## LETTERS TO THE EDITOR

**Anticoagulation and atrial fibrillation**

**Editor,—** We would like to congratulate McNulty and colleagues on their excellent clinical audit of antithrombotic therapy in atrial fibrillation.1 Their approach to the methods of audit has been impeccable, completing this audit cycle by instigating a process of reaudit after the results from the original data set had been intensively presented to hospital colleagues, itself leading to a highly effective intervention.

We would, however, appreciate this opportunity to provide a brief update in a few aspects of the current knowledge of stroke prevention in atrial fibrillation. The Lip and Lowe algorithm used for risk stratification was first published in 19962 and a refinement has since been proposed (Box 1),3 which has been adapted for use in local and national guidelines.

The essential changes relate to the contribution of echocardiography and paroxysmal atrial fibrillation. In the Atrial Fibrillation Investigators overview on echocardiographic risk factors for thromboembolism, left atrial size *per se* does not appear to be an independent risk factor on multivariate analysis and is no longer used in the risk stratification schema4; indeed, left atrial dilatation rarely occurs independent of “other” pathology, such as hypertension or heart failure which themselves constitute high risk features.5 In this analysis, moderate or severe left ventricular dysfunction on two dimensional echocardiography was the only significant abnormality which appeared to be an independent risk factor for thromboembolic stroke in non-valvular atrial fibrillation.6 Other studies using echocardiography for risk stratification have rarely found that the investigation significantly contributed to antithrombotic therapy management decisions, as many patients already had clinical risk factors allowing effective risk stratification.7

Regarding other risk factors, hormone replacement therapy use may also increase risk while alcohol consumption may be protective.8 McNulty and colleagues do not specifically address the problem of paroxysmal atrial fibrillation, which has significant implications on the scale of stroke and thromboembolic risk as sustained atrial fibrillation, especially in the presence of clinical risk factors.9 In general, our recommendation is to use warfarin in patients with paroxysmal atrial fibrillation unless they can be classified as having “lone” atrial fibrillation or there are contraindications to the use of anticoagulation, where aspirin should be used instead. The safety and tolerability of long term anticoagulation titrated to conventional levels (international normalised ratio (INR) 2–3) is less clear in the very elderly (age older than 75 years), which is the age group encompassing perhaps half of the atrial fibrillation associated stroke patients. The elderly are also prone to more co-morbidity, polypharmacy, cognitive problems and frailty; indeed, biological age in some way is more important than chronological age, and the decision must be based on the risk-benefit ratio, as with many things in clinical medicine. There have also been suggestions that an INR range of 1.6–2.5 can provide substantial, if partial efficacy (estimated in early 90% of the highest intensities), and could be used for elderly patients to minimise haemorrhagic complications, although this has not been verified by any prospective study.10 Given the uncertainty about the safety of INRs >2.5 for patients with atrial fibrillation over the age 75, a target INR of 2.0 (range 1.6–2.5) may be a reasonable compromise between toxicity and efficacy for this age group, pending further data about the safety of higher intensities. Further information from our ongoing Medical Research Council funded BAFTA (Birmingham Atrial Fibration Treatment and Assessment) study in elderly patients aged >75 years, with non-valvular atrial fibrillation in primary care, would provide further information.

McNulty and colleagues extrapolate from their data the potential savings both in hospital admission days and financial cost,1 which may be achievable by a nationwide consensus approach to the problem. We wholeheartedly support this, and agree with their call for improved stroke prevention in atrial fibrillation, especially as there is now evidence the benefits and risks of anticoagulation seen in the clinical trials can realistically be translated into everyday clinical practice.11

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**Box 1: Risk stratification and anticoagulation in non-valvular atrial fibrillation**

**ASSSESS RISK AND REASSESS REGULARLY:**

1. **High risk (annual risk of CVA = 8%–12%)**
   - All patients with previous transient ischaemic attack or CVA.
   - All patients aged 75 or over with diabetes and/or hypertension.
   - All patients with clinical evidence of valve disease, heart failure, thyroid disease, and/or impaired left ventricular function on echocardiography.

2. **Moderate risk (annual risk of CVA = 4%)**
   - All patients aged under 65 with no history of embolism, hypertension, peripheral arterial disease, ischaemic heart disease.
   - All patients aged over 65 who are not in high risk group.

3. **Low risk (annual risk of CVA = 1%)**
   - All patients under 65 with no history of embolism, hypertension, diabetes, or other clinical risk factors.

**TREATMENT**

1. **High risk:** give warfarin (target INR 2.0–3.0) if no contraindications and reasonable in practice.
2. **Moderate risk:** either warfarin or aspirin 75–300 mg. In view of insufficient clear cut evidence, treatment may be decided on individual cases. Refer to and echocardiography may help.
3. **Low risk:** give aspirin 75–300 mg daily.

*Echocardiography: not needed for routine risk assessment but refines clinical risk stratification in case of impaired left ventricular function and valve disease. A large atrium *per se* is not an independent risk factor on multivariate analysis.*

*CVA = cerebrovascular accident.*

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The current antithrombotic strategy in atrial fibrillation and stroke prevention has been a focus of recent research and clinical practice. A atrial fibrillation (AF) is a common arrhythmia characterized by an irregular and rapid heart rate, often leading to an increased risk of thromboembolic events, including stroke. The management of AF involves careful consideration of the risk of stroke and the potential bleeding risks associated with anticoagulation therapy.

**Antithrombotic Management in Atrial Fibrillation**

Antithrombotic management in AF aims to balance the risks of stroke and bleeding. Therapy decisions are based on the individual patient's risk factors, the presence or absence of prior stroke or transient ischemic attack (TIA), and the risks and benefits of different treatments. The choice between warfarin and new oral anticoagulants (NOACs) is influenced by the patient's INR control, bleeding risk, and the need for dual antiplatelet therapy.

**INR Control and Monitoring**

INR control is crucial to the effectiveness of warfarin. The goal is to maintain the INR within a target range, typically 2.0 to 3.0, to optimize the reduction of stroke risk while minimizing the risk of major hemorrhage. INR monitoring involves regular blood tests to assess the patient's response to the anticoagulant.

**Device-Assisted Monitoring**

Device-assisted monitoring systems can help improve INR control, especially in patients with frequent clinic visits or who have difficulty maintaining adequate INR levels. These devices provide real-time feedback, allowing for timely adjustments to the anticoagulant dose.

**Bleeding Risk Management**

Bleeding risk is a significant concern in AF management, particularly in patients at higher risk, such as those with renal impairment, gastrointestinal bleeding, or a history of major bleeding. Strategies to manage bleeding risk include minimizing anticoagulant doses, using lower-intensity anticoagulation, and providing education on appropriate medication use.

**New Oral Anticoagulants**

NOACs offer a promising alternative to warfarin, providing a convenient, pill-based therapy with a more predictable anticoagulation effect. They have been shown to be as effective as warfarin in reducing stroke risk while reducing bleeding complications. However, their use is complex, requiring careful monitoring of drug levels and understanding of the patient's clinical history.

**Future Directions**

The field of AF management is rapidly evolving, with ongoing research aimed at improving stroke prevention strategies while minimizing bleeding risks. Future directions include the refinement of antithrombotic algorithms, enhanced device-assisted monitoring, and the development of additional NOACs.

**Conclusion**

The management of AF continues to be a dynamic area of research and clinical practice. Balancing the risks of stroke and bleeding, while ensuring adequate INR control and effective anticoagulation, remains a critical component of care for patients with AF. The future holds promising advancements in antithrombotic strategies to further reduce stroke risk and improve patient outcomes.