Population Screening for AF is not Worthwhile

Jonathan P. Piccini, MD, MHS, FHRS
Associate Professor of Medicine
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Relevant Disclosures (related to AF)

- **Grants for research**
  - AHRQ
  - ARCA biopharma
  - Boston Scientific
  - German AFNet
  - Gilead
  - Johnson & Johnson
  - ResMed
  - St Jude Medical

- **Consulting**
  - Medtronic
  - Pfizer/BMS
  - Laguna Pharmaceuticals
Age-adjusted survival after new-onset AF by decade in men & women

Schnabel RB. Lancet. 2015;386:154-162.
Brand Camp

by Tom Fishburne

Let me play Devil's advocate and passive aggressively roast your idea with infernal damnation.
Population Based Screening

Perception

Reality

[Images of healthy and unhealthy foods to illustrate the contrast between perception and reality.]
1. We don’t even treat the patients we know have AF
Oral Anticoagulation is Underutilized in AF Patients at Risk for Stroke

![Bar chart showing the percentage of AF patients receiving oral anticoagulation.](chart.png)

*Curr Opin Cardiol. 2010;25:312-20.*
2. Diagnosis is not as simple or easy as it seems
Taking the pulse of atrial fibrillation

Atrial fibrillation is a highly prevalent disease and a growing health-care burden worldwide.²³ By the middle of the 21st century, about 25 million people are expected to be affected by atrial fibrillation in Europe and North America.²³ With the ageing demographics of most developed countries, and with people with atrial fibrillation living longer than before, the predicted financial cost of atrial fibrillation⁴ and its sequelae make it imperative to understand determinants in the population, as well as the effect of interventions to reduce disease burden.

Until now, however, trends in prevalence and incidence of atrial fibrillation have largely been derived from administrative data that offer cross-sectional snapshots of disease burden. These data are subject to ascertainment bias, and apparent increases in prevalence might be largely explained by improvements in the ability to detect atrial fibrillation. In The Lancet, Renate Schnabel and colleagues⁴ present 50 year trends in prevalence and incidence of atrial fibrillation and associated morbidity in the Framingham Heart Study cohorts.

In a sex-stratified analysis of more than 200,000 person-years, however, the multivariable regression model used by Schnabel and colleagues to analyse stroke and mortality outcomes did not include information on antithrombotic therapy. The model instead relied on known risk factors for atrial fibrillation. While some of these risk factors might indeed be useful to control for confounding, there could still be important residual confounding of the stroke and mortality risk attributable to atrial fibrillation. The investigators attribute the impressive apparent reduction in stroke and mortality after diagnosis of atrial fibrillation to improved treatment of atrial fibrillation, including more aggressive anticoagulation guidelines for stroke prevention. Although attractive, this conclusion is not incontrovertible. The identification of more atrial fibrillation cases suggests that a greater number of patients at low risk of atrial fibrillation are being disproportionately identified and given treatment, during the later years of the study. Aggressive treatment of comorbid disorders, such as hypertension, might also have played a part in diminishing morbidity in patients with atrial fibrillation. We hope the investigators will be...
Screening for Atrial Fibrillation in people 65 & older

**Pulse check**
Sensitivity 87%, Specificity 81%

**EKG (general MD)**
Sensitivity 92%, Specificity 91%

**Pulse & EKG Combined**
Sensitivity = 80% (87% X 92%), Specificity = 91%

SPH for NHS. Screening for Atrial Fibrillation in People aged 65 and over. May, 2014.
3. Aggregate evidence does not support population-based screening.
Effectiveness of systematic screening for detection of AF

- Systematic screening
  - OR 1.57 (1.08-2.26)
  - Uptake 53%
  - NNS 172

- Opportunistic screening
  - OR 1.58 (1.10-2.29)
  - Uptake 46%
  - NNS 167

- Both have comparable impact but systematic has >> cost

4. Do we have any randomized controlled trials of screening in high-risk patients?
RCT of systematic screening (targeted & population) versus routine practice for the detection of AF (SAFE)

At risk patients:
- CHF
- HTN
- Rheumatic dz
- DM
- CAD
- Stroke/TIA

Flag chart
- Invitation to screening visit

Hobbs FDR. Health Technology Assessment. October, 2005
# RCT of systematic screening: SAFE Results

<table>
<thead>
<tr>
<th>Arm</th>
<th>Incidence of AF (% per year)</th>
<th>Incremental Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>1.04 (0.78-1.38)</td>
<td>-</td>
</tr>
<tr>
<td>Interventional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunistic</td>
<td>1.64 (1.31-2.05)</td>
<td>337 £</td>
</tr>
<tr>
<td>Systematic</td>
<td>1.62 (1.29-2.03)</td>
<td>3520 £</td>
</tr>
</tbody>
</table>

Hobbs FDR. Health Technology Assessment. October, 2005
but surely the results would be different with continuous monitoring technologies – right?
IMPACT of Device Monitoring Guided Anticoagulation on Stroke

2,700 patients
CHADS2 ≥ 1

Anticoagulation Protocol

Intervention Group

Continuous remote monitoring for AT
(36 of 48 atrial beats ≥200 bpm)

CHADS\(_2\) 1 & 2
- Start OAC
- AT for ≥48h
- No AT for 30d

CHADS\(_2\) 3 & 4
- Start OAC
- AT for ≥24h in 2d
- No AT for 90d

CHADS\(_2\) 5 & 6 (or prior TE)
- Start and maintain OAC

Any AT

Primary Outcome Events

Event-free Survival (%)

Time (years)

Control

Intervention

\( p = 0.777 \)

Back to “opportunistic” or risk-focused screening
Cryptogenic Stroke & Underlying AF: CRYSTAL AF

OAC use:
ICM 10% vs.
Control 4.6%

Detection of Atrial Fibrillation by 12 Months

Hazard ratio, 7.3 (95% CI, 2.6–20.8)
P<0.001 by log-rank test

Stroke/TIA
5.2%

Stroke/TIA
8.6%

In Summary

• The rationale for screening is sound

• Implementation has challenges

• Sensitivity & specificity in practice are not optimal
In Summary

- Systematic/population screening is far more costly, with a marginal increase in yield

- Whether or not screening improves outcomes remains unproven

- Opportunistic (NOT population) screening is best practice
Thank you