Background: New alternatives have recently appeared for the secondary prevention of deep vein thrombosis (DVT) and pulmonary embolism (PE). Data on effectiveness and safety has been increasing over the years.

Objective: To evaluate cost-effectiveness of apixaban, dabigatran and rivaroxaban, compared to currently reimbursed warfarin and low molecular weight heparins (LMWH) for the prophylaxis of thromboembolic events, from a payer’s perspective in Colombia.

Methods: The model simulates a cohort of adult patients with symptomatic acute episode of objectively verified DVT of the lower extremities, or PE. We used a Markov decision model based on efficacy, safety and utilities, all of them obtained from clinical trials (CT). (RE-COVER I and II; Einstein-DVT; Eisenstein; AMPLIFY; RE-SONATE; RE-MEDY and a meta-analysis of 18 CT for LMWH. Cost of medication was obtained from SISMED, Vademecum Med®, and government reference prices; costs of events were estimated from hospital billing records, POS tariffs, SOAT Manual and local experts. Costs are reported in euros (€ 1 = $1.03, 2013, 2014) and effectiveness in terms of death due to bleeding and Quality Adjusted Life Years (QALYs), obtain from the published literature (and stored in Tufts University CEA Registry). A 3% discount rate was used for both costs and outcomes. Base-case scenario was a 5-year time horizon; with analysis for 6 months, 1 year and lifetime (Colombian mortality rates were applied to Univariable and probabilistic sensitivity analyses were performed. A local expert panel validated model inputs.

The threshold currently used is €16,833 per QALY gained (three times the Colombian per capita GDP). Outcomes measured (based on CT) were recurrent DVT, major or clinically relevant bleeding, QALYs and life-year gained.

Other costs were: hemorrhagic stroke € 8.253 (plus €5.671 for one year home care); pulmonary embolism €12.670 and myocardial infarction €12.226.

Results: In the 5-year time horizon, deaths due to bleeding were 5 with dabigatran, 7 with apixaban, 9 with LMWH, 7 with rivaroxaban and 15 with warfarin, per 10,000 patients. Dabigatran is dominant compared with LMWH and apixaban. Compared with rivaroxaban, dabigatran is safer with similar costs and QALYs gained. Considering a baseline scenario comparing all alternatives versus warfarin, dabigatran shows the lowest IEC: €32,121/QALY (rivaroxaban €36,388/QALY, apixaban €72,228/QALY and LMWH €604,515/QALY). Our findings were consistent throughout the different sensitivity analyses, with drug costs as critical variables.

Discussion: Limitations of the model include the use of foreign clinical data and utilities. QALYs, as an outcome, are not very sensitive to safety issues (1 or 2 dead patients per thousand treated, for example, has little influence overall). The model is highly sensitive to individual medication prices, which are constantly changing; a factor that increases uncertainty over medium and long term time horizons.

Conclusion: Dabigatran is the alternative with the best value for money when all alternatives are compared with warfarin, and is dominant compared with LMWH which are reimbursed by the current Colombian National Plan POS.