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Screening for atrial fibrillation in primary care – from recommendation to implementation

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Atrial fibrillation (AF), the most common sustained cardiac arrhythmia, has a prevalence that increases with age.[1] AF is associated with a 4-5 fold increased risk of ischaemic stroke[2] and strokes attributable to AF are associated with greater morbidity, mortality and healthcare costs.[3] Untreated AF and subsequent stroke disease, therefore, pose a significant public health burden.[4]

Oral anticoagulation reduces the risk of ischaemic stroke by two-thirds in people with AF and, if undiagnosed AF can be accurately identified and treated, there is great potential for reducing AF thromboembolic complications.[5] Around 12% of patients with AF are asymptomatic and it is prevalent in at least 12% of patients at first presentation of ischaemic stroke.[6] Optimal identification and treatment of AF could prevent substantial numbers of strokes and have a major impact on public health.

Screening for AF, using opportunistic pulse palpation and confirmatory 12-lead electrocardiogram (ECG) in those found with an irregular pulse, has been recommended in patients aged 65 years and over.[7] A systematic review of 30 AF screening studies from nine countries[8] found a pooled AF prevalence (95% Confidence Interval (C.I)) of 2.3% (2.2-2.4); the incidence of previously undiagnosed AF was 1.0% (0.89-1.04) in screened populations. Both prevalence and incidence of new AF was higher in studies conducted within a General Practice (GP) or outpatient setting. Sub-group analyses of patients ≥65 years found the prevalence of AF significantly increased to 4.4% (4.1-4.6) and the incidence of AF increased to 1.4% (1.2-1.6). However, further research is needed that investigates the impact of

screening on clinical outcomes, such as stroke prevention, as compared to non-screened populations.

It is unclear how AF screening is best organized; screening could be opportunistic or systematic. The Screening for Atrial Fibrillation in the Elderly study, a cluster-randomized trial set in 50 English GP practices, was the largest study that compared the efficacy of opportunistic screening (pulse palpation followed by 12-lead ECG in those with an irregular pulse) and systematic screening (12-lead ECG for all patients) with usual care in patients ≥65 years age.[9] Fitzmaurice and colleagues reported a greater incidence of new AF from intervention practices (1.63% versus 1.04%; absolute difference 0.59%, 95% C.I 0.20-0.98).[9] There was no difference in newly detected AF between the two screening approaches (1.64% for opportunistic screening and 1.62% for systematic screening) but economic analyses from this study suggested opportunistic screening was more cost-effective.[10]

Based on this trial data, current recommendations assume the optimal configuration for screening is the two-stage approach of pulse palpation followed by confirmatory 12-lead. A recent meta-analysis suggested alternative methods to pulse palpation, such as blood pressure monitors (BPMs) and non-12-lead ECG (e.g. single-lead ECG), may be more accurate at detecting pulse irregularities attributable to AF [Sensitivity (95% C.I) and specificity (95% C.I) for BPMs: 0.98 (0.92-1.00), 0.92 (0.88-0.95); non-12-lead ECG: 0.91 (0.86-0.94), 0.95 (0.92-0.97); pulse palpation: 0.92 (0.85-0.96), 0.82 (0.76-0.88)].[11] Due to the lower specificity for pulse palpation, this method of

detecting pulse irregularities may result in higher false positive cases of suspected AF and other methods may provide greater accuracy for this first-step of screening.

The gold standard test for diagnosing AF is 12-lead ECG interpreted by a competent professional, the recommended second-step of AF screening. Another meta-analysis investigated the accuracy of methods for interpreting 12-lead ECGs for diagnosing AF.[12] Taggar and colleagues reported automated software analysis had the greatest specificity for AF diagnosis, although the sensitivities were similar for software and any healthcare professional (HCP) diagnosed AF. [Sensitivity (95% C.I) and specificity (95% C.I) for automated software: 0.89 (0.82-0.93), 0.99 (0.99-0.99), any HCP: 0.92 (0.81-0.97), 0.93 (0.76-0.98)]. Sub-group analyses of primary care professionals found a greater accuracy for General Practitioner (GP) than nurse diagnosed AF, which was due to the lower specificity of nurse ECG interpretation for diagnosing AF [Sensitivity (95% C.I) and specificity (95% C.I) for GP: 0.91 (0.68-1.00), 0.96 (0.89-1.00); nurses: 0.88 (0.63-1.00), 0.85 (0.83-0.87)]. However, these findings also suggest the ability of primary HCPs to accurately diagnose AF should be improved to ensure maximal effectiveness of screening.

Despite optimizing the configuration of AF screening, for this to be successfully and consistently introduced within primary care, it would be important to ensure that primary care infrastructure, such as access to ECG equipment and staffing, can support screening activities. AF screening would result in a greater number of patient contacts, ECGs performed and interpreted, and consequent prescribing and monitoring of anti-thrombotic medication. To date, there have been no studies that

have investigated the feasibility of introducing screening within a primary care setting or the opinions of primary care professionals about screening activities. For maximal success, the professionals chosen to deliver screening, whether GPs or nurses, would require enthusiasm for this new responsibility. Research that investigates current practice, knowledge, skills and attitudes to AF screening by professionals working in primary care is important as understanding the facilitators and barriers to delivering AF screening are imperative to its successful implementation.

In conclusion, screening has been shown to be efficacious in detecting asymptomatic incident cases of AF. However, research suggests other technologies, such as modified BPMs and non-12-lead ECGs may have an important role for the initial identification of suspected AF. Moreover, if screening were implemented within a primary care setting, it is likely that training to improve the skills of HCPs to accurately diagnose this arrhythmia would be required to ensure maximal effectiveness of screening. This would be particularly important in regions where ECG interpretation is not part of routine practice.

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