

# Should We Screen For Atrial Fibrillation?

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No country has yet established a National Screening Programme (NSP) for atrial fibrillation (AF), including the UK. However, there is an increasing body of evidence suggesting screening may be beneficial, prompting recommendations from prominent expert bodies to screen for AF.

Despite these data, the UK National Screening Committee (NSC) has not recommended systematic population screening. The review in 2014 concluded 'it is not clear that those identified as at risk through screening would benefit from early diagnosis<sup>1</sup>.' The Committee also identified a need to improve clinical management and standardise the treatment services currently available to those with diagnosed AF. The British Cardiovascular Society issued a subsequent statement in response to the decision questioning the interpretation of the evidence and suggesting that it would be in the public interest to reconsider their decision<sup>2</sup>. A further review by the UK NSC is scheduled for 2017/2018.

## **The main arguments for AF Screening**

Atrial fibrillation (AF) is the most common cardiac arrhythmia, present in around 1% of the population and 7% of over 65's<sup>3</sup>. Approximately 1 million people are affected by AF in England and Wales and data from the USA suggests the incidence may double by 2050<sup>5</sup>.

The most important clinical significance of AF is the associated five-fold increase in the risk of stroke. Furthermore, AF-related strokes tend to be more severe and have higher mortality<sup>4</sup>. However, AF related strokes are potentially preventable and thus population-based screening for AF has the potential for consideration as part of a public health initiative, meeting many of the National Screening Committee (NSC) criteria. It is estimated that 7,100 AF-related strokes and 2,100 AF-related deaths could be prevented annually in the UK if everyone with AF was appropriately managed<sup>6</sup>.

Several factors have led to an increased interest in AF screening<sup>7</sup>:

1. The prevalence of AF is increasing due to a combination of population ageing, changing patterns of risk factors and improved survival rates in other, contributory forms of cardiovascular disease.
2. Newer treatments are available in the form of Novel Oral Anticoagulants (NOACS) which are probably safer and as effective in elderly patients with AF as the existing treatment mainstay of Vitamin K antagonists, but much simpler to use, though at higher cost.
3. A number of relatively inexpensive screening devices for detecting AF in the community have been developed and the field may evolve rapidly as new technologies and algorithms emerge.

The most recent European Society of Cardiology (ESC) guidelines recommend opportunistic screening for AF by pulse taking or ECG rhythm strip in patients >65 years of age<sup>8</sup>.

Previously undiagnosed AF was found in 1.4% of those aged >65 years, suggesting a number needed to screen of 70<sup>8</sup>. This opinion is echoed by a Royal College of Physicians Edinburgh consensus statement recommending the introduction of a national screening programme. The ESC guidelines however recommend further evaluation of systematic AF screening programmes in at-risk populations<sup>8</sup>.

## **The main potential problems with AF screening**

Although the case for screening is strong, there are several key outstanding issues identified in the NSC report in 2014 and in particular<sup>1</sup>:

- There is a lack of high quality RCT evidence that screening for silent AF in a high-risk population who may or may not be already interacting with the healthcare system saves lives or reduces morbidity ie is the risk of stroke in an asymptomatic AF sufferer the same as the evidence for stroke rates from non-screening AF studies and is their treatment benefit as effective? There are observational data, however, that shows the stroke risk of screen detected AF patients is the same as those detected by symptomatic presentation (SAFE risk factor paper, Fitzmaurice et al).
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- The cost-effectiveness of a screening programme is therefore uncertain. Although some cost-effectiveness analyses have been published since the NSC report, they relied on untested assumptions of prognosis and treatment effect in screen detected AF. Furthermore, prolonged screening strategies may detect a large number of paroxysmal AF cases (pAF) and the relationship between AF burden (defined as the amount of time spent in AF) and stroke risk is not well understood and requires further evaluation. The optimal screening methods and technology for detecting pAF are also yet to be determined.
- The uptake of anticoagulation for established AF in the UK is poor. Results published in August 2014 in the first report of the Sentinel Stroke National Audit Programme (SSNAP) found that only 36% of patients with known AF admitted to hospital with a stroke were taking anticoagulants and 38% were taking antiplatelet drugs such as aspirin which have limited efficacy in patients with AF<sup>9</sup> and is no longer a recommended therapeutic option.
- Workload in general practice within the NHS has increased significantly and thus there are concerns as to whether an AF screening programme would be both feasible and sustainable. A recent analysis in The Lancet has shown a substantial increase in practice consultation rates, average consultation duration, and total patient-facing clinical workload in English general practice. These results suggest that English primary care as currently delivered could be reaching saturation point<sup>10</sup>.
- Many primary care professionals cannot accurately detect atrial fibrillation on an electrocardiogram. In one trial the sensitivity and specificity of the GPs was 80% and 92% respectively<sup>11</sup>. Diagnosis of atrial fibrillation in the community needs to factor in the reading of electrocardiograms by appropriately trained people.

## What Questions Need To Be Answered

Risk factors for AF and for stroke in AF overlap, so it might be possible to screen for AF in a population with a raised CHA<sub>2</sub>DS<sub>2</sub>-VASc score. Single lead ECG devices have been shown to be accurate for detecting AF<sup>11</sup> and it is possible that the single-lead ECG trace could be read by a physician to establish the diagnosis of AF. Opportunistic screening has been shown to detect as many new cases of AF as systematic screening, and more than conventional care<sup>3</sup>. A process for staggered systematic invitation of patients not opportunistically screened within GP practices could be implemented for a one-off screen using a single-lead ECG device. Screen negative subjects could be invited for a prolonged screen in order to detect more paroxysmal AF with a single-lead device over the duration of perhaps a week. Acceptability and usability of the devices in an elderly population would also require evaluation.

Training would be required for GPs in order to diagnose AF with sufficient accuracy from single lead traces with provision to obtain an expert opinion on indeterminate cases. Regarding optimal treatment, it is likely that both physicians' and patients' perceptions and attitudes might be potential factors in the underuse of treatment with vitamin K antagonists. Further work to address poor rates of anticoagulation uptake would include literature reviews, interviews with clinicians and patients, and direct observation of screening related activity in general practices along with training for clinicians as part of a screening programme.

Traditionally, screening programmes have been judged in terms of uptake of screening and uptake of treatment. It is now recognised that such paternalistic approaches that deny patient choice to refuse are not in keeping with best practice. It is possible that screening for AF could cause psychological distress and this requires careful consideration and evaluation. Therefore, striking the right balance in terms of what information to provide, in what detail, and at what time in order to ensure fully informed patient choice, will be key to the development of an AF screening programme that meets patient needs and expectations and is streamlined in terms of resource use.

To meet screening criteria, screening for AF would also need to show that future stroke events were avoided as a consequence. That therefore requires a demonstration of a cost effective strategy for screening linked to treatment and follow up of stroke, bleeding, and other events.

## Conclusions

There is great potential for public health gain in screening for AF but the current evidence base needs strengthening, particularly in terms of clinical end points. The recent STROKESTOP study, a prospective population-based study of systematic AF screening with intermittent ambulatory ECG recordings among those ages 75 and 76 years of age invited 14,387 individuals in Sweden<sup>12</sup>. An impressive 54% participated and transmitted 30-second, single-lead ECG recordings (average 26.4 per participant) over a two-week period. AF incidence was 3.0% and among the participants with newly diagnosed AF, anticoagulation was started in 93% with almost ¾ receiving a NOAC, although some of the findings in the study may be difficult to extrapolate. It is of note that 9.3% of patients screened had a previous diagnosis of AF and that the majority of the newly detected AF was pAF (2.5% vs 0.5% with single-point screening). The Detecting and Diagnosing Atrial Fibrillation (D2AF): study is ongoing in the Netherlands and will also add to the evidence base<sup>13</sup>.

Given the increasing rates of AF, and the significant financial burden of stroke on an already stretched NHS, the role of screening for AF may become more prominent if practical and economical arguments can be addressed. More research is required to determine the appropriate target population and screening strategy and technology in addition to the risks associated with clinically silent pAF. It is also necessary to ensure that there is fully informed patient choice and that there is optimisation in terms of anticoagulation uptake. If a screening strategy is to be implemented, it must be streamlined and balanced in terms of workload and resource usage.

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