

Screening brief

Atrial fibrillation and screening for the prevention of stroke

Incidence and mortality of stroke (England and Wales, men and women combined)

- At the ages of 60, 70, and 80 respectively: Annual incidence: 0.2%, 0.8%, 1.5%. Annual death rate: 0.04%, 0.2%, 0.8%

Prevalence of atrial fibrillation¹⁻³

- About 0.5% at age 55, 2% at 65, 5% at 75, 10% at 85
- In a minority of patients with atrial fibrillation this will be due to rheumatic heart disease or thyrotoxicosis; most are atherosclerotic

Link between stroke and atrial fibrillation

- Annual incidence of stroke in people with atrial fibrillation is 3.1% at age <65, 5.1% at age 65-74, 5.6% at age 85+⁴
- Relative risk of stroke in patients with atrial fibrillation declines with increasing age; it is about 6 at age 70⁵
- Of all patients with stroke, 17% have atrial fibrillation⁶
- Atrial fibrillation is both a cause of stroke (embolus) and a marker of atherosclerosis, which is a cause of stroke⁷

Screening test

- Electrocardiographic rhythm strip periodically in persons about a specified age (say 60) to identify atrial fibrillation (feeling the pulse may be insensitive and does not provide a record for audit purposes). Exclude thyrotoxicosis

Possible interventions

- Warfarin: target international normalised ratio (INR) 2.0-3.0; at higher levels there is little further gain but higher risk of serious haemorrhage⁸
- Aspirin
- Cardioversion

Reduction in incidence of stroke⁴

- Warfarin: from combined data from five randomised trials (in which 94% of the subjects had no history of stroke), stroke occurred in 27/1225 treated and 81/1236 control patients, an incidence of 1.4% and 4.5% per year; stroke was reduced by 68% (95%CI 50% to 79%). Over half the 27 treated patients with stroke took insufficient warfarin (INR<1.5). Warfarin prevented 3.1 strokes per 100 patients treated per year, at a cost of 0.3 major haemorrhages (mainly gastrointestinal) (1.3% v 1.0% per year)
- Aspirin: combined data from two trials; reduction in stroke was less: 36% (95%CI 4% to 57%)
- In one trial in patients with stroke or transient ischaemic attack, risk was reduced with warfarin from 12% to 4% per year, a reduction of 56% (95%CI 43% to 80%), but with aspirin the reduction was only 17% (95%CI -5% to 35%)⁹
- Cardioversion is of uncertain benefit; it restores sinus rhythm in 80% of patients but over half revert to atrial fibrillation in under a year¹⁰

Healthcare costs

- The costs of screening and medical care are probably outweighed by the costs of strokes prevented, provided that screening is not taken as an opportunity for additional unevaluated investigations²

Overall assessment

- Screening based on atrial fibrillation is simple and effective; treatment of people with stroke using warfarin to prevent stroke is worthwhile and cost effective. Aspirin is less effective but could be used in subjects judged difficult to control with warfarin
- It could prevent 12% (0.17 x 0.68) of strokes
- A national screening policy should be specified

1 Wheeldon NM, Tayler DI, Anagnostou E, *et al.* Screening for atrial fibrillation in primary care. *Heart* 1998;79:50-5.

2 Gustafsson C, Asplund K, Britton M, *et al.* Cost effectiveness of primary stroke prevention in atrial fibrillation: Swedish national perspective. *BMJ* 1992;305:1457-60.

3 Lake FR, McCall MG, Cullen KJ, *et al.* Atrial fibrillation and mortality in an elderly population. *Aust NZ J Med* 1989;19:321-6.

4 Atrial fibrillation investigators. Risk factors for stroke and efficacy of antithrombotic therapy in atrial fibrillation. *Arch Intern Med* 1994;154:1449-57.

5 Flegel KM, Shipley M, Rose G. Risk of stroke in non-rheumatic atrial fibrillation. *Lancet* 1987;i:526-9.

6 Sandercock P, Bamford J, Dennis M, *et al.* Atrial fibrillation and stroke: prevalence in different types of stroke and influence on early and long term prognosis (Oxfordshire community stroke project). *BMJ* 1992;305:1460-5.

7 Nolan J, Bloomfield P. Non-rheumatic atrial fibrillation: warfarin or aspirin for all? *Br Heart J* 1992;68:544-8.

8 Lancaster T, Mant J, Singer DE. Stroke prevention in atrial fibrillation. *BMJ* 1997;314:1563-4.

9 European Atrial Fibrillation Study Group. Secondary prevention in non-rheumatic atrial fibrillation after transient ischaemic attack or minor stroke. *Lancet* 1993; 342:1255-62.

10 Golzari H, Cebul RD, Bahler RC. Atrial fibrillation: restoration and maintenance of sinus rhythm and indications for anticoagulation therapy. *Ann Intern Med* 1996;125:311-23.