



## Evidence Summary

# The effective, safe and appropriate use of medicines taken by mouth to prevent blood clots

- Medicines taken by mouth to reduce the risk of bleeding and prevent blood clots ('oral anticoagulants') are used to prevent and treat irregular heartbeat ('atrial fibrillation or ATF ') and clotting of blood in veins ('venous thromboembolism or VTE'). These medicines are used to prevent strokes (bleeding in the brain that can lead to death).
- Warfarin was until recently the only available oral drug (i.e. taken as a tablet rather than injection) for preventing blood clots. New drugs called novel oral anticoagulants or NOACs, have become available in the past few years.

Our review found evidence which suggests that:

- Newer types of NOACs are better than warfarin

for the prevention of strokes related to irregular heartbeat

- Pharmacy-based care may help patients and pharmacists to manage appropriate levels of anticoagulation compared with routine medical care
- When choosing or changing oral anticoagulant medication, patients and most clinicians feel that how well the drug works is the most important factor to consider, followed by how safe the drug is, for example avoiding bleeding
  - Discussion between patients and their doctors should take into account a range of factors including patient age, gender, lifestyle, employment status, and support needs

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• *This summary presents a rapid overview of systematic reviews:*

- In Review 1, Sterne and colleagues' (2017) series of four reviews on the most effective, safe and cost effective oral anticoagulants were summarised.
- In Review 2, the use of methods to identify genetic factors that influence the effectiveness of oral anticoagulants ('genotyping') was considered
- In Review 3, the ways to manage appropriate levels of the medication in the bloodstream were evaluated
- In Review 4, patient and clinician views and experiences of oral anticoagulant medicines were explored

### Evidence Sources

- Review 1: Four reviews on the most effective, safe and cost effective oral anticoagulants
- Review 2: Ten reviews on genotyping
- Review 3: Six reviews on the management of appropriate levels of anticoagulation
- Review 4: Eight reviews of patient and clinician views
- Many of the studies had problems in design or conduct; so, our conclusions need to be interpreted with caution.
- Below is a summary of the methods and results of the review. A full report is at <https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=3733>

### Background

- Current guidelines recommend the use of either warfarin or newer medications (called novel oral anticoagulants or NOACs) for the prevention and treatment of heartbeat irregularities due to atrial fibrillation and the formation of blood clots in the extremities, known as venous thromboembolism. However, uncertainties relating to their efficacy, safety and patient experience exist.
- The effect of warfarin can be altered by medications, food and alcoholic drinks and may require behavioural adjustments by the patient, and frequent blood monitoring by a clinician, to maintain appropriate levels of anticoagulation, which reduces the risk of blood clotting or bleeding.
- The newer oral anticoagulants do not require such close monitoring or adaptations. However, due to their recent availability, they are currently more expensive and their potential side effects are less well known.
- Better understanding of the efficacy, safety, and patient/clinician experience of warfarin and NOACs could help to identify which drugs are better for whom, and in which circumstances.

### Which oral anticoagulant/s are best for prevention and treatment of stroke in atrial fibrillation (AF) and venous thromboembolism (VTE)?

- Among people experiencing irregular heartbeat due to atrial fibrillation, the newer blood thinning medicines (NOACs) showed advantages over warfarin for most efficacy and safety outcomes. One newer blood thinning medication (called apixaban) was most promising in terms of efficacy and safety, and had the highest likelihood of being most cost-effective (for a 5mg dose given twice daily).
- However, there is no strong evidence to support the use of these newer blood thinning medications, over warfarin, for people who experience blood clots in their extremities.
- Due to weaknesses in the evidence base these findings should be interpreted with caution.

### Can genotyping (i.e. using genetic information) improve the use of oral anticoagulants for the prevention and treatment of stroke in AF and VTE?

- No reviews were identified that focused specifically on patients with irregular heartbeat or with blood clots in their extremities.

### Can self-monitoring or self-management interventions improve appropriate levels of oral anticoagulant?

Five types of intervention were identified:

- Education only
- Education plus patient decision aid (to inform preferences for anticoagulation therapy)
- Self-testing with guidance on dosing from a clinician
- Self-management (self-testing and making dose adjustments, and
- Pharmacist-management (pharmacist-testing and making dose adjustments)
- Among people with irregular heartbeat due to atrial fibrillation, low-quality evidence suggests that education and education plus decision aid, and self-management improve appropriate levels of anticoagulation compared with usual care.
- None of the interventions included populations with blood clots in the extremities (venous thromboembolism) exclusively.
- Among mixed-diagnoses groups (including but not limited to atrial fibrillation and/or venous thromboembolism), pharmacist-managed oral anticoagulation may improve appropriate levels of anticoagulation compared with usual care.

### What do patients and clinicians say about anticoagulation medication?

- Patients and most clinicians consider drug efficacy most important, followed by safety (i.e. risk of bleeding).

Several other influential factors emerged, including:

- Knowledge, experience of irregular heartbeat and blood clots in the extremities

- Changes in patient cognition and memory due to the condition itself

- Patient characteristics such as age, gender, lifestyle, employment status, support needs

- Aspects and quality of the relationship between patients and clinicians, such as how discussions take place and beliefs about who bears the responsibility for decision-making

### Implications for practice

Whilst some evidence suggests that newer oral anticoagulants (NOACs) are more effective than warfarin among people experiencing irregular heartbeat, there was no strong evidence that NOACs should replace warfarin or other routine drugs in the prevention and treatment of blood clots in the extremities. It seems unlikely that NOACs will be suitable for all patients with atrial fibrillation, therefore further research is needed to identify which drugs are better for whom, and in which circumstances.

The evidence on self- and pharmacist-management of appropriate levels of anticoagulation is promising but there are too few studies available to reach reliable conclusions about effectiveness and it is not known whether they will be more financially sustainable than routine care.

### Citation

This report should be cited as: Brunton G, Richardson M, Stokes G, Blanchard L, Burchett H, Khatwa M, Khouja C, Walker R, Wright K, Sowden A, Thomas J (2018) The effective, safe and appropriate use of anticoagulation medicines: A systematic overview of reviews. London: EPPI-Centre, Social Science Research Unit, UCL Institute of Education, University College London.

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The Department of Health and Social Care Reviews Facility collaboration has grown out of a previous 'reviews facility' in Health Promotion and Public Health based at the EPPI-Centre, and has been funded by the Department since 1995.

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