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Atrial fibrillation burden & timing of anticoagulation therapy in patients with screen-detected & clinically-diagnosed AF

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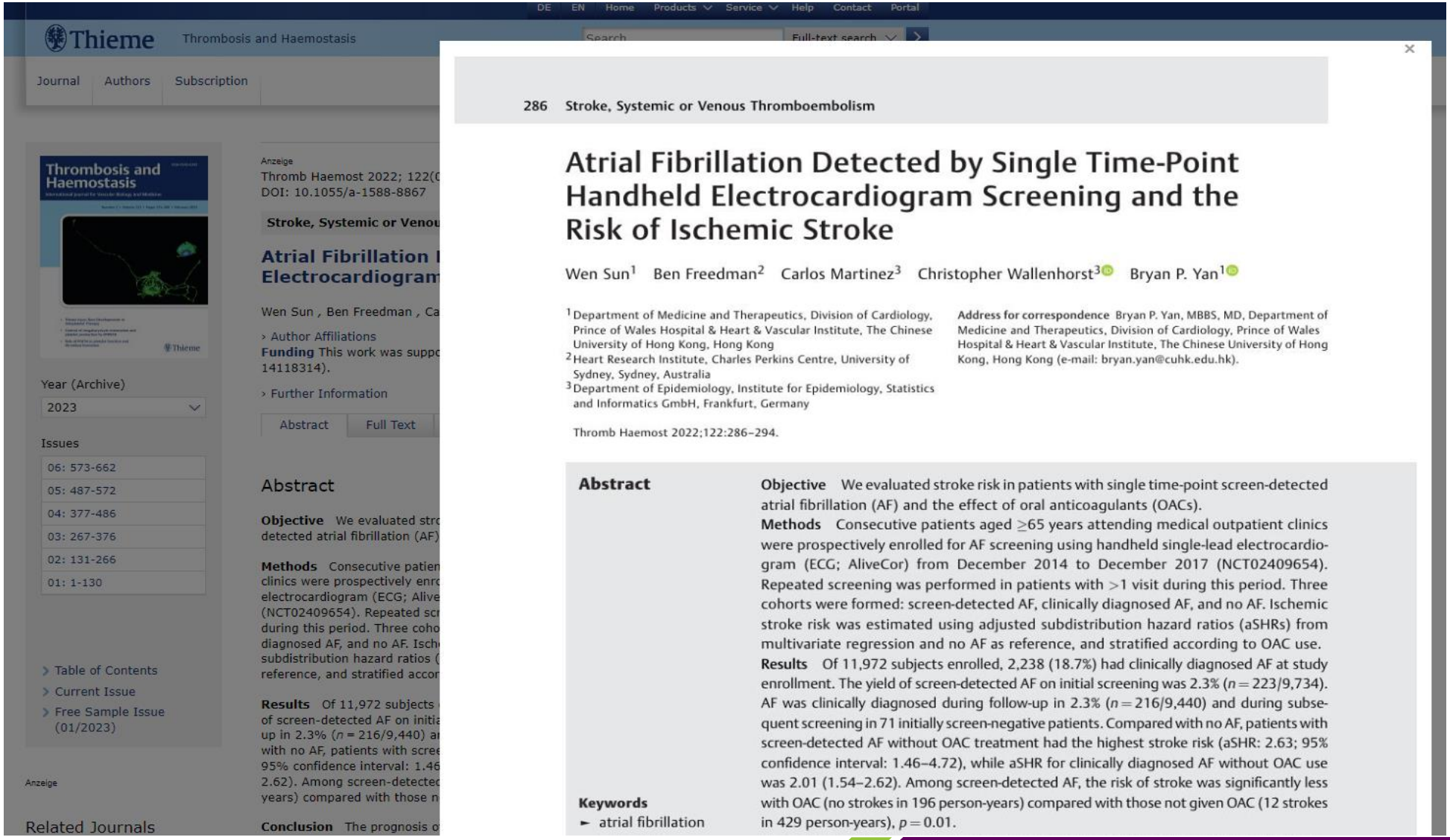
Background & Research Gap

- Screening for AF has been proposed as a strategy to increase detection of silent unrecognized AF.
- Opportunistic screening by pulse palpation or electrocardiogram (ECG) rhythm strip is recommended by the ESC and CSANZ in all patients ≥65 years because of abrupt rise of AF incidence above 65.
- However, **the US Preventive Services Task Force (USPSTF) found inadequate evidence to determine whether AF screening with ECG and subsequent treatment in asymptomatic adults is more effective than usual care**.

One prospective cohort study involving 11,972 patients filled the gap of knowledge…



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Atrial Fibrillation Detected by Single Time-Point Handheld Electrocardiogram Screening and the Risk of Ischemic Stroke

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Abstract

Objective We evaluated stroke risk in patients with single time-point screen-detected atrial fibrillation (AF) and the effect of oral anticoagulants (OACs).

Methods Consecutive patients aged ≥65 years attending medical outpatient clinics were prospectively enrolled for AF screening using handheld single-lead electrocardiogram (ECG; AliveCor) from December 2014 to December 2017 (NCT02409654). Repeated screening was performed in patients with >1 visit during this period. Three cohorts were formed: screen-detected AF, clinically diagnosed AF, and no AF. Ischemic stroke risk was estimated using adjusted subdistribution hazard ratios (aSHRs) from multivariate regression and no AF as reference, and stratified according to OAC use.

Results Of 11,972 subjects enrolled, 2,238 (18.7%) had clinically diagnosed AF at study enrollment. The yield of screen-detected AF on initial screening was 2.3% ($n = 223/9,734$). AF was clinically diagnosed during follow-up in 2.3% ($n = 216/9,440$) and during subsequent screening in 71 initially screen-negative patients. Compared with no AF, patients with screen-detected AF without OAC treatment had the highest stroke risk (aSHR: 2.63; 95% confidence interval: 1.46–4.72), while aSHR for clinically diagnosed AF without OAC use was 2.01 (1.54–2.62). Among screen-detected AF, the risk of stroke was significantly less with OAC (no strokes in 196 person-years) compared with those not given OAC (12 strokes in 429 person-years), $p = 0.01$.

Keywords
► atrial fibrillation

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Background & Research Gap

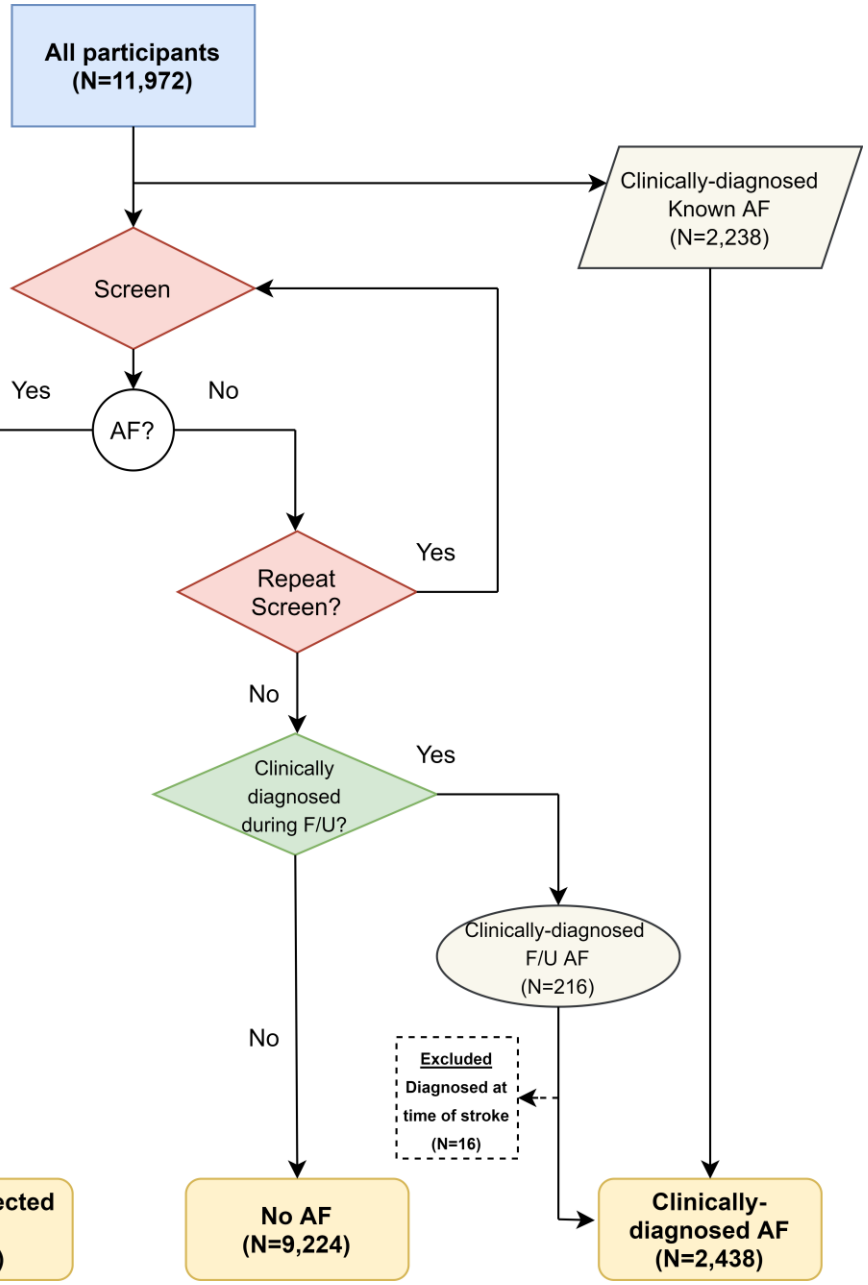
What is known on this topic?

- Screening for atrial fibrillation (AF) has been suggested as a strategy to increase detection of silent unrecognized AF.

What does this paper add?

- Prognosis of AF detected by opportunistic ECG screening is not benign. The risk of stroke is high enough to warrant OAC use, with a similar response to OAC as clinically-diagnosed AF.
- Our finding fills an important evidence gap: the prognosis of screen-detected AF, and vindicates the recommendation for opportunistic screening by ESC guidelines since 2012.

Study design & study population



- Inclusion criteria: consecutive patients aged ≥65 years attending medical outpatient clinics with or without known AF
- Study design: prospective registered observational study from 12/2014 to 12/2017
- Repeated screening was performed in **patients with >1 visit** during this period.
- Of 11,972 patients enrolled, **3,853(32.2%) received repeated screening** (mean age 76.7±7.3, female 47.5%).

Aims at answering new questions…

- Question 1: How does AF burden influence the risk of ischemic stroke in AF patients?

Persistent vs. paroxysmal?

- Question 2: Does earlier initiation of OAC improve outcomes?

Early vs. delayed initiation of OAC?

- Question 3: How does AF diagnosed in different scenario influence the risk of ischemic stroke?

Clinically-diagnosed vs. screen-detected AF?

Methods

- Subgroups definitions: Patients with previously known AF who were in AF in the initial screening & those with repeat screen-positivity were considered probably persistent AF, otherwise paroxysmal AF (single screen-positivity) or no AF (never screen-positive).
- AF diagnosis to anticoagulation treatment time: Dx-to-Rx $\leq$ 1 and >1 month.
- Outcome measures: Ischemic stroke risk estimated using adjusted sub-distribution hazard ratios (aSHR) derived from Fine and Gray regression models, accounting for death as competing risk, adjusting for components of CHA2DS2VASC score and chronic renal disease, with no AF as reference and stratified according to AF burden and Dx-to-Rx.

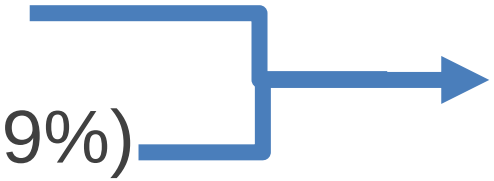
Results

- 3,853(32.2%) received repeated screening (mean age 76.7±7.3, female 47.5%)
- AF categories:

➢ Screened-detected AF (n=144,3.7%)

➢ Previously known AF (n=972,25.2%)

➢ FU clinically-diagnosed AF (n=226,5.9%)



Clinically-diagnosed AF

➢ No AF (n=2,511, 65.2%)

Results

- 55.1% (n=739/1,342) initiated OAC within 1 month after AF diagnosis
- Median follow-up period: 7.2(IQR: 6.1-7.5) years
- Risk of ischemic stroke: compared to no AF (reference group)

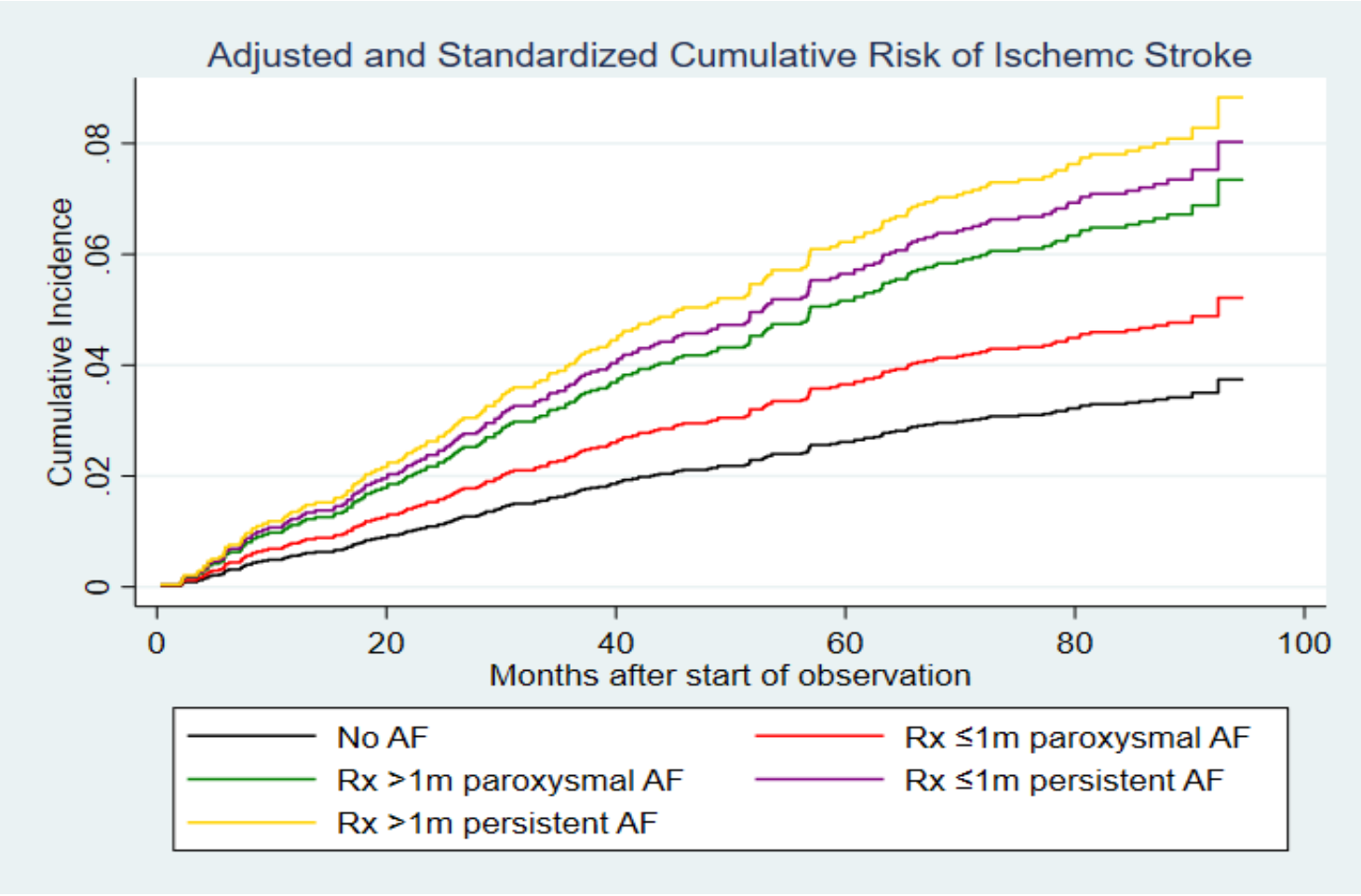
Paroxysmal AF with Dx-to-Rx ≤1m (aSHR=1.40[0.80-2.47]) → As low as No AF!

Persistent AF with Dx-to-Rx >1m (aSHR=2.42[1.38-4.26]) → Higher AF burden + delayed OAC = worst outcome ?

Persistent AF with Dx-to-Rx ≤1m (aSHR=2.19[1.47-3.28])

Paroxysmal AF with Dx-to-Rx >1m (aSHR=2.00[1.32-3.02])

Results



Cumulative risk of ischemic stroke stratified by AF burden and Dx-to-Rx

Subgroup analysis:

Consistent effect across screen-detected &clinically-diagnosed AF.

- Timing of OAC initiation

(P for interaction=0.936)

- AF burden

(P for interaction=0.863)

Limitation

- Participants of screening were those who attended routine follow-up in outpatient clinics, with potentially more co-morbidities than those in the general population or primary care
- Participants of repeat screening were those who attended >1 clinics, with potentially more co-morbidities than those underwent screening only once.
- Early initiation was defined by arbitrary cut-off (i.e., ≤1 month vs. >1 months).
- Further study is warranted to test whether the correlation of OAC timing and ischemic stroke risk is linear.
- Subsequent study to explore ‘intervention window’, beyond which the benefit would diminish.
- We did not evaluate OAC adherence & assumed that once patients was put on OAC, there was no discontinuation or interruption occurring during follow-up.
- We did not separate OAC into VKA & DOAC.

Conclusion

- Among patients with screen-detected AF or clinically-diagnosed AF, **lower AF burden & immediate initiation of OAC therapy** were associated with reduction in risk of ischemic stroke.
- Early detection of AF by screening facilitating early OAC prophylaxis is likely to improve clinical outcomes.