

Temporal changes in anticoagulant prescribing and atrial fibrillation: results of interrupted time-series analysis of openly available routine data in England

Rawand Jarrar, Thomas Chadwick, Joanne Lally, Richard Thomson, Christopher Wilkinson, Christopher Price
Population Health Sciences Institute, Newcastle University, Newcastle, UK

Introduction

- The use of anticoagulants for stroke prevention in patients with atrial fibrillation (AF) has been increasing in England in the recent years (1, 2).
- The changes in practice coincided with several developments in the area of anticoagulants and AF, including: the emergence of evidence supporting anticoagulant use for stroke prevention in AF, changes in guideline recommendations, and the licensing of direct oral anticoagulants (DOACs) as an alternative to warfarin, which was the mainstay of stroke prevention in AF.
- Currently, there are four DOACs available for use: dabigatran, rivaroxaban, apixaban, and edoxaban.
- Recent analyses of time trends of anticoagulant prescribing in England showed an increase in DOACs prescribing and a decrease in warfarin prescribing (1, 2).
- However, more recent exploration of recent anticoagulant prescribing trends is needed.

Aim

To explore the changes in anticoagulant prescribing for AF in England

Methods

- Interrupted time-series analysis (ITSA) of openly available data on anticoagulant prescribing and AF.
- Separate analyses were conducted for data from *Sentinel Stroke National Audit Programme (SSNAP)* and *Quality and Outcomes Framework (QOF)*.
- The timeframe of the analysis and the length of time intervals depended on the characteristics of each dataset

Results

- The proportion of stroke patients who have a diagnosis of AF who were taking an anticoagulant alone prior to admission increased from 32.51% to 62.63%
- The proportion of stroke patients who have a diagnosis of AF taking antiplatelets alone decreased from 37.10% to 8.31%
- The proportion of eligible patients with AF being prescribed anticoagulants also increased in the period between 2012/2013 and 2019/2020 (ITSA gradient = 1.98, p-value<.001, 95% confidence interval: 1.52-2.44).

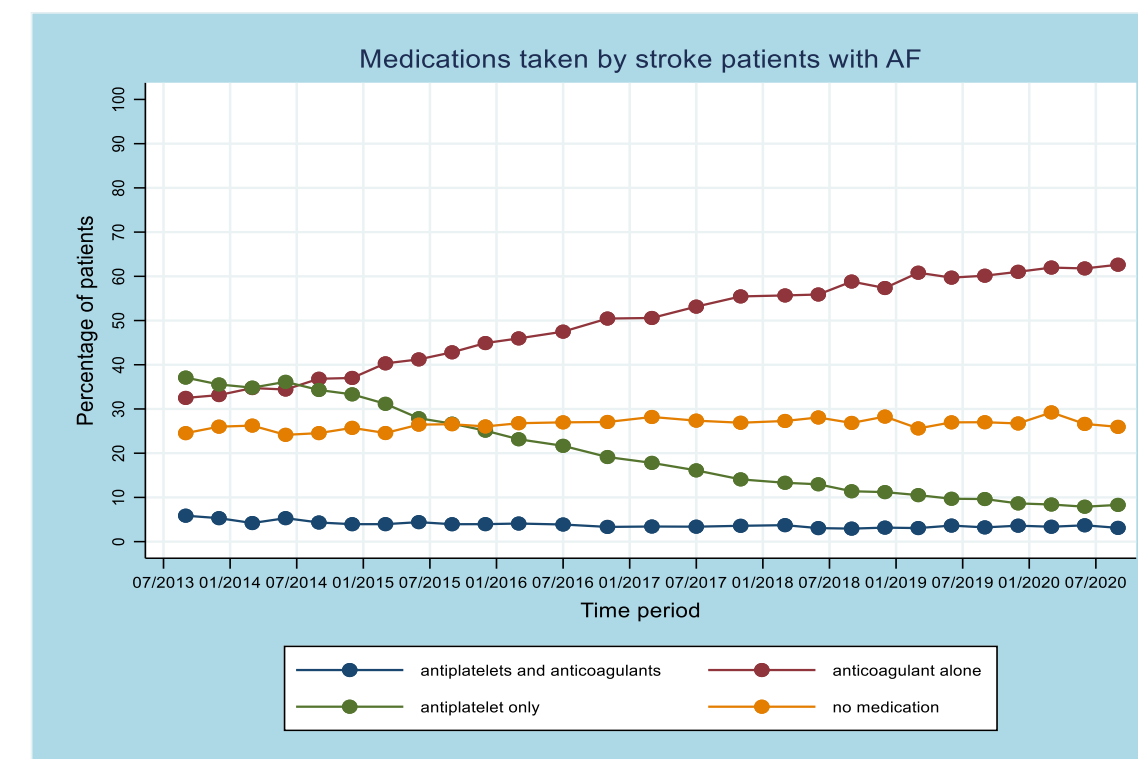


Figure 1 Anticoagulation among patients admitted with AF-related stroke

- Prevalence of AF in England in QOF datasets increased from 1.52% in 2012/2013 to 2.05% in 2019/2020 (ITSA gradient=0.08, p-value<.001, 95% confidence interval: 0.07- 0.09).

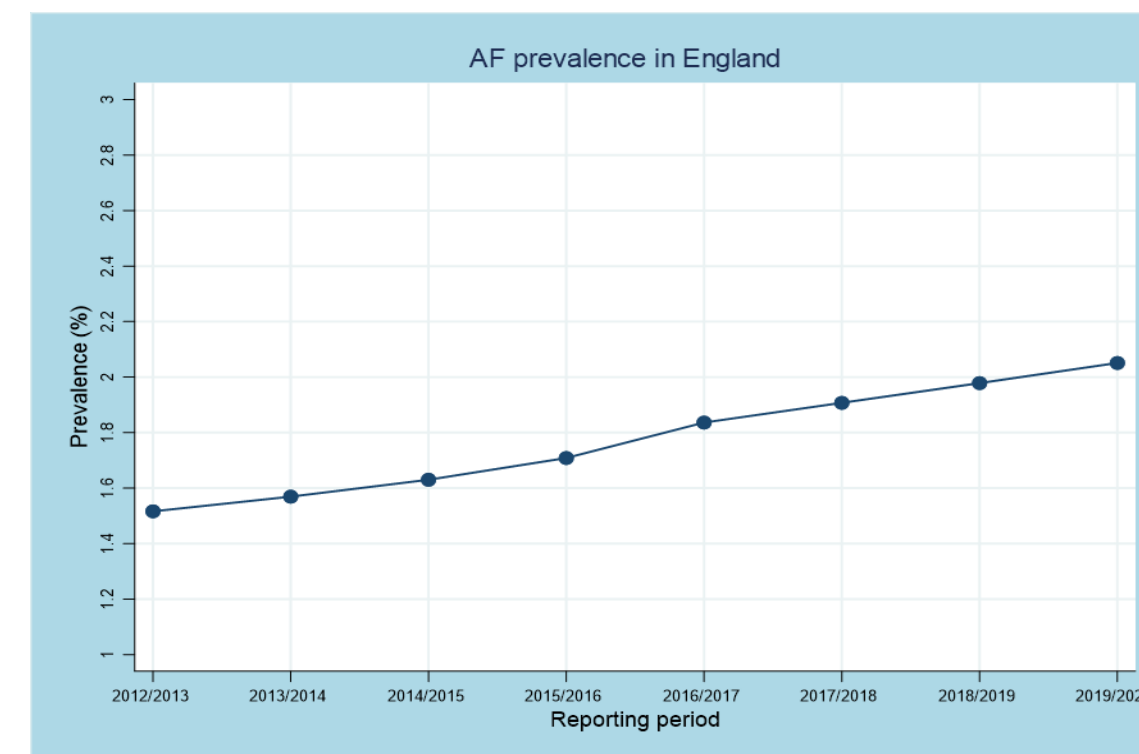


Figure 2 AF prevalence in QOF datasets

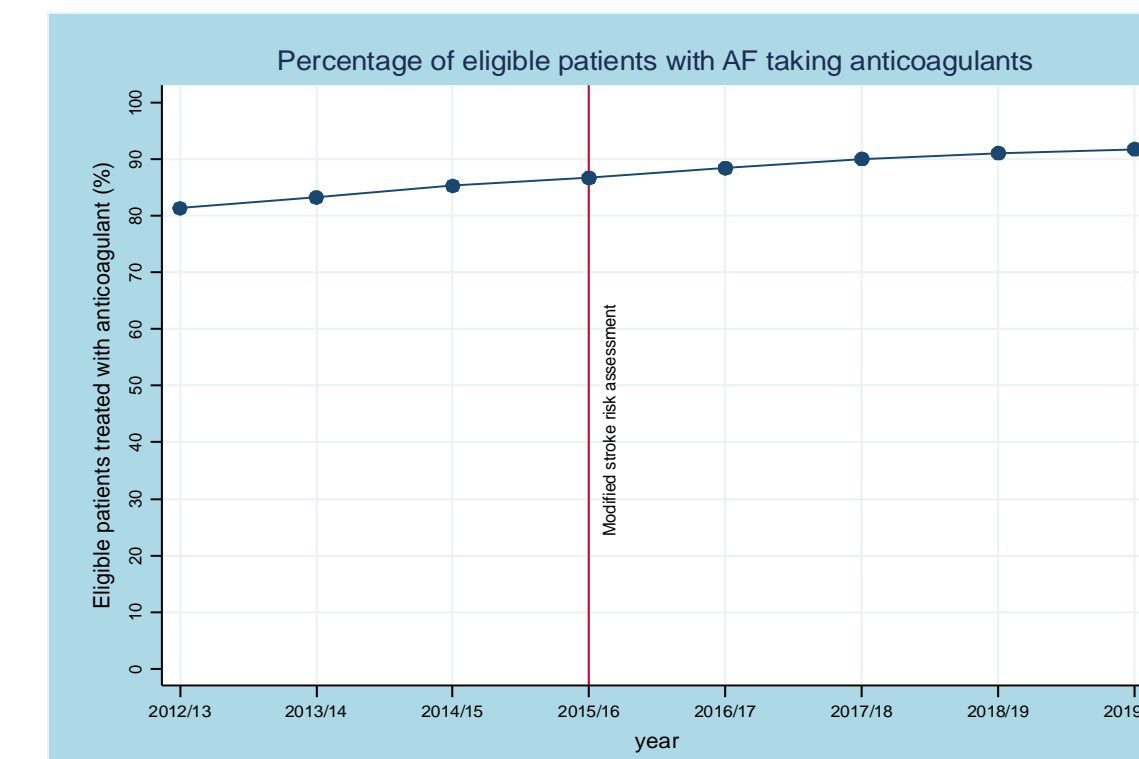


Figure 3 Anticoagulant prescribing for eligible patients with AF in QOF datasets

- Between 2012/2013 and 2014/2015, **CHADS₂** score was used to assess stroke risk
- In 2015/2016, stroke risk assessment was changed to **CHA₂DS₂-VASc** score, which includes additional comorbidities and potentially offers a more accurate depiction of stroke risk
- The proportion of patients with AF who are considered eligible for anticoagulation increased by 25.24% between 2014/2015 and 2015/2016

Conclusion

- The analysis of data from different sources identified an increase in anticoagulant prescribing for patients with AF in England, which is likely to translate into health gains.
- The increased prescribing levels of anticoagulants could have been a result of the changes in policies, guidelines, evidence supporting anticoagulant use for AF, and the introduction of DOACs
- The use of aggregate data in the analysis did not allow for detailed inspection of patient characteristics, and individual anticoagulants were not specified in the datasets.
- Quantitative analyses of primary care data of individual anticoagulant prescribing for different patient groups with AF are needed to further understand whether additional improvements are possible in the prevention of complications from atrial fibrillation.
- The results of the analysis also need to be viewed in relation to evidence on patient and clinician views and experiences with anticoagulant prescribing for AF.

References

- Adderley NJ, Ryan R, Nirantharakumar K, Marshall T. Prevalence and treatment of atrial fibrillation in UK general practice from 2000 to 2016. *Heart*. 2019;105(1):27-33.
- Loo SY, Dell'Aniello S, Huiart L, Renoux C. Trends in the prescription of novel oral anticoagulants in UK primary care. *British Journal of Clinical Pharmacology*. 2017;83(9):2096-106.

Contact

Rawand Jarrar
Newcastle University
Email: r.jarrar2@ncl.ac.uk
Twitter: @rawand_jj

