events per 100 PYs. Overall, the prediction rule classified 588 (23.5%) patients as having low risk for stroke or TIA, of which 144 (24.5%) were  $>$  75 years of age.

## CONCLUSION

An age-independent clinical prediction rule identified patients with nonvalvular atrial fibrillation at low risk for all-cause stroke or transient ischemic attack while taking aspirin.

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## COMMENTARY

For every 100 patients in the community with nonvalvular AF, about 5 will have a stroke each year (1). This is about 5 times greater than people of the same age and sex in the community who do not have AF; their annual stroke rate is about 1% (2). Treating all 100 patients with AF with oral anticoagulation would reduce the stroke rate by two thirds to 2%, thus saving 3 strokes per year, but at the expense of causing 1 or 2 serious bleeding episodes. Treating all 100 patients with AF with aspirin would reduce the stroke rate by one fifth to 4%, thus saving 1 stroke per year, but with less risk for bleeding.

In an ideal world, we would be able to identify the 5% of patients with AF who will have a stroke each year and treat them with the more effective but more risky oral anticoagulation, and treat the remainder with low-risk treatments such as aspirin, or no treatment. Such predictions, however, are difficult to make in individual patients.

van Walraven and colleagues have developed a clinical prediction model that reliably identifies patients with AF who, when taking aspirin, will have an acceptably low risk for stroke (a risk that is less than or equal to persons of the same age and sex in the community without AF).

For clinicians, the beauty of this model is that it is simple and can be generated in the office or at the bedside. It requires that patients have none of the following 4 clinical features: 1) symptomatic cerebrovascular disease (previous stroke or TIA), 2) symptomatic coronary heart disease, 3) diabetes, or 4) treated hypertension or systolic blood pressure  $>$  140 mm Hg. Patients can therefore be identified after 4 questions plus or minus a measurement of blood pressure and blood glucose levels. Furthermore, the model is independent of age, internally valid, and robust.

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## References

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