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## Letter to the Editor

**Recommendations on stroke prevention for patients having a CHA<sub>2</sub>DS<sub>2</sub>-VASC score of 1 (males) or 2 (females) in 2019 atrial fibrillation guidelines<sup>☆☆</sup>**


Whether oral anticoagulants (OACs) should be prescribed for patients with atrial fibrillation (AF) having a CHA<sub>2</sub>DS<sub>2</sub>-VASC score of 1 for males or 2 for females has been debated for years. The 2019 AHA/ACC/HRS focused update of the 2014 AHA/ACC/HRS guideline for the management of AF patients states that OACs may be reasonable for this AF population (class IIb recommendation). [1] This recommendation is less strong compared to that of the 2016 AF guidelines of European Society of Cardiology (class IIa recommendation) and the 2018 CHEST guidelines. [2,3] These discrepancies of different important guidelines could make this difficult issue even more complicated.

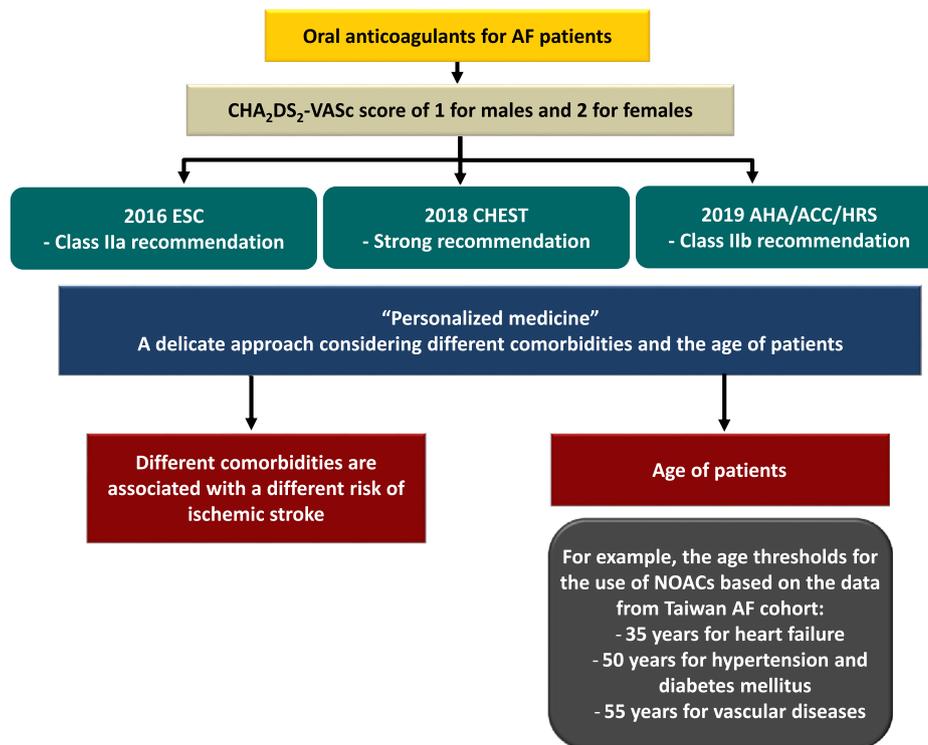
Current recommendations of the international guidelines may perhaps be too simplified regarding this area, and a more delicate approach for these patients is required. After all, clinical factor-based stroke risk stratification schemes such as the CHA<sub>2</sub>DS<sub>2</sub>-VASC score are reductionist in design with the aim to aid clinical decision-making in a simple and practical manner; indeed, the CHA<sub>2</sub>DS<sub>2</sub>-VASC score does not include all possible risk factors associated with stroke in AF. Second, stroke risk is a dynamic process, and a patient's risk profile changes over time. Third, different risk factor components were not equal regarding the risk of ischemic

stroke in AF patients with a CHA<sub>2</sub>DS<sub>2</sub>-VASC score of 1 for males or 2 for females. For example, age 65–74 years and diabetes mellitus were associated with a higher risk of ischemic stroke than other risk factors among AF patients with one single risk factor beyond sex. [4] Besides, since “age” is an important driver of ischemic stroke, the age of patients also should be taken into consideration when making decisions about stroke prevention, but age is also a continuum of risk such that an AF patient who is age 65 is clearly at lower risk than someone at age 74. Indeed, when that patient turns age 75 and gains 2 points on the CHA<sub>2</sub>DS<sub>2</sub>-VASC score, it does not mean that their risk is doubled.

The introduction of the non-vitamin K antagonist OACs (NOACs) have changed the landscape of stroke prevention. In our recent publication, we proposed that age thresholds for the use of NOACs were different for AF patients having different single risk factors beyond sex despite the same CHA<sub>2</sub>DS<sub>2</sub>-VASC score point (1 for males and 2 for females); that is, 35 years for heart failure, 50 years for hypertension or diabetes, and 55 years for vascular diseases. [5] We therefore suggest that “age” and “comorbidity” are two important factors which should be considered to be incorporated into the guideline recommendations for the use of OACs for patients with a CHA<sub>2</sub>DS<sub>2</sub>-VASC score of 1 for males or 2 for females (Fig. 1), notwithstanding the fact that clinicians should recognize that risk stratification is designed with practicality in mind and that stroke risk is dynamic rather than static.

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**Fig. 1.** Different recommendations in important guidelines and the delicate approach about stroke prevention for AF patients with a CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 1 (males) or 2 (females).

ACC = American College of Cardiology; AF = atrial fibrillation; AHA = American Heart Association; ESC = European Society of Cardiology; NOACs = non-vitamin K antagonist oral anticoagulants.

## References

- [1] January CT, Wann LS, Calkins H, Chen LY, Cigarroa JE, Cleveland JC. 2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS guideline for the management of patients with atrial fibrillation. *Circulation* 2019 Epub.
- [2] Kirchhof P, Benussi S, Kotecha D, Ahlsson A, Atar D, Casadei B, et al. 2016 ESC Guidelines for the management of atrial fibrillation developed in collaboration with EACTS. *Eur Heart J* 2016;37(1):2893–962.
- [3] Lip GYH, Banerjee A, Boriani G, Chiang CE, Fargo R, Freedman B, et al. Antithrombotic therapy for atrial fibrillation: CHEST guideline and expert panel report. *Chest* 2018;154:1121–201.
- [4] Chao TF, Liu CJ, Wang KL, Lin YJ, Chang SL, Lo LW, et al. Should atrial fibrillation patients with 1 additional risk factor of the CHA<sub>2</sub>DS<sub>2</sub>-VASc score (beyond sex) receive oral anticoagulation? *J Am Coll Cardiol* 2015;65:635–42.
- [5] Chao TF, Lip GYH, Lin YJ, Chang SL, Lo LW, Hu YF, et al. Age threshold for the use of non-vitamin K antagonist oral anticoagulants for stroke prevention in patients with atrial fibrillation: insights into the optimal assessment of age and incident comorbidities. *Eur Heart J* 2019 Epub.

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