Background: Non-valvular atrial fibrillation (NVAF) causes one fifth of overall ischemic strokes, therefore, oral anticoagulation with warfarin is recommended since it can prevent about one third of the events. Novel oral anticoagulants (NOAC), i.e. oral inhibitors of thrombin or factor Xa, compete with warfarin in this setting since a simplified monitoring is required and intracranial bleedings are significantly reduced.

Aims: We aimed at assessing the cost-effectiveness of NOACs (dabigatran, apixaban, rivaroxaban, edoxaban), versus warfarin, for stroke prevention in NVAF patients with CHADS2 score ≥2.

Methods: We built a Markov decision model including 11 health-states. Quarterly transition probabilities among states were estimated based on data from published randomized trials. Quality of life estimations for each event or health-state were derived from reference studies. For each therapeutic strategy, the model estimated expected quality-adjusted life-years (QALY) in the lifetime horizon. The economic analysis was performed in the perspective of the Italian National Health System. Quarterly drug cost of NOACs was €198 versus €3.9 of warfarin. Future life years and costs were discounted by 3.5% per year, according to international guidelines. Incremental cost per QALY gained (ICUR) as compared with warfarin was calculated for each NOAC. First- and second-order (probabilistic) sensitivity analyses were run. The model was developed and run by TreeAge SW.

Results: NOACs increased quality-adjusted life expectancy by 0.405-0.753 discounted years, as compared with warfarin. Incremental lifetime health-care costs of patients assigned to NOACs ranged from €3,439 to €4,923. The cost-effectiveness of NOACs versus warfarin ranged from €4,567/QALY (80%CI: 2,129-8,993) for rivaroxaban, Dabigatran and edoxaban reported intermediate ICUR values: €6,307/QALY (80%CI: 3,034-13,421) and €7,713/QALY (80%CI: €3,909-€17,963), respectively.

Second-order sensitivity analysis showed that the results were robust: over 90% of the simulations provided an incremental-cost-effectiveness ratio lower than €50,000/QALY, irrespectively of the NAO being compared with warfarin. The results were sensitive to the time in warfarin therapeutic range, the analysed time horizon, and the impact of anticoagulants on the quality of life. NOAC cost variation by 20% induced ICUR variations by about €3,000/QALY.

Summary and Conclusion: NOACs are cost-effective drugs for stroke prevention in moderate-high risk patients with NVAF. Lacking head-to-head studies, the relative cost-effectiveness of one NOAC versus another one is surrounded by a wide uncertainty. Economic sustainability of widespread NOAC adoption in industrialized countries still needs to be assessed, therefore phase 3 studies should investigate clinical and economic outcomes in specific patient subgroups, i.e. warfarin-treated patients with a high rate of time-in-treatment-range.

ECONOMIC VALUE CREATED BY ADDING RITUXIMAB TO CHEMOTHERAPY IN THE UNITED STATES FROM 1998-2013

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Background: Rituximab has become the standard in diffuse large B-cell lymphoma (DLBCL), follicular lymphoma (FL), and chronic lymphocytic leukemia (CLL). The incremental cost of adding rituximab to existing chemotheraphy and the value of the life years saved have not been estimated at the population level.

Aims: Our objective is to estimate the net economic value of rituximab in the United States for policy decision-makers.

Methods: We constructed a population effectiveness model from 1998-2013. Age group, gender, and year-specific incidence rates for each cancer were estimated from the Surveillance, Epidemiology, and End Results (SEER) program. Incidence rates were multiplied by Census estimates to calculate total diagnosed patient counts. Utilization, survival and cost inputs were estimated using SEER Medicare merged data for patients diagnosed 1999-2009 and followed through 2010, extrapolated through 2013. First-line utilization of rituximab plus chemotherapy (R-Chemo) and Chemo Alone were calculated as a proportion of all diagnosed patients to estimate treated patient counts.