

## Editorial

# Direct oral anticoagulants (DOACs): benefits, limitations, and cost-effectiveness considerations in Thailand

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Direct oral anticoagulants (DOACs) are effective medications for the prevention and treatment of thromboembolic disorders. Compared to warfarin, they offer several advantages, including equal or superior efficacy with similar or lower rates of major bleeding—particularly intracranial hemorrhage.<sup>1</sup> They also do not require routine monitoring of drug levels and have fewer drug-drug interactions. However, DOACs have limitations, such as lower efficacy in certain conditions (e.g., in patients with mitral stenosis, mechanical heart valves or antiphospholipid syndrome), a higher incidence of gastrointestinal bleeding, restricted use in children and pregnant women, and higher costs for both the medications and the management of associated bleeding complications.

In resource-limited countries like Thailand, healthcare costs may be as important as clinical outcomes or complications when evaluating treatment options. Pharmacoeconomic studies—particularly cost-benefit analyses—are therefore essential, even though the available data remain limited. Such studies typically collect information on the efficacy of DOACs in preventing thrombosis, the incidence of adverse effects (especially major bleeding), patient quality of life and treatment costs over a defined period. These data are then used to evaluate cost-effectiveness, often through the use of a Markov model.<sup>2-4</sup>

In patients with atrial fibrillation, most studies have shown that DOACs improve quality-adjusted life-years (QALYs),<sup>2-4</sup> despite being more expensive than warfarin. However, when willingness-to-pay thresholds are

included in the analysis, DOACs are often considered cost-effective compared with warfarin—meaning that the actual cost to patients falls to below the acceptable threshold.<sup>4</sup>

For patients with venous thromboembolism (VTE), real-world data have shown that warfarin results in lower overall treatment costs than DOACs but higher VTE-related costs.<sup>5</sup> This may be due to the need for low molecular weight heparin (LMWH) before initiating warfarin and the frequent clinic visits required for dose titration, which increases expenses compared with DOAC therapy.<sup>6</sup> Currently, no studies have evaluated the cost-effectiveness of long-term (extended-phase) anticoagulation in these patients. In cancer-associated thrombosis, DOACs—especially apixaban—have been shown to be more cost-effective than LMWH.<sup>7</sup>

However, some of these studies have limitations, especially in estimating societal costs, which are difficult to measure and vary by setting. These include indirect costs such as lost productivity due to hospital visits and expenses associated with managing long-term complications (e.g., chronic thromboembolic pulmonary hypertension and post-thrombotic syndrome). In addition, willingness-to-pay thresholds are often externally determined and may vary by country. In Thailand, healthcare reimbursement systems differ from those in many other countries, suggesting that willingness-to-pay thresholds may need to be set by relevant agencies such as the Social Security Office.

Furthermore, generic and locally manufactured DOACs are now available in Thailand at significantly lower prices than those in countries where most existing

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studies were conducted. However, clinical efficacy data comparing these generics with the original products remained limited. As a result, the cost-effectiveness landscape may continue to evolve in the future.

### References

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