

Real-World Data Cost-Effectiveness of Direct Non-Vitamin K Oral Anticoagulants Compared with Acenocoumarol for the Management of Patients with Non-Valvular Atrial Fibrillation in Spain

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Background and Objectives

The conventional management of patients with nonvalvular atrial fibrillation (NVAF) includes the prevention of thromboembolic events (stroke and thromboembolic events) mainly through the use of oral anticoagulants. Several new direct oral anticoagulants (DOACs), including dabigatran (DBG), rivaroxaban (RVX), and apixaban (APX), has been approved to compete with acenocoumarol (warfarin)

Objective: To assess the cost-effectiveness in routine clinical practice of DOACs compared to acenocoumarol in patients with NVAF from the Basque Health System and with a follow-up of up to 7 years (2013-2019)

Results

10,843 NVAF new users of oral anticoagulants were followed-up for a mean of 4.1 years; mean age of 75.2 years, very similar among all cohorts, and 55.1% of them were men.

Although ACN patients presented a baseline higher HASBLED and Charlson Comorbidity Index mean scores, GBM and entropy methods got excellent covariate balance adjustments.

The ICER of DOACs compared with acenocoumarol ranged from €1,732 to €2,556/QALY (table 1). In this study, dabigatran and rivaroxaban appear to be more efficient drugs than apixaban, both in terms of life years gained and QALYs (table 2), in all the different types of analyses performed. Bootstrapping performed on those ICER reflected low variability on outcomes (Fig 1)

The incremental net benefit (INB), in terms of QALYs, of DOACs as a group was €6,368 compared to acenocoumarol; very similar outcomes were obtained for life years gained. When analyzing the INBs for different willingness-to-pay, thresholds were negative only for values below €3,000/QALY (Fig 2).

Methods

A retrospective cohort study NVAF new users of oral anticoagulants whose data were extracted from the electronic medical record management system of the Basque Healthcare Service (Osakidetza).

Effectiveness was expressed in terms of life years gained and adjusted for health-related quality of life (i.e., quality-adjusted life years, QALYs). The incremental cost-effectiveness ratio (ICER) were obtained by combined multivariate analysis of total costs and QALYs using a seemingly unrelated regression (SUR) method plus bootstrapping

The base year of unit cost was 2019. Several propensity score methods (IPTW adjusted, entropy balance, GBM) were used to limit the impact of covariates on the results.

Table 1. Cost-effectiveness analysis of DOACs as a group compared to ACN using different methods for covariate adjustment with incremental cost-effectiveness ratios for LYGs and incremental cost-utility ratios for QALYs.

Method	Δ Costs, €	Δ LYGs	Δ QALYs	ICER, €	ICUR, €
none	752	0.413	0.434	1,823	1,732
SUR	1,109	0.367	0.434	3,021	2,556
entropy balance	1,035	0.378	0.463	2,740	2,235
GBM	1,067	0.381	0.468	2,799	2,278

Legend: LYG: life years gained; ICER: incremental cost-effectiveness ratio; ICUR: incremental cost-utility ratio; ACN: acenocoumarol; DOAC: direct oral anticoagulant; sur: seemingly-unrelated regression; GBM: gradient boosting machine; QALY: quality-adjusted life years

Fig 2. Incremental Net Benefit of DOACs vs ACN for different willingness-to-pay thresholds (QALYs)

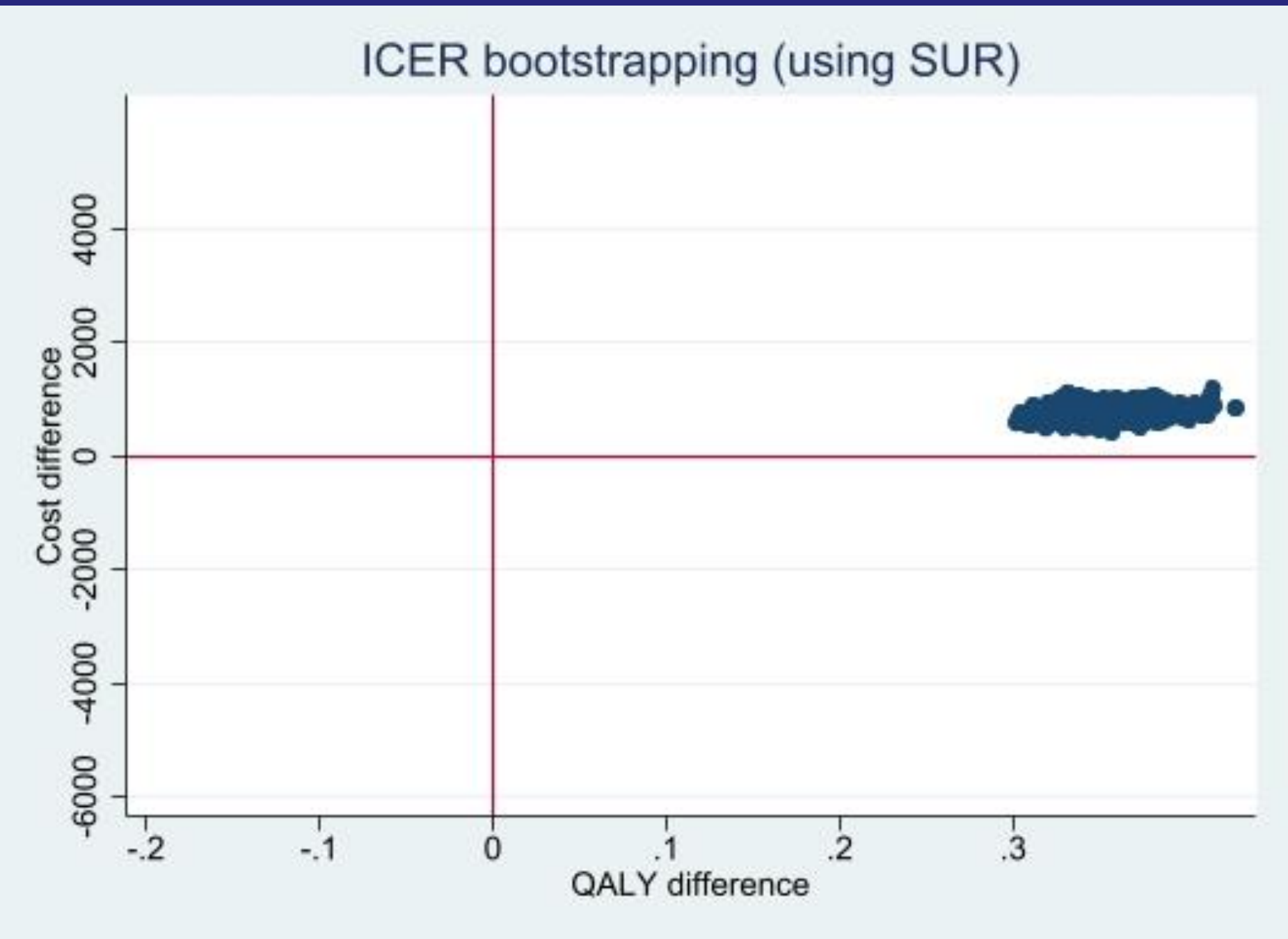
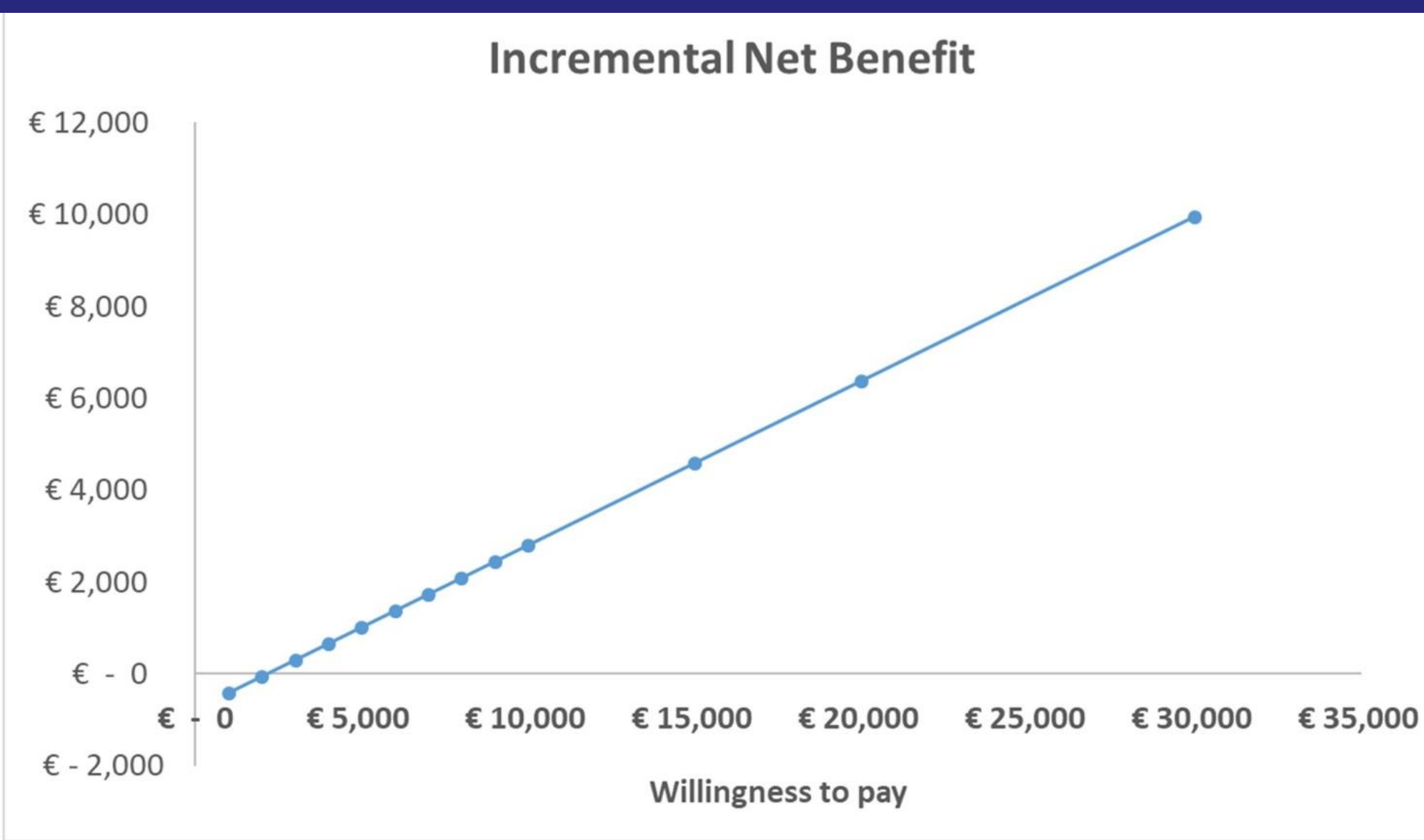


Fig 1. Incremental Cost-Effectiveness Ratio of DOACs against ACN (QALYs); variability thru 5000 bootstraps

Table 2. Cost-effectiveness analysis (AVG y QALY) of DOACs vs CAN using GBM for covariate balance

	Outcome	Δ Costs	Δ Efects	ICER
DBG-ACN	AVGs	1.589 €	0,773	2.057 €
	QALYs	1.589 €	0,838	1.896 €
APX-ACN	AVGs	570 €	-0,001	dominated
	QALYs	570 €	0,018	31.851 €
RVX-ACN	AVGs	884 €	0,398	2.219 €
	QALYs	884 €	0,500	1.770 €

ACN: acenocoumarol; DBG: dabigatran; APX: apixaban; RVX: rivaroxaban

Conclusions

- Based on the analysis of real world data from clinical practice and the similarity of results using different techniques to adjust for the bias associated with observational studies, we conclude that DOACs would be an efficient alternative to acenocoumarol in the treatment of patients with NVAF in the Basque Health System - Osakidetza
- The outcomes of this study are in line with the most recent publications of the cost-effectiveness of DOACs vs acenocoumarol using clinical practice data in Spain..

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