

TitleRandomized Controlled Trial and Cost Effectiveness Study
of Targeted Screening Versus Systematic Population Screening
for Atrial Fibrillation in the Over 65s: the SAFE StudyAgencyNCCHTA, National Coordinating Centre for Health Technology Assessment
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Aim

To determine the rate of new cases of atrial fibrillation (AF) detected by various screening strategies and to evaluate the incremental cost effectiveness of the screening strategies compared to routine clinical practice in detecting AF in people aged 65 and over. Other aims were to:

- evaluate the relative cost effectiveness of screening methods for AF diagnosis
- evaluate the most cost-effective method of test interpretation
- assess different combinations of screening strategies and procedures
- calculate company prevalence and incidence of AF in people aged 65+
- evaluate the value of clinical assessment and echocardiography in risk stratification
- evaluate the implications of national AF screening and identify the optimum algorithm.

Conclusions and results

Total patients in each arm: Control 4936, Opportunistic screening 4933, Systematic screening 4933. Baseline prevalence of AF was 7.2%, with higher prevalence in males (7.8%) and patients aged 75 and over (10.3%). The control population showed higher baseline prevalence (7.9%) than either the systematic (6.9%) or opportunistic (6.9%) intervention populations. In the control population 47 new cases were detected (incidence 1.04% per year). In the opportunistic arm 243 patients without a baseline diagnosis of AF had an irregular pulse, with 177 having an ECG, yielding 31 new cases (incidence 0.69% per year). A further 44 cases were detected outside the screening program (overall incidence 1.64% per year). In the systematic arm, 2357 patients had an ECG, yielding 52 new cases (incidence 1.1% per year). Of these, 31 were detected by targeted screening and 21 by total population screening. A further 22 cases were detected outside the screening program (overall incidence 1.62%

per year). Regarding ECG interpretation, computerized decision support software (CDSS) gave a sensitivity of 87.3%, a specificity of 99.1%, and a positive predictive value (PPV) of 89.5% compared to the gold standard (cardiologist reporting). GPs and practice nurses performed less well. Practice nurses from the control arm performed less well on interpretation compared to intervention practice nurses of limb lead (PPV 38.8% vs 20.8%) and single lead (PPV 37.7% vs 24.0%) ECGs. The opportunistic arm cost £337 for each extra case detected compared to the control arm, while the systematic screening arm was dominated.

Recommendations

Prevalence of AF in this population was found to be 7.2%. Incidence ranged from 1.04% to 1.64% per annum. In terms of a screening program, opportunistic screening was the only strategy that improved on routine practice, at a cost of £337 per case detected.

Methods

This was a multicenter, randomized controlled trial of patients aged 65 and over from 50 primary care centers. Selected general practices were randomly allocated to 25 intervention and 25 control practices. GPs and nurses in the intervention practices received education on the importance of AF detection and ECG interpretation. Patients in the intervention practices were randomly allocated to systematic (n=5000) or opportunistic screening (n=5000). Prospective identification of pre-existing risk factors for AF in the screened population enabled comparison between targeted screening of those at higher risk of AF and total population screening. AF detection rates in the systematic and opportunistic screening populations in intervention practices were compared to the AF detection rate in 5000 patients in the control practices. The screening period was 12 months.

Further research/reviews required

None given.