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Impact of non-adherence to direct oral anticoagulants amongst Swedish patients with non-valvular atrial fibrillation: results from a real-world cost-utility analysis

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Introduction

- Atrial fibrillation (AF) affecting an estimated 37.5 million individuals worldwide, carries a five-fold greater risk of stroke than normal cardiac rhythm[1]. Direct oral anticoagulants (DOACs) have confirmed efficacy in preventing strokes in patients with nonvalvular atrial fibrillation (NVAF).[2] DOAC non-adherence is considered to result in significant morbidity.[3]
- This analysis evaluated the cost-effectiveness of full DOAC adherence compared to levels of non-adherence. The cost-effectiveness of an adherence-improving intervention was also assessed.

Methodology

- A cost-utility analysis was performed based on published data from the Stockholm Healthcare database of NVAF patients with a first stroke between 2011 and 2018.[4]
- A Markov model estimated costs, morbidity and mortality related to the natural history of NVAF and the effects of DOAC treatment over a 20-year time horizon, for a cohort of 77-year-old patients in the base-case. Adherence was defined by the medication possession ratio (MPR; <90% defining non-adherence). The primary outcomes were number of ischaemic strokes and the associated incremental cost-effectiveness ratio (ICER). Costs comprised treatments and health state costs.
- A weighted analysis was used to determine costs and effects of a putative adherence-improving intervention.

Results

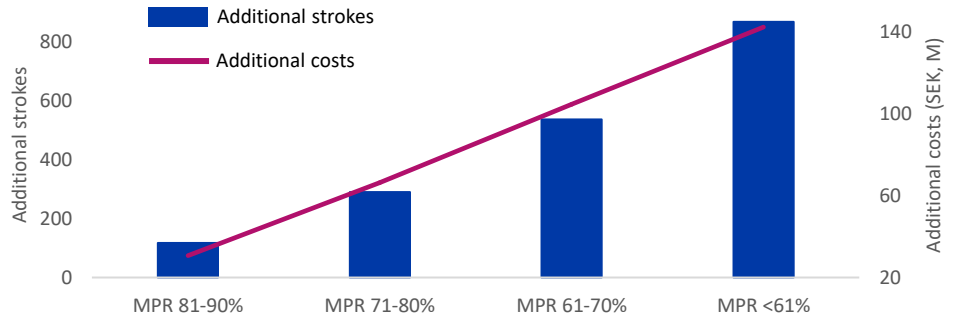
- Comparisons between 1,000 hypothetical patient in cohorts of varying non-adherence levels, and full adherence (MPR >90%), predicted an additional number of strokes ranging from 117 (MPR 81-90%) to 866 (MPR <61%), and years of life lost ranging from 177 (MPR 81-90%) to 1,318 (MPR <61%) (Table and Figure 1).
- A putative adherence-improving intervention showed that increasing the proportion of patients who were fully adherent (MPR >90%) from 81% to 86% resulted in a cost saving of €450,382 (SEK 4,639,407) and 31 quality-adjusted life year gain based on a willingness to pay of 750,000 SEK/QALY.

Table 1. Markov model base-case results

	Full adherence (MPR >90%)	MPR 81–90%	MPR 71–80%	MPR 61–70%	MPR <61%
Total costs, drug + treatment (SEK, M)	182.86	213.63	249.32	287.67	325.37
Health benefits					
Total LYs	8183.95	8007.24	7747.01	7374.21	6865.95
Total QALYs	6115.42	5972.78	5765.94	5473.80	5080.07
Stroke cases	235.05	351.78	524.47	770.77	1101.45
Incremental results vs. Full adherence					
Total costs (SEK,M)	-	30.76	66.46	104.81	142.50
Additional Strokes	-	116.73	289.42	535.71	866.40
LYs	-	176.71	436.94	809.74	1318.00
QALYs	-	142.64	349.49	641.62	1035.36
ICER	-	Dominated			

Abbreviations: ICER, incremental cost-effectiveness ratio; MPR, medication possession rate; LY, life-years; QALY, quality adjusted life year; M, millions; SEK, Swedish Krona

Figure 1. Additional strokes and costs at varying levels of DOAC non-adherence vs full adherence



Abbreviations: MPR, medication possession rate; M, millions; SEK, Swedish Krona

Discussion

- The model showed there is a strong relationship between DOAC adherence levels (defined by MPR) and the number of strokes, which contribute to increased mortality and reduced quality of life; these outcomes are associated with considerable economic consequences. Therefore there is a clear need to improve treatment adherence among NVAF patients.
- A 5% increase in the proportion of patients who were fully adherent yielded substantial savings, suggesting a significant opportunity to improve clinical outcomes and lower healthcare costs.

Limitations

- This analysis utilised real-world data from the Komen et al[8]. publication for key clinical parameters and therefore is subject to limitations of the publication:

1. MPR was used to define DOAC adherence. However, MPR assumes that a patient was in possession of a DOAC but does not take into account whether it was prescribed as indicated or even consumed
2. Non-adherence to antihypertensives was not accounted for in the Komen et al[8]. analysis, which may have resulted in an overestimation of the association between DOAC non-adherence and stroke risk, if DOAC non-adherence was also associated with anti-hypertensive medication non-adherence.

Conclusions

- This analysis suggests an increasing clinical and economic burden associated with worsening levels of DOAC nonadherence, and that incremental improvements in adherence can deliver cost savings. This is an important consideration for Swedish health policymakers planning quality improvement initiatives.

Disclosures

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