

Health Economics of Stroke Prevention in Atrial Fibrillation

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In patients with atrial fibrillation (AF), long-term treatment with an oral anticoagulant effectively prevents ischemic stroke and improves patient survival.¹ In addition to inconvenient features, warfarin, though being efficacious, carries an excessive risk of bleeding—especially, the risk of intracranial hemorrhage is higher in Asian patients than in Caucasian patients. Consequently, the challenge of an ingenious use of warfarin has led to an endeavor to seek for safer and more convenient alternatives. For the past decade, the landscape of prevention and/or treatment for thromboembolism has been reshaped with the development of four non-vitamin K antagonist oral anticoagulants (NOACs) that directly inhibit a single coagulation step. In the field of AF,² those four agents collectively showed a better risk benefit profile in Asian patients than in non-Asian patients as compared with warfarin—NOACs appear more efficacious and safer than warfarin in Asian patients.³ As the result, the uptake of NOACs in Taiwan has been rapid and outcomes of patients with AF are improved accordingly since they are marketed.⁴

Even though randomized clinical trials are the best measure to gauge the efficacy and safety of any experimental agent, generalizability of their findings is limited and often requires additional data from non-randomized studies to further elucidate effectiveness and safety of studied agents in clinical practice once the agents are approved.⁵ When an agent is marketed, the center to the healthcare system and/or policy is whether reimbursing such a treatment is economically reasonable

and financially affordable—in other words, the cost effectiveness of the new treatment as compared with conventional choice(s). In this issue of the Journal, Liao, et al., supplemented the cost effectiveness analysis of oral anticoagulants in patients with AF.⁶ By using data derived from Taiwan National Health Insurance Research Database, local reimbursement prices of medical resources and treatments, outcome probabilities from the network meta-analysis using Asian data from randomized clinical trials, and the Markov model, they concluded that all four NOACs were cost-effective substitutes for warfarin in Taiwan for patients with AF. The incremental cost-effectiveness ratios of four NOACs as compared with warfarin were between 4115 and 6415 US dollars per quality-adjusted life year gained.

Although their findings were reassuring and concordant with prior investigations on dabigatran and edoxaban,^{7,8} some may argue that the authors used a hypothetical cohort aged 65 years in whom NOACs might have more benefits. For patients with AF eligible for stroke prevention and younger than 65 years, the current analysis could have underestimated the financial burden to the health insurance system. Although age is one of the strongest function of stroke, other factors are important when evaluating the risk of stroke in younger age.⁹ As the younger people are economically more productive, the economic loss would be greater if they suffer from the complications that could have been prevented with oral anticoagulants or those associated with treatments. Meanwhile, the long-term persistence of warfarin is poor. By estimation, one fifth of patients discontinued warfarin within 3 months and only 40% of patients remained warfarin by 2 years.⁹ Therefore, the current analysis focusing on the cost of medical resource utilization actually underrates the true cost effectiveness of NOACs, including the use of non-medical resources and the loss of productivity.

The authors used effect estimates derived from Asian

Received: December 9, 2019 Accepted: December 12, 2019

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cohorts in the randomized clinical trials for the current analysis. It appears that efficacy and safety of some of NOACs by their dose are different between settings of randomized clinical trials and of clinical practice.¹¹⁻¹³ Before we have results from head-to-head comparisons of NOACs from randomized studies, we should take extra cautions on interpreting those incremental cost-effectiveness ratio estimates. Finally, the best and most cost-effective strategy of stroke prevention in patients with AF is to maximize the treatment benefits and minimize the treatment complications by appropriately dosing patients with NOACs.¹⁴

FUNDING SOURCE

None.

DISCLOSURE

Kang-Ling Wang has received honoraria from Bayer, Boehringer Ingelheim, Daiichi-Sankyo, Novartis, Orient EuroPharm, and Pfizer.

Chern-En Chiang has been on the speaker bureau for AstraZeneca, Bayer, Boehringer Ingelheim, Daiichi-Sankyo, Merck Sharp & Dohme, Novartis, Pfizer, Sanofi, and Servier.

DISCLAIMER

This article reflects the views of the authors only.

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