Dépistage de la FA en 2023

CARDIO RUN 2023

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Université de Rennes
28 septembre 2023

Mes relations avec l'industrie

- **Bourses de recherche:**

  Abbott, Boston, Biotronik, Medtronic, Microport CRM

- **Lectures:**

  BMS, Microport CRM, Pfizer

- **Consultant:**

  Cairdac, Cardiologs, Microport CRM

Pourquoi traquer la FA ?

Une arythmie fréquente

Souvent silencieuse avant le premier évènement clinique

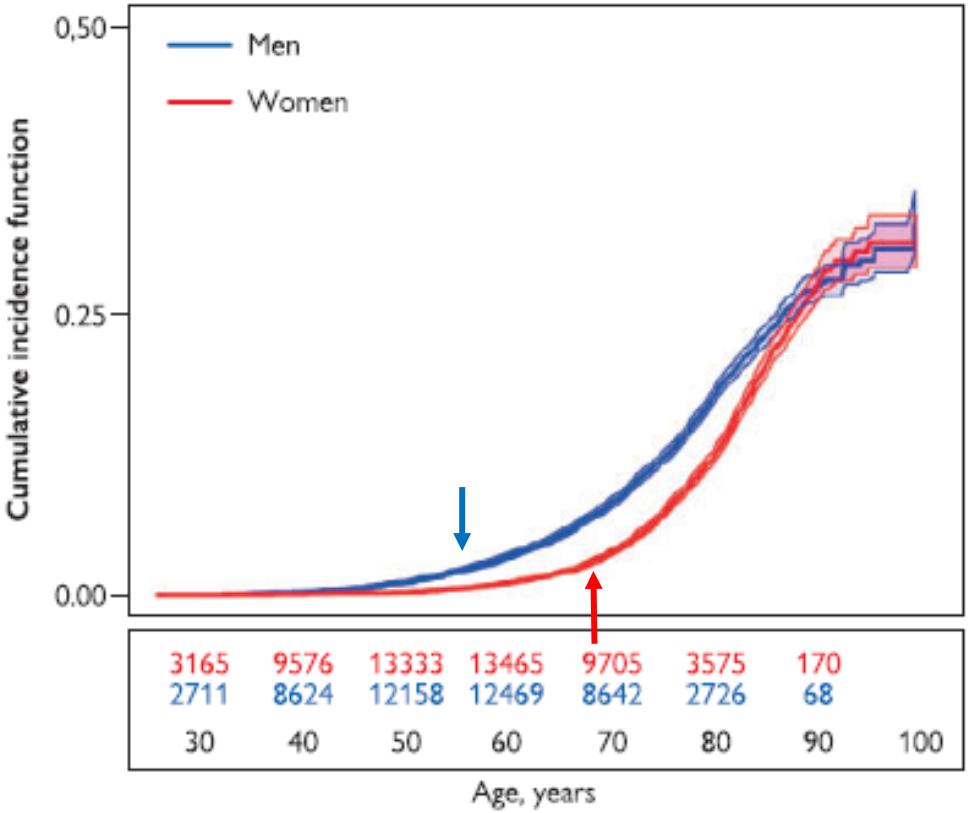
AF incidence: is screening necessary ?

LIFETIME RISK for AF
1 in 3 individuals

of European ancestry
at index age of 55 years
37.0% (34.3% to 39.6%)

AF is more common in males

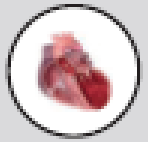
Cumulative incidence curves and 95% CIs
for AF in women and men with death as a competing risk



Pourquoi traquer la FA ?

Une morbi-mortalité souvent sous-estimée

AF related outcome

AF-Related Outcome	Frequency in AF	Mechanism(s)
Death 	1.5 – 3.5 fold increase	Excess mortality related to: • HF, comorbidities • Stroke
Stroke 	20-30% of all ischaemic strokes, 10% of cryptogenic strokes	• Cardioembolic, or • Related to comorbid vascular atheroma
LV dysfunction / Heart failure 	In 20-30% of AF patients	• Excessive ventricular rate • Irregular ventricular contractions • A primary underlying cause of AF
Cognitive decline / Vascular dementia 	HR 1.4 / 1.6 (irrespective of stroke history)	• Brain white matter lesions, inflammation, • Hypoperfusion, • Micro-embolism

AF-Related Outcome	Frequency in AF	Mechanism(s)
Depression 	Depression in 16-20% (even suicidal ideation)	• Severe symptoms and decreased QoL • Drug side effects
Impaired quality of life 	>60% of patients	• Related to AF burden, comorbidities, psychological functioning and medication • Distressed personality type
Hospitalizations 	10-40% annual hospitalization rate	• AF management, related to HF, MI or AF related symptoms • Treatment-associated complications

Pourquoi traquer la FA ?

Des interventions potentielles

- **Prévention du risque thrombo-embolique**
- **Rythme: contrôle de la fréquence cardiaque si besoin**

ESC European Society of Cardiology

European Heart Journal (2020) **00**, 1–125
doi:10.1093/eurheartj/ehaa612

ESC GUIDELINES

2020 ESC Guidelines for the diagnosis and management of atrial fibrillation developed in collaboration with the European Association of Cardio-Thoracic Surgery (EACTS)

The Task Force for the diagnosis and management of atrial fibrillation of the European Society of Cardiology (ESC)

Developed with the special contribution of the European Heart Rhythm Association (EHRA) of the ESC

Authors/Task Force Members: Gerhard Hindricks* (Chairperson) (Germany), Tatjana Potpara* (Chairperson) (Serbia), Nikolaos Dagres (Germany), Elena Arbelo (Spain), Jeroen J. Bax (Netherlands), Carina Blomström-Lundqvist (Sweden), Giuseppe Boriani (Italy), Manuel Castella[1] (Spain), Gheorghe-Andrei Dan (Romania), Polychronis E. Dilaveris (Greece), Laurent Fauchier (France), Gerasimos Filippatos (Greece), Jonathan M. Kalman (Australia), Mark La Meir[1]

AF screening in « asymptomatic » patients: why ?

BENEFITS

Prevention of:
- Stroke/SE using OAC in patients at risk
- Subsequent onset of symptoms

Prevention/reversal of:
- Electrical/mechanical atrial remodelling
- AF-related haemodynamic derangements
- Atrial and ventricular tachycardia-induced cardiopmyopathy

Prevention/reduction of:
- AF-related morbidity; hospitalization; mortality

Reduction of:
- The outcomes associated with conditions / diseases associated with AF that are discovered and treated as a consequence of the examinations prompted by AF detection

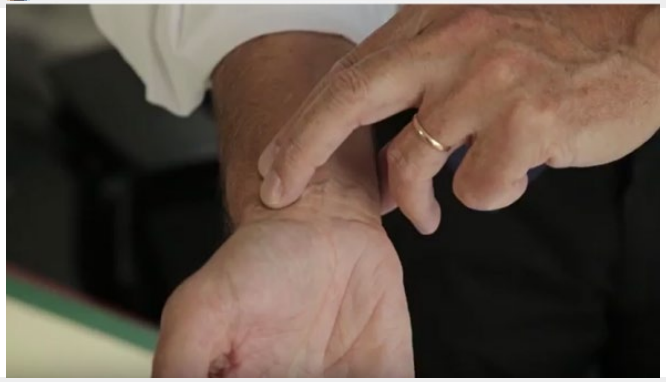
AF screening in « asymptomatic » patients: limits

RISKS

- Abnormal results may cause anxiety
- ECG misinterpretation results may lead to overdiagnosis and overtreatment
- ECG may detect other abnormalities (true or false positives) that may lead to invasive tests and treatments that have the potential for serious harm (e.g., angiography / revascularisation with bleeding, contrast-induced nephropathy and allergic reactions to the contrast)

Détecter la FA

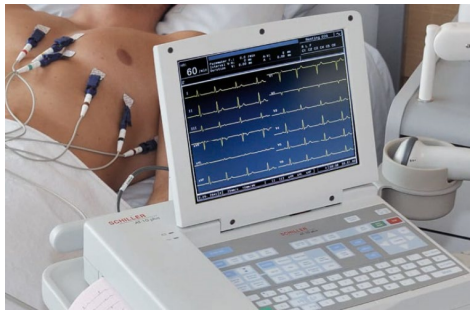
Recommendation	Class[a]	Level[b]
Opportunistic screening for AF by pulse taking or ECG rhythm strip is recommended in patients ≥65 years of age.[188,211,223,225]	I	B
Systematic ECG screening should be considered to detect AF in individuals aged ≥75 years, or those at high risk of stroke.[212,224,227]	IIa	B



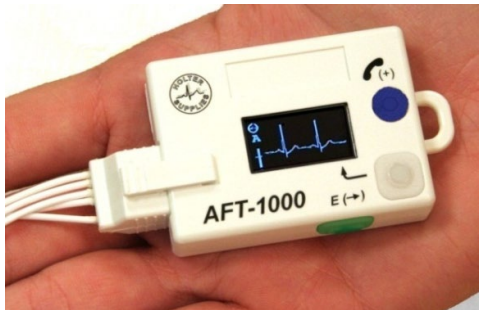
FA: diagnostic

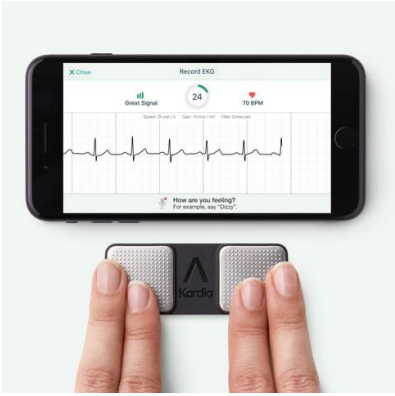
Recommendations for diagnosis of AF	
ECG documentation is required to establish the diagnosis of AF. A standard 12-lead ECG recording or a single-lead ECG tracing of ≥30 s showing heart rhythm with no discernible repeating P waves and irregular RR intervals (when atrioventricular conduction is not impaired) is diagnostic of clinical AF.	I

Il faut un tracé +++ !



ECG 12 D





Tracé monopiste ≥ 30 s

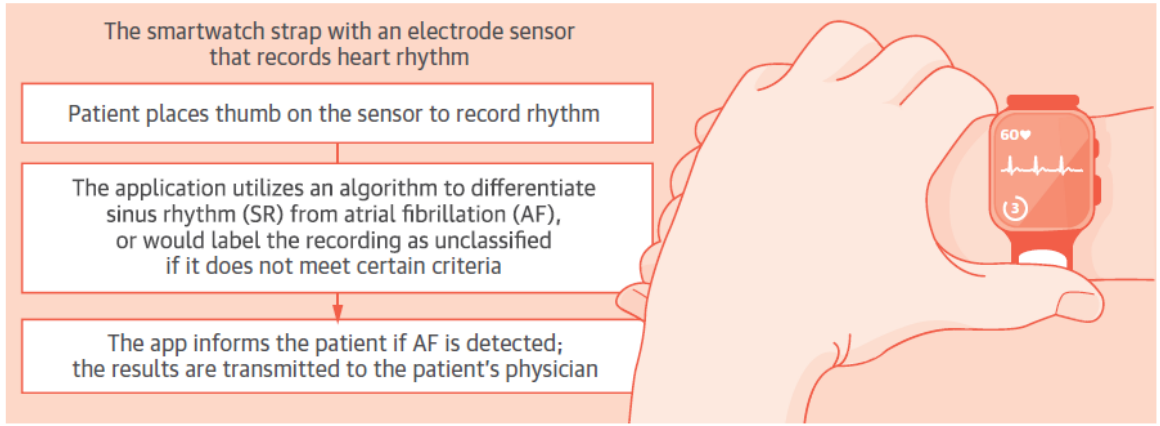
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

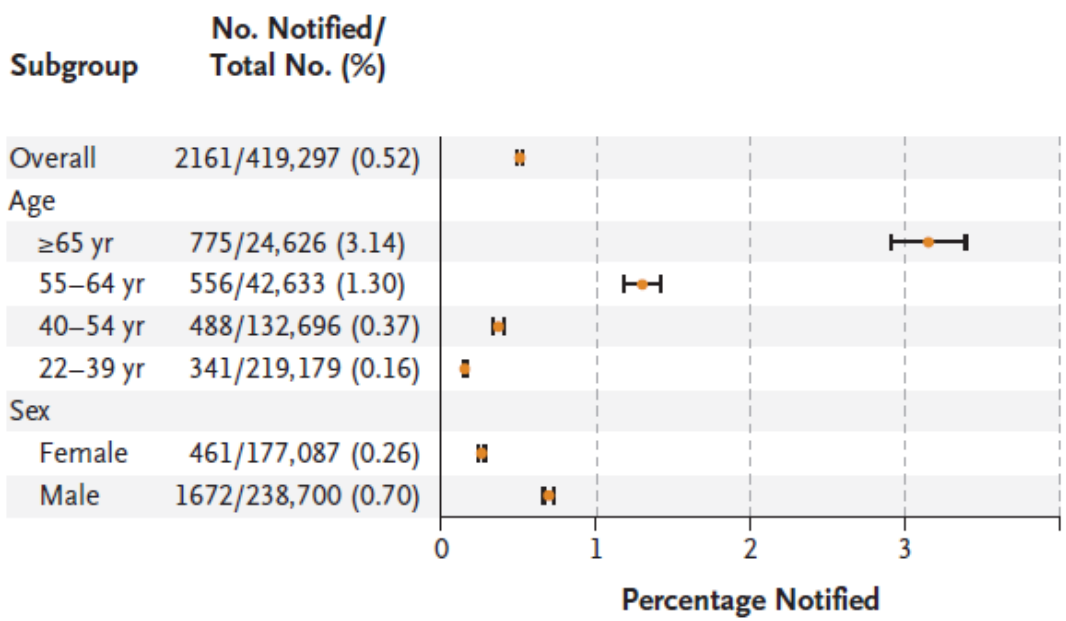
Large-Scale Assessment of a Smartwatch to Identify Atrial Fibrillation

Marco V. Perez, M.D., Kenneth W. Mahaffey, M.D., Haley Hedlin, Ph.D., John S. Rumsfeld, M.D., Ph.D., Ariadna Garcia, M.S., Todd Ferris, M.D., Vidhya Balasubramanian, M.S., Andrea M. Russo, M.D., Amol Rajmane, M.D., Lauren Cheung, M.D., Grace Hung, M.S., Justin Lee, M.P.H., Peter Kowey, M.D., Nisha Talati, M.B.A., Divya Nag, Santosh E. Gummidipundi, M.S., Alexis Beatty, M.D., M.A.S., Mellanie True Hills, B.S., Sumbul Desai, M.D., Christopher B. Granger, M.D., Manisha Desai, Ph.D., and Mintu P. Turakhia, M.D., M.A.S., for the Apple Heart Study Investigators*

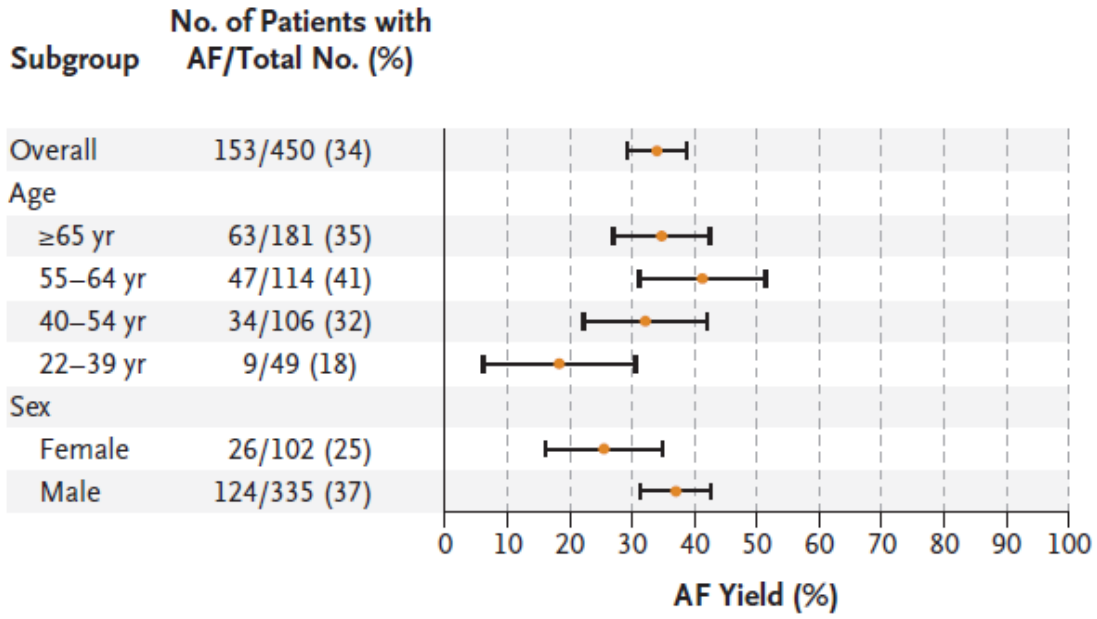
N Engl J Med 2019;381:1909-17.



the Apple Heart Study



Irregular Pulse Notifications, According to Age and Sex.



Yield of Atrial Fibrillation on ECG Patch Monitoring.

N Engl J Med 2019;381:1909-17.

Detection of Atrial Fibrillation in a Large Population Using Wearable Devices: The Fitbit Heart Study

Steven A. Lubitz, MD, MPH; Anthony Z. Faranesh, PhD; Caitlin Selvaggi, MS; Steven J. Atlas, MD, MPH; David D. McManus, MD, ScM; Daniel E. Singer, MD; Sherry Pagoto, PhD; Michael V. McConnell, MD, MSEE; Alexandros Pantelopoulos, PhD; Andrea S. Foulkes, PhD

Circulation. 2022;146:1415–1424

Fitbit device with PPG sensor to mesure pulse rate

Irregular heart rhythm detection (IHRD): 11 consecutive irregular tachograms

1-week ambulatory ECG patch monitor if IHRD detected

Primary outcome: PPV of the first IHRD during ECG patch monitoring for concurrent AF

455699 participants enrolled (median age 47 years, 71% female, 73% White)

IHRDs: 4728 (1%) participants - 2070 (4%) aged ≥65 years - median of 122 days at risk for an IHRD.

1057 participants with an IHRD notification and subsequent analyzable ECG patch monitor:

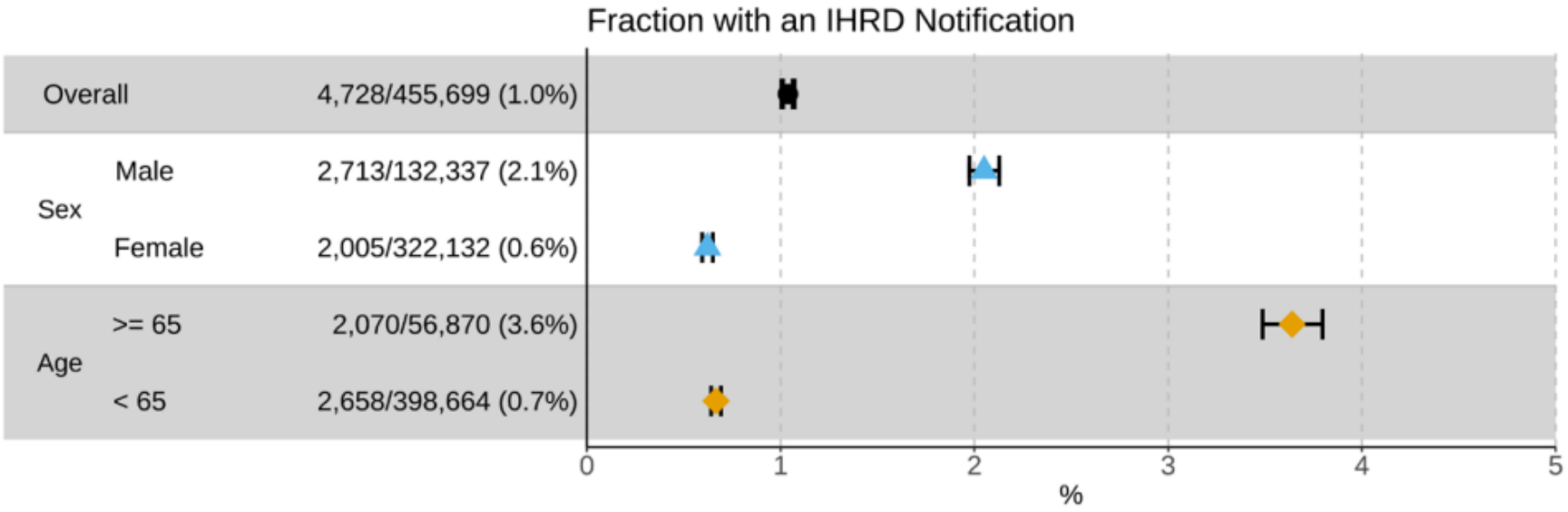
AF was present in 340 (32.2%)

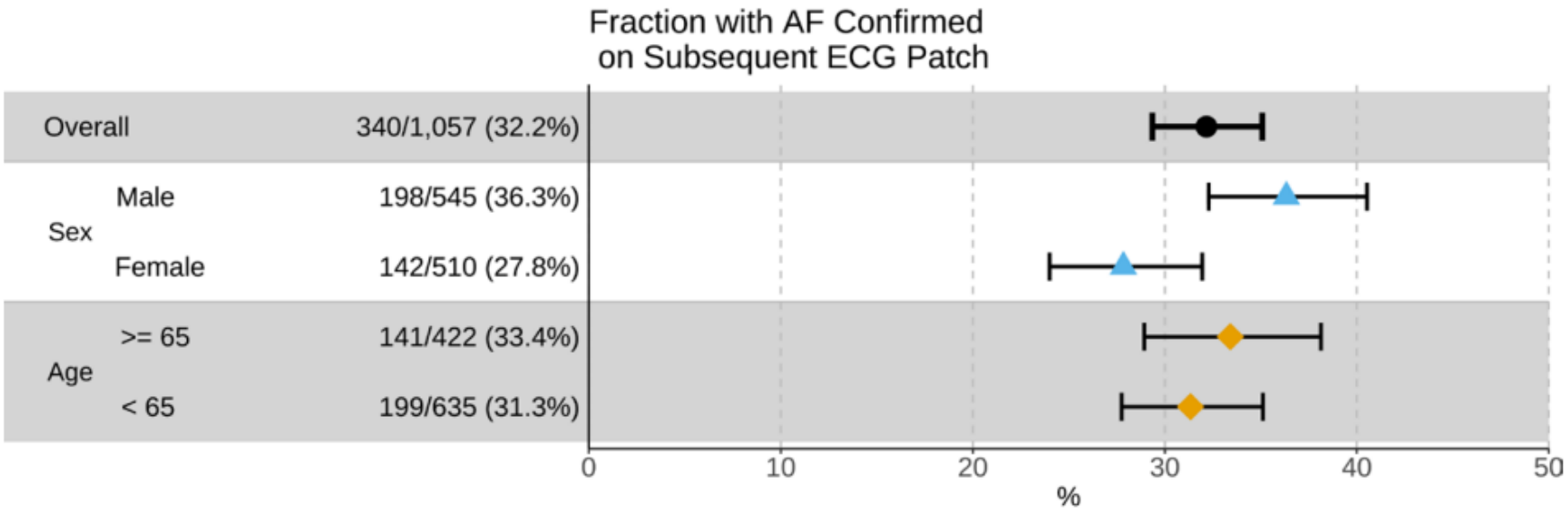
225 participants with another IHRD during ECG patch monitoring: 221 had concurrent AF

IHRD PPV: 98.2% (95% CI, 95.5%–99.5%).

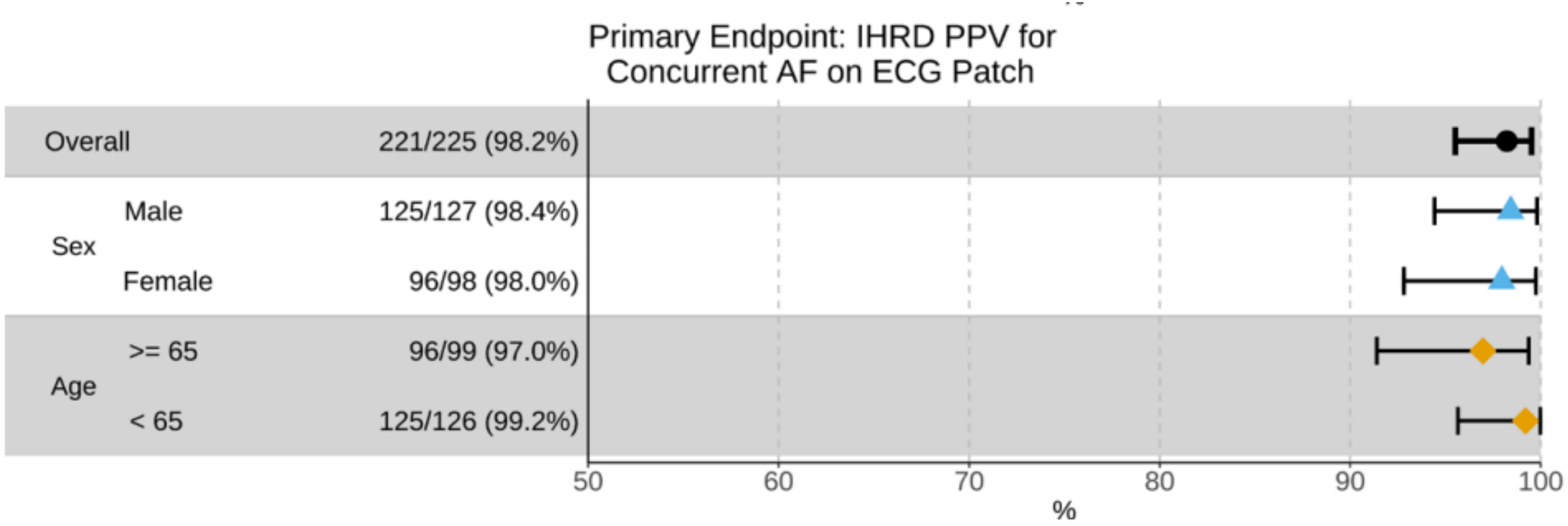
Participants aged ≥65 years, IHRD PPV: 97.0% (95% CI, 91.4%–99.4%)

IHRD notification and AF detection





Primary endpoint: IHRD PPV for AF



IHRD PPV: 98.2% (95% CI, 95.5%–99.5%).

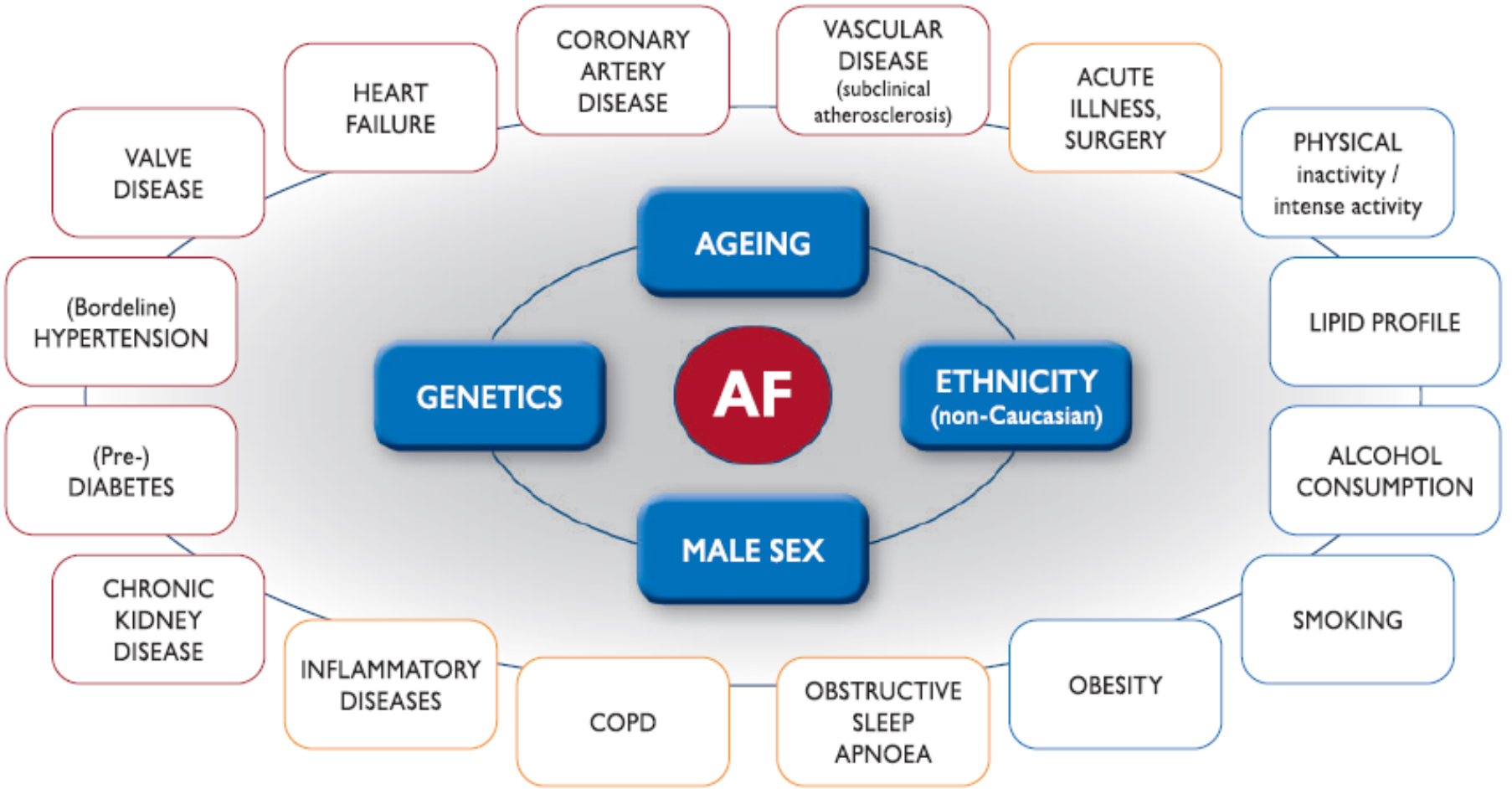
Participants aged ≥65 years, IHRD PPV: 97.0% (95% CI, 91.4%–99.4%)

Quelle méthode choisir ?

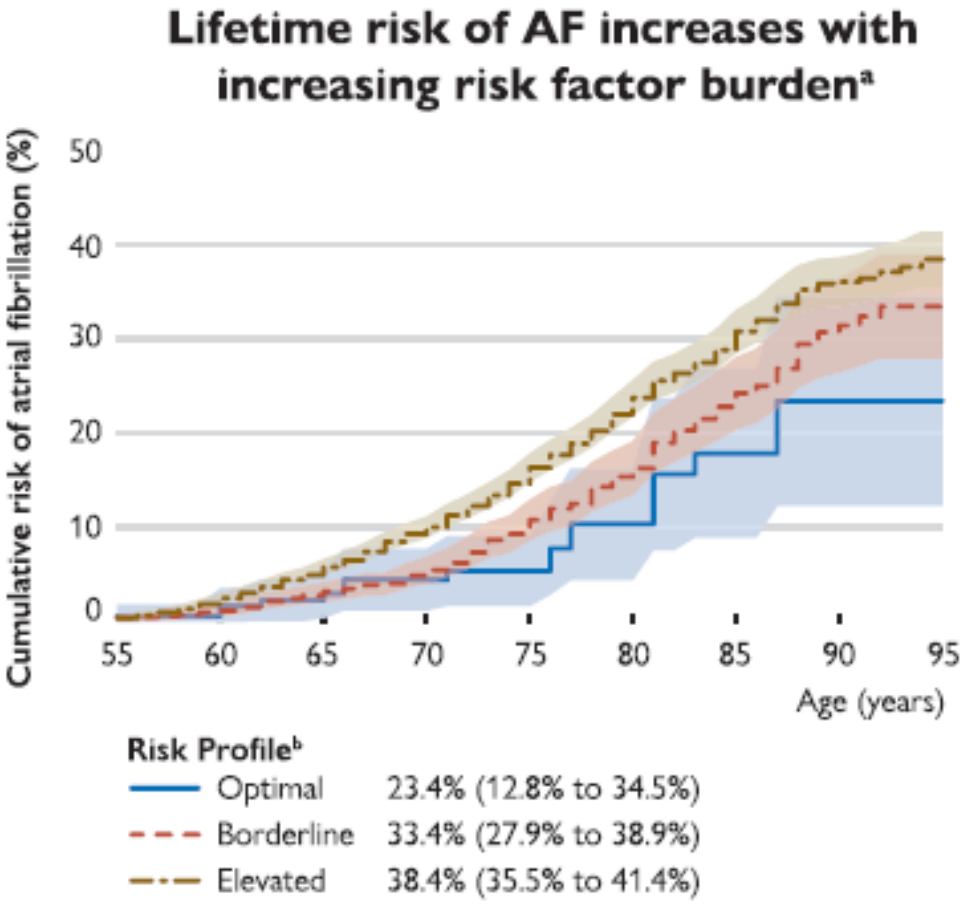
Sensitivity and specificity of various AF screening tools considering the 12-lead ECG as the gold standard

	Sensitivity	Specificity
Pulse taking[203]	87 - 97%	70 - 81%
Automated BP monitors[204–207]	93 - 100%	86 - 92%
Single lead ECG[208–211]	94 - 98%	76 - 95%
Smartphone apps[188,189,191,195,212,213]	91.5 - 98.5%	91.4 - 100%
Watches[196,198,213,214]	97 - 99%	83 - 94%

Détecter la FA : quels individus ciblés ?



AF screening: general or selected population ?



Risk factors (RF)

- Smoking
- Alcohol consumption
- Body mass index
- Blood pressure
- Diabete melitus
- History of myocardial infaction
- Heart failure

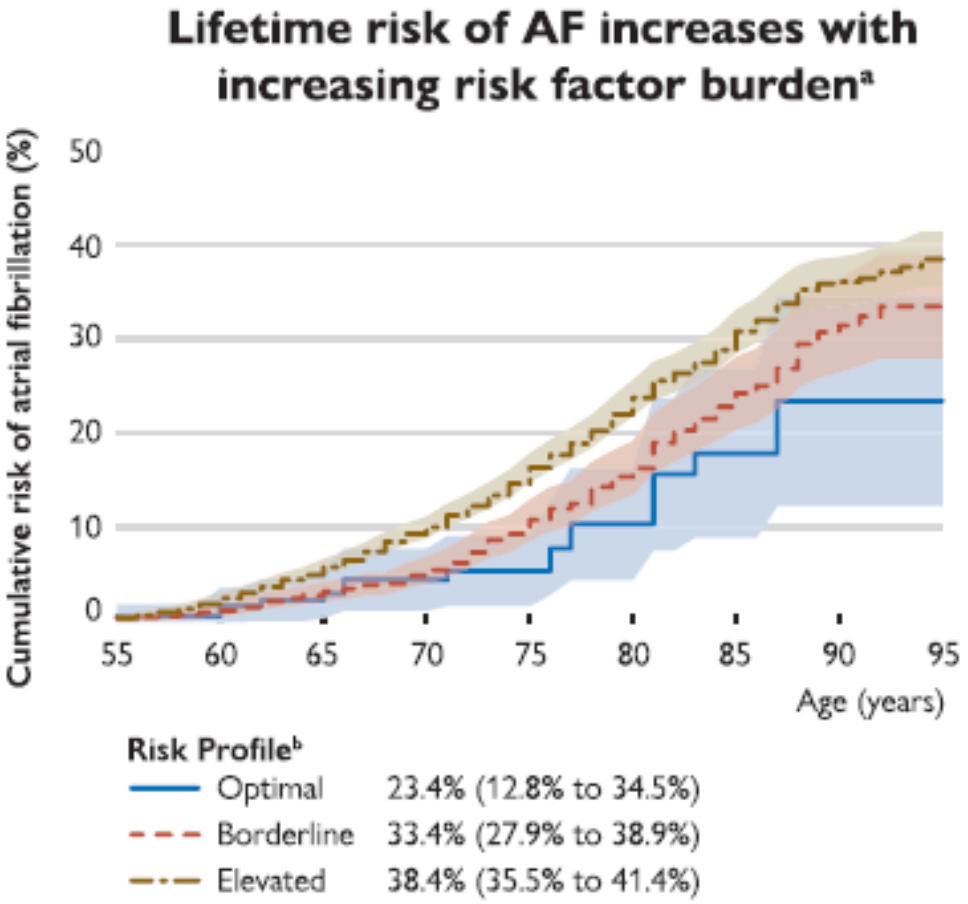
Risk profile

Optimal: all RF negative or in normal range

Bordeline: no elevated RF but > 1 bordeline RF

Elevated: > 1 elevated RF

AF screening: general or selected population ?



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AF risk profile + embolic risk factors: a new score to built and validate for AF detection ?

AF screening: general or selected population ?

Screening based on 12 lead surface ECG ?

Artificial intelligence-guided screening for atrial fibrillation using electrocardiogram during sinus rhythm: a prospective non-randomised interventional trial

Peter A Noseworthy, Zachi I Attia, Emma M Behnken, Rachel E Giblon, Katherine A Bews, Sijia Liu, Tara A Gosse, Zachery D Linn, Yihong Deng, Jun Yin, Bernard J Gersh, Jonathan Graff-Radford, Alejandro A Rabinstein, Konstantinos C Siontis, Paul A Friedman, Xiaoxi Yao

1003 patients - mean age of 74 years (SD 8·8) from 40 US states

Stroke risk factor – No AF

1 ECG and 30 day HR monitor

AI algorithm was applied to the ECGs to divide patients into high-risk or low-risk groups of AF

Mean 22·3 days of continuous monitoring

AF detected in : 6 (1·6%) of 370 patients with low risk

48 (7·6%) of 633 with high risk (odds ratio 4·98, 95% CI 2·11–11·75, p=0·0002)

Compared with usual care, AI-guided screening was associated with increased detection of atrial fibrillation

- high-risk group: 3·6% [95% CI 2·3–5·4] with usual care *vs* 10·6% [8·3–13·2] with AI-guided screening, p<0·0001

- low-risk group: 0·9% *vs* 2·4%, p=0·12)

median follow-up of 9·9 months (IQR 7·1–11·0).

Lancet 2022; 400: 1206–12

	Low AI risk (n=370)	High AI risk (n=633)	Total (n=1003)
Age, years			
Mean	71·9 (10·3)	75·2 (7·6)	74·0 (8·8)
Median	73 (67–79)	76 (71–81)	75 (69–80)
Gender			
Men	201 (54·3%)	419 (66·2%)	620 (61·8%)
Women	169 (45·7%)	214 (33·8%)	383 (38·2%)
Race			
White	353 (95·4%)	612 (96·7%)	965 (96·2%)
Black	7 (1·9%)	8 (1·3%)	15 (1·5%)
Asian	0	7 (1·1%)	7 (0·7%)
Other	6 (1·6%)	4 (0·6%)	10 (1·0%)
Unknown or choose not to disclose	4 (1·1%)	2 (0·3%)	6 (0·6%)
Medical history			
Diabetes	112 (30·3%)	195 (30·8%)	307 (30·6%)
CAD or PAD	112 (30·3%)	269 (42·5%)	381 (38·0%)
Heart failure	34 (9·2%)	142 (22·4%)	176 (17·5%)
Hypertension	295 (79·7%)	531 (83·9%)	826 (82·4%)
Ischaemic stroke, systemic embolism, or TIA	60 (16·2%)	73 (11·5%)	133 (13·3%)
CHA_2DS_2-VASc score	3·4 (1·2)	3·7 (1·3)	3·6 (1·2)

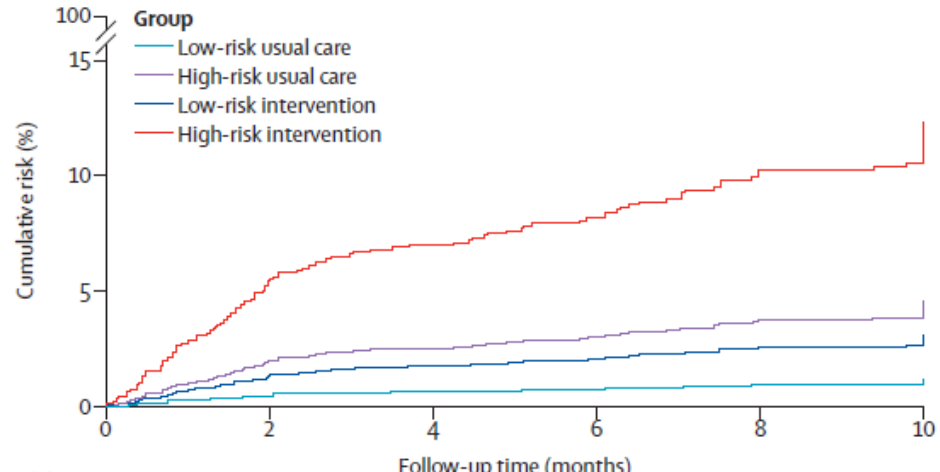
Data are mean (SD) or n (%). CAD=coronary artery disease. AI=artificial intelligence. PAD=peripheral artery disease. TIA=transient ischaemic attack.

Table 1: **Characteristics of the trial population at baseline**

	Low risk (n=370)	High risk (n=633)	Odds ratio (95% CI)	p value
Atrial fibrillation ≥30 s	6 (1·6%)	48 (7·6%)	4·98 (2·11–11·75)	0·0002
Atrial fibrillation ≥6 min	6 (1·6%)	40 (6·3%)	4·09 (1·72–9·75)	0·0015
Atrial fibrillation ≥24 h	1 (0·3%)	10 (1·6%)	5·92 (0·76–46·45)	0·091
Atrial fibrillation burden, %*	4·97 (6·78)	20·32 (37·78)	..	0·016
Longest episode of atrial fibrillation within 24 h, hours*	10·03 (8·57)	8·03 (9·45)	..	0·61
Time to atrial fibrillation diagnosis, days*	13·96 (8·20)	15·36 (10·26)	..	0·71

Data are n (%) or mean (SD), unless specified otherwise. *These outcomes were measured among patients who were diagnosed with atrial fibrillation.

Table 2: **Primary outcome and key secondary clinical outcomes**



Number at risk						
Low-risk usual care	342	341	338	236	149	90
High-risk usual care	661	648	638	570	412	382
Low-risk intervention	371	365	364	253	145	99
High-risk intervention	632	593	577	514	399	375

AF screening in selected population

Do we have strong proofs of clinical benefit ?

AF screening in selected population

Do we have strong proofs of clinical benefit ?

Embolic event prevention ?

Implantable loop recorder detection of atrial fibrillation to prevent stroke (The LOOP Study): a randomised controlled trial

Jesper H Svendsen, Søren Z Diederichsen, Søren Højberg, Derk W Krieger, Claus Graff, Christian Kronborg, Morten S Olesen, Jonas B Nielsen, Anders G Holst, Axel Brandes, Ketil J Haugan, Lars Køber

www.thelancet.com Published online August 29, 2021 https://doi.org/10.1016/S0140-6736(21)01698-6

Clinical outcomes in systematic screening for atrial fibrillation (STROKESTOP): a multicentre, parallel group, unmasked, randomised controlled trial

Emma Svennberg, Leif Friberg, Viveka Frykman, Faris Al-Khalili, Johan Engdahl, Mårten Rosenqvist**

www.thelancet.com Published online August 29, 2021 https://doi.org/10.1016/S0140-6736(21)01637-8

The LOOP Study

- Etude prospective randomisée danoise
- Patients: 70 – 90 ans
  pas de FA connue
  ≥ 1 facteur de risque (HTA, diabète, ATCD AIT/AVC, Ins Card)
- Randomisation 1/3 ILR ou soin usuel
- Groupe ILR: ACO recommandé si FA ≥ 6 mn
- Suivi 3 ans
- Critère primaire d'évaluation: délai pour AIT/AVC ou embolie systémique

The LOOP Study

	ILR group (n=1501)	Control group (n=4503)
Sex		
Women	709 (47·2%)	2128 (47·3%)
Men	792 (52·8%)	2375 (52·7%)
Age, years	74·7 (4·1)	74·7 (4·1)
Comorbidities		
Hypertension	1378 (91·8)	4066 (90·3%)
Diabetes	422 (28·1)	1288 (28·6%)
Heart failure	67 (4·5%)	199 (4·4%)
Previous stroke	262 (17·5%)	794 (17·6%)
Previous transient ischaemic attack	155 (10·3%)	473 (10·5%)
Previous stroke, transient ischaemic attack, or systemic arterial embolism	370 (24·7%)	1139 (25·3%)

	ILR group (n=1501)	Control group (n=4503)
(Continued from previous column)		
CHA_2DS_2VASc score	4 (3–4)	4 (3–4)
2	202 (13·5%)	602 (13·4%)
3	513 (34·2%)	1494 (33·2%)
4	419 (27·9%)	1312 (29·1%)
5	244 (16·3%)	687 (15·3%)
≥6	123 (8·2%)	408 (9·1%)

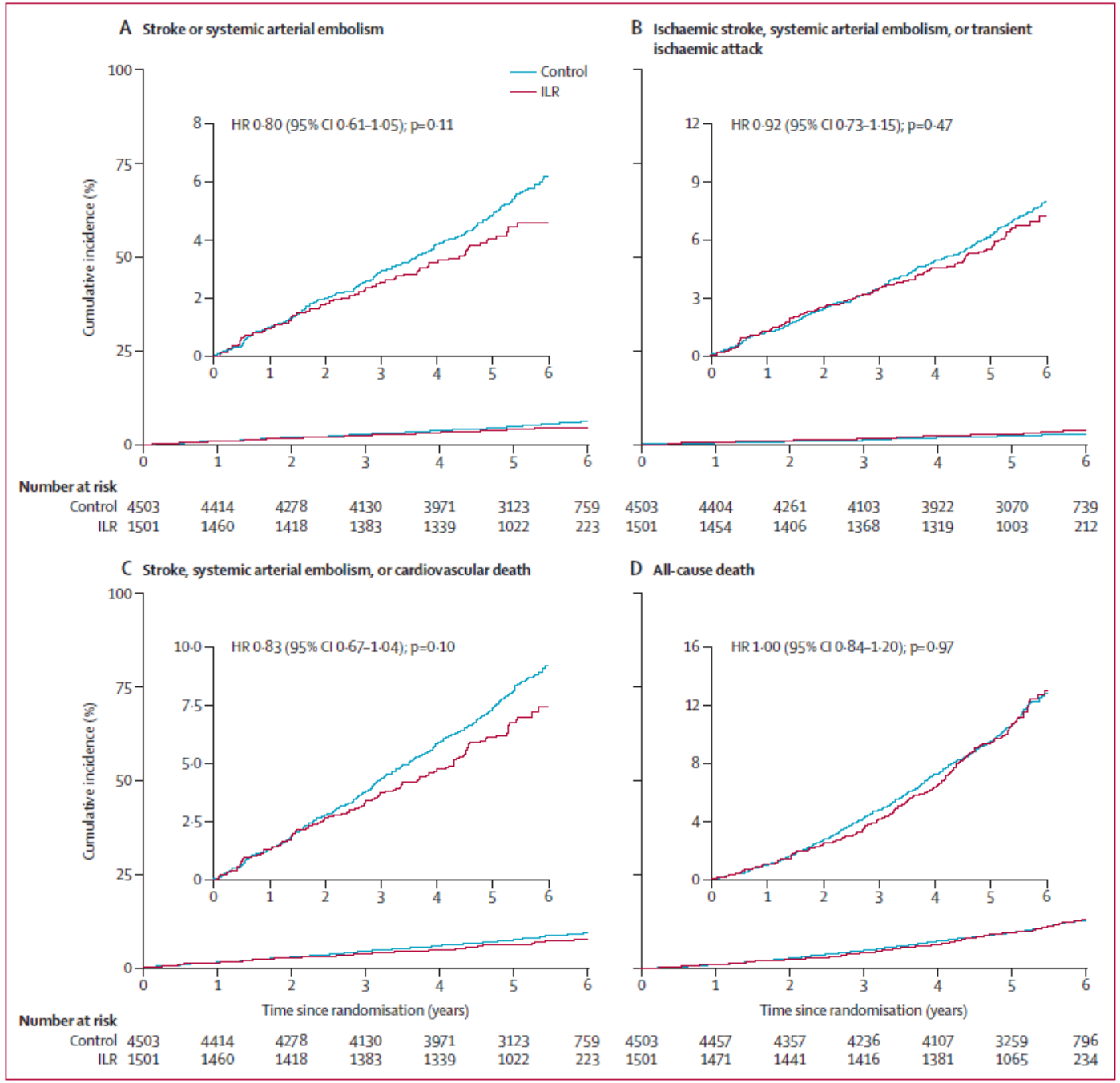
The LOOP Study

	Number of events		Cumulative incidence rate at 6 years (95% CI)		Events per 100 person-years (95% CI)		Hazard ratio (95% CI)	p value
	ILR group (n=1501)	Control group (n=4503)	ILR group	Control group	ILR group	Control group		
Stroke or systemic arterial embolism	67 (4·5%)	251 (5·6%)	4·61 (3·50–5·73)	6·22 (5·41–7·03)	0·88 (0·68–1·12)	1·09 (0·96–1·24)	0·80 (0·61–1·05)	0·11
Ischaemic stroke, systemic arterial embolism, or transient ischaemic attack	96 (6·4%)	316 (7·0%)	7·20 (5·71–8·70)	7·94 (7·03–8·86)	1·27 (1·03–1·55)	1·39 (1·24–1·55)	0·92 (0·73–1·15)	0·47
Stroke, systemic arterial embolism, or cardiovascular death	104 (6·9%)	376 (8·3%)	7·44 (5·95–8·93)	9·16 (8·20–10·12)	1·36 (1·11–1·65)	1·64 (1·48–1·81)	0·83 (0·67–1·04)	0·10
Cardiovascular death	43 (2·9%)	157 (3·5%)	3·23 (2·16–4·30)	3·77 (3·14–4·40)	0·55 (0·40–0·74)	0·67 (0·57–0·78)	0·83 (0·59–1·16)	0·27
All-cause death	168 (11·2%)	507 (11·3%)	13·02 (10·96–15·08)	12·80 (11·65–13·96)	2·16 (1·84–2·51)	2·16 (1·97–2·35)	1·00 (0·84–1·19)	1·00
Major bleeding	65 (4·3%)	156 (3·5%)	4·88 (3·67–6·10)	3·69 (3·10–4·29)	0·85 (0·66–1·08)	0·67 (0·57–0·79)	1·26 (0·95–1·69)	0·11
Haemorrhagic stroke	11 (0·8%)	34 (0·8%)	0·80 (0·32–1·29)	0·81 (0·53–1·10)	0·14 (0·07–0·25)	0·14 (0·10–0·20	0·97 (0·49–1·92)	0·94
Traumatic intracranial haemorrhage	10 (0·9%)	36 (0·8%)	0·81 (0·29–1·33)	0·90 (0·59–1·21)	0·13 (0·06–0·24)	0·15 (0·11–0·21	0·84 (0·41–1·68)	0·61
Atrial fibrillation	477 (31·8%)	550 (12·2%)	32·24 (29·84–34·65)	13·62 (12·47–14·78)	8·04 (7·34–8·80)	2·48 (2·27–2·69)	3·17 (2·81–3·59)	<0·0001
Oral anticoagulation	445 (29·7%)	591 (13·1%)	30·25 (27·82–32·67)	14·58 (13·37–15·79)	7·39 (6·72–8·11)	2·68 (2·46–2·90)	2·72 (2·41–3·08)	<0·0001

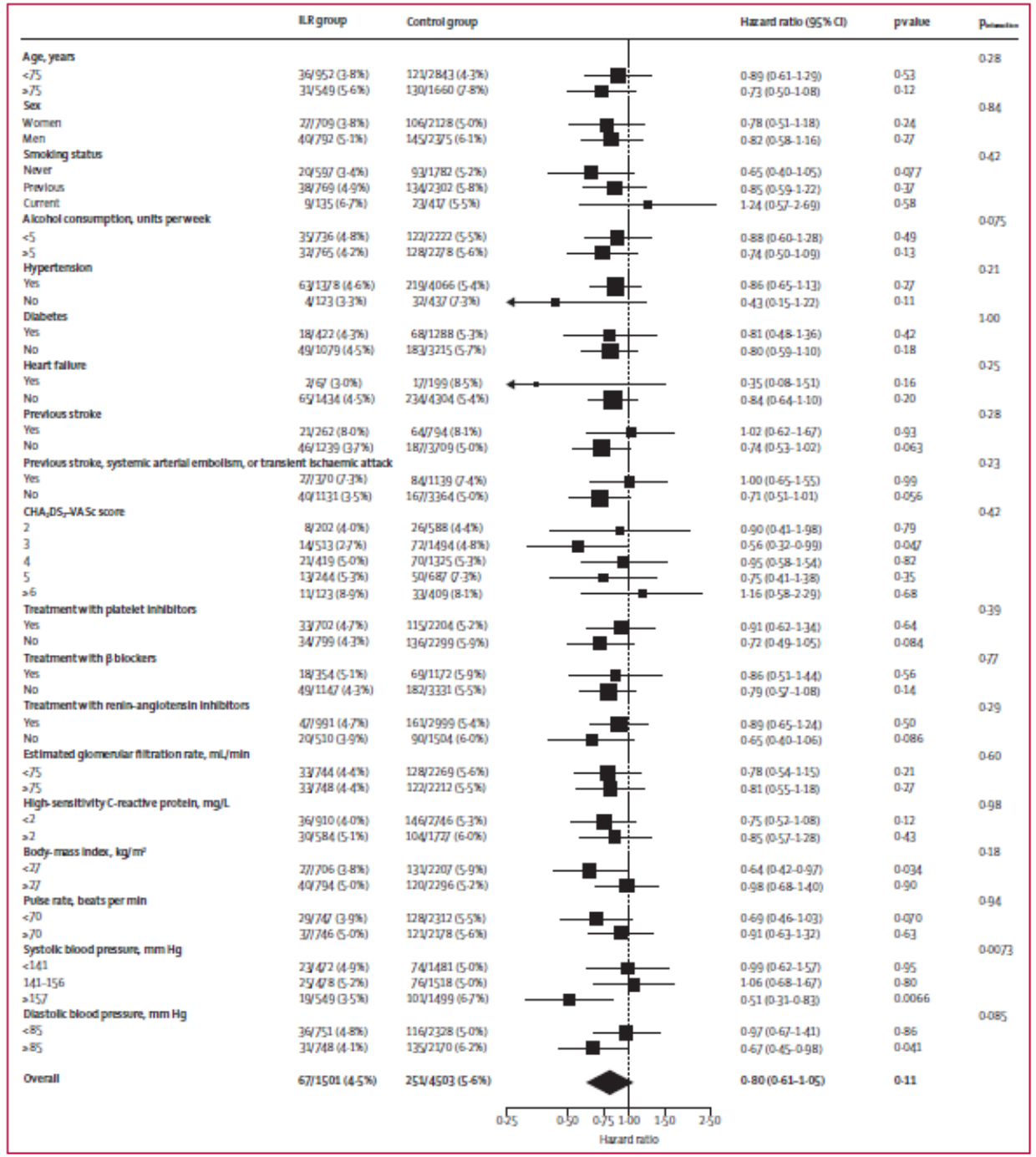
Data are n (%) or as specified. ILR=implantable loop recorder.

Table 2: **Outcomes and adverse events**

The LOOP Study



The LOOP Study



The loop study - Conclusion

In conclusion, in this trial of individuals at high risk of stroke, screening for atrial fibrillation using long-term continuous monitoring by ILR resulted in a three-times increase in detection of atrial fibrillation and concomitant anticoagulation, but no significant decrease in the risk of stroke or systemic arterial embolism.

The STROKESTOP Study

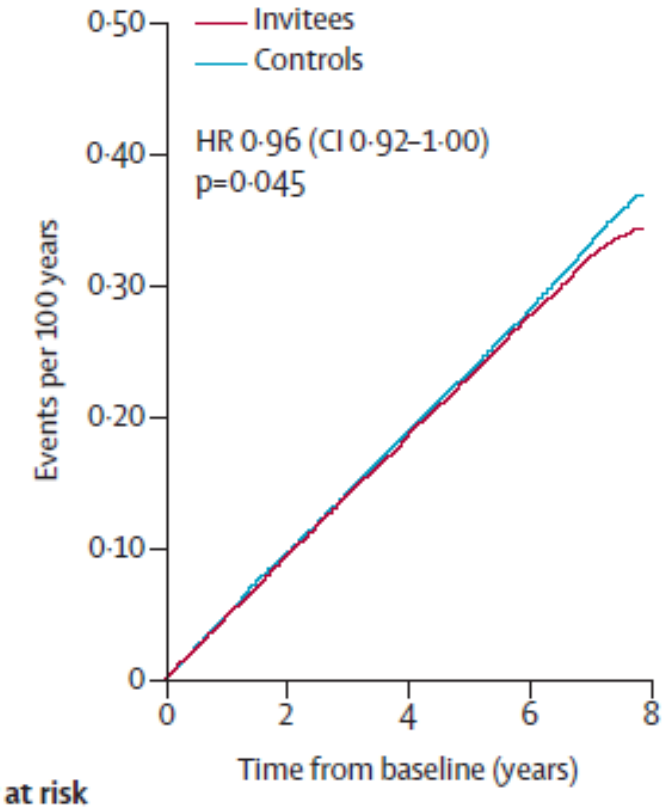
- Etude multicentrique randomisée ouverte suédoise (2 régions)
- Age 75 ou 76 ans
- Groupe « actif »: ECG 1 dérivation 2 fois par jour pendant 2 semaines
- Diagnostic FA: 1 épisode $\geq$ 30 s ou $\geq$ 2 épisodes 10 à 29 s
- Si FA détectée consultation cardiologique pour introduction ACO
- Suivi 5 ans
- Critère d'évaluation primaire: AIT/AVC ischémique ou hémorragique, embolie systémique, hospitalisation pour saignement, décès toute cause

STROKESTOP Study

	Randomly assigned groups		Within the invited to screening group		
	Invited to screening (n=13 979)	Control group (n=13 996)	Participants (n=7165)	Non-participants (n=6814)	p value*
Demographic and socioeconomic factors					
Age, years	76·0 (75·5–76·6)	76·0 (75·5–76·6)	75·8 (75·3–76·3)	76·2 (75·7–76·8)	<0·0001
Women	7637 (54·6%)	7636 (54·6%)	3863 (53·9%)	3774 (55·4%)	0·081
Medical history					
CHA_2DS_2VASC‡ score	3·5 (1·3)	3·5 (1·3)	3·3 (1·1)	3·7 (1·4)	<0·0001
Ischaemic stroke, transient ischaemic attack, or systemic embolism	1557 (11·1%)	1513 (10·8%)	634 (8·8%)	923 (13·5%)	<0·0001
Heart failure	1045 (7·5%)	1098 (7·8%)	341 (4·8%)	704 (10·3%)	<0·0001
Hypertension	4963 (35·5%)	4980 (35·6%)	2262 (31·6%)	2701 (39·6%)	<0·0001
Vascular disease§	1632 (11·7%)	1686 (12·0%)	649 (9·1%)	983 (14·4%)	<0·0001
Diabetes	2115 (15·1%)	2107 (15·1%)	829 (11·6%)	1286 (18·9%)	<0·0001
Chronic kidney disease	303 (2·2%)	356 (2·5%)	77 (1·1%)	226 (3·3%)	<0·0001

STROKESTOP Study	Invited to screening			Control group			Hazard ratio (95% CI)	p value
	Events*	Years at risk	Events per 100 years (95% CI)	Events*	Years at risk	Events per 100 years (95% CI)		
Composite primary endpoint†	4456	81757	5·45 (5·29–5·61)	4616	81262	5·68 (5·52–5·85)	0·96 (0·92–1·00)	0·045
Ischaemic stroke	766	85068	0·90 (0·84–0·97)	830	84574	0·98 (0·92–1·05)	0·92 (0·83–1·01)	0·084
Haemorrhagic stroke	137	86727	0·16 (0·13–0·19)	155	86309	0·18 (0·15–0·21)	0·88 (0·70–1·11)	0·27
Systemic embolism	60	86808	0·07 (0·05–0·09)	54	86531	0·06 (0·05–0·08)	1·10 (0·76–1·59)	0·60
Hospitalisation for major bleeding	1431	83490	1·71 (1·63–1·81)	1448	83084	1·74 (1·66–1·83)	0·98 (0·91–1·06)	0·65
Death from any cause	3177	86930	3·65 (3·53–3·78)	3287	86614	3·79 (3·67–3·93)	0·96 (0·92–1·01)	0·12
Ischaemic stroke or systemic thromboembolism as randomly assigned	812	84952	0·96 (0·89–1·02)	874	84514	1·03 (0·97–1·11)	0·92 (0·84–1·02)	0·10
Ischaemic stroke or systemic thromboembolism as treated	372	47203	0·79 (0·71–0·87)	874	84514	1·03 (0·97–1·11)	0·76 (0·67–0·85)	<0·0001
New clinical diagnosis of dementia	1164	84258	1·38 (1·30–1·46)	1217	83805	1·45 (1·37–1·54)	0·95 (0·88–1·03)	0·20
Cardiovascular death	1211	86930	1·39 (1·32–1·47)	1197	86614	1·38 (1·31–1·46)	1·01 (0·93–1·09)	0·87
Cardiovascular hospitalisation	3633	76265	4·76 (4·61–4·92)	3659	75919	4·82 (4·67–4·98)	0·99 (0·94–1·04)	0·63
Primary endpoint with the addition of cardiovascular hospitalisation	6101	74283	8·21 (8·01–8·42)	6191	73834	8·38 (8·18–8·60)	0·98 (0·95–0·01)	0·26
Ischaemic or haemorrhagic stroke or dementia	1981	79982	2·48 (2·37–2·59)	2077	79724	2·61 (2·50–2·72)	0·95 (0·89–1·01)	0·098
Pulmonary embolism or venous thromboembolism	577	84873	0·68 (0·63–0·74)	564	84809	0·67 (0·61–0·72)	1·02 (0·91–1·15)	0·71

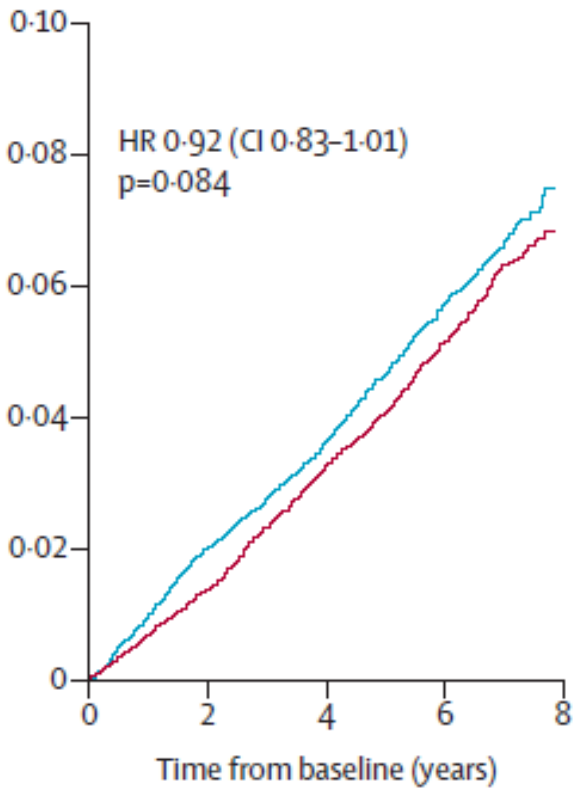
STROKESTOP Study



Number at risk

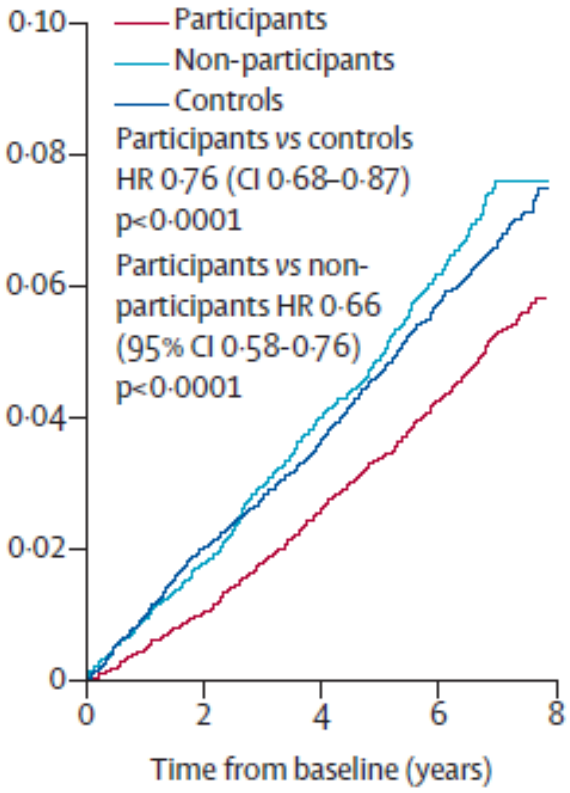
Invitees	13979	12639	11342	9747	..
Controls	13996	12614	11300	9727	..

Primary endpoint



	13979	12960	11929	10470	..
	13996	12929	11880	10437	..

Ischaemic stroke



Participants	7165	6914	6558	5933	..
Non-participants	6814	6046	5369	4357	..
Controls	13996	12929	11880	10437	

Ischaemic stroke

STROKESTOP Study - Conclusions

Screening for atrial fibrillation in an older population showed a significant benefit by reducing hard clinical outcomes. Screening for atrial fibrillation is likely to show a greater difference in outcomes in populations with lower spontaneous detection of atrial fibrillation, as well as in settings with higher participation rates.

AF screening in selected population

Do we have strong proofs of clinical benefit ?

Rhythm management ?

ESC European Society of Cardiology

European Heart Journal (2022) **43**, 1219–1230
https://doi.org/10.1093/eurheartj/ehab593

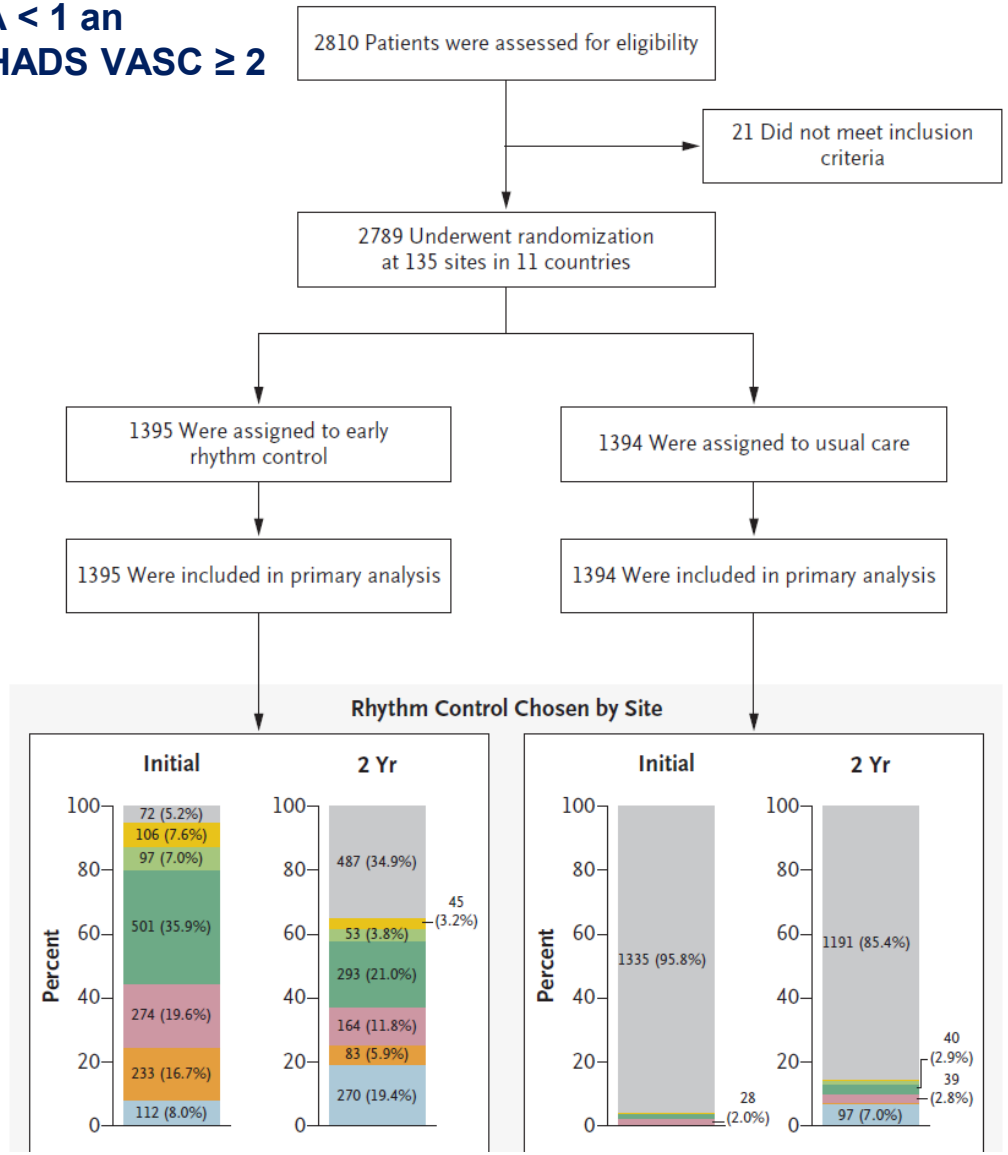
FASTTRACK CLINICAL RESEARCH
Arrhythmias

Systematic, early rhythm control strategy for atrial fibrillation in patients with or without symptoms: the EAST-AFNET 4 trial

Stephan Willems[1,2,3], Katrin Borof[4], Axel Brandes [5,6], Günter Breithardt [3,7], A. John Camm[8], Harry J.G.M. Crijns[9], Lars Eckardt[3,7], Nele Gessler [1,2], Andreas Goette[6,10,11], Laurent M. Haegeli[12,13], Hein Heidbuchel[14], Josef Kautzner[15], G. André Ng [16], Renate B. Schnabel [2,4], Anna Suling[17], Lukasz Szumowski[18], Sakis Themistoclakis [19], Panos Vardas[20], Isabelle C. van Gelder[21], Karl Wegscheider [2,3,15], and Paulus Kirchhof [2,3,4,22]*

EAST AFNET trial

FA < 1 an
CHADS VASC ≥ 2



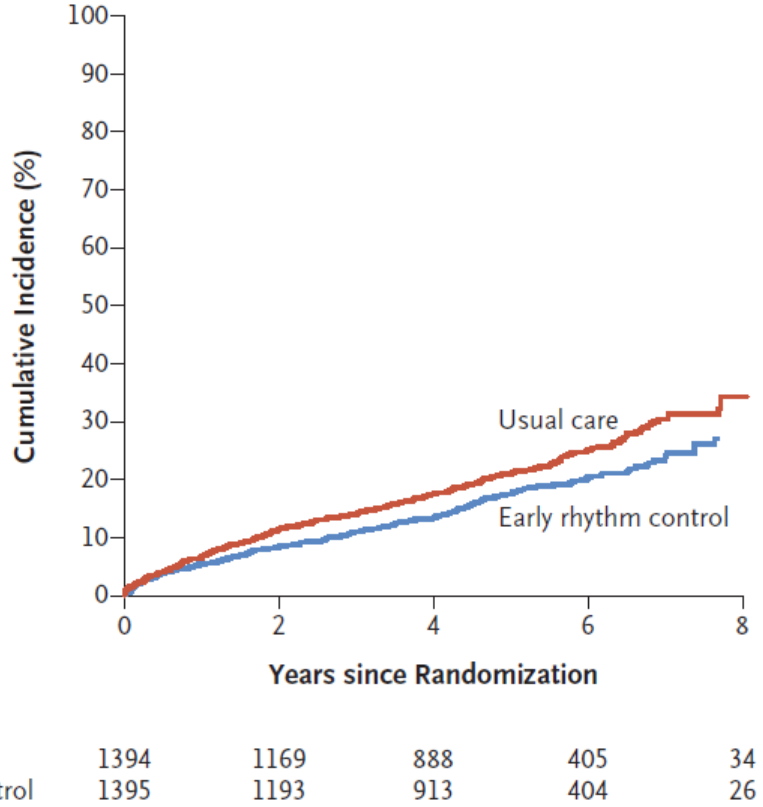


Figure 2. Aalen–Johansen Cumulative-Incidence Curves for the First Primary Outcome.

The first primary outcome was a composite of death from cardiovascular causes, stroke, or hospitalization with worsening of heart failure or acute coronary syndrome.

P Kirchhhof, et al. N Engl J Med 2020

Analyse de EAST-AFNET selon les symptômes

EAST – AFNET 4 trial population

2789 patients with atrial fibrillation diagnosed within a year prior to randomization and cardiovascular conditions approximating a CHA_2DS_2VASc score of ≥ 2

2633 with known AF-related symptoms (EHRA score) at baseline

randomized to Early Rhythm Control or Usual Care

Early Rhythm Control in all patients (n=1305/2633)		**Usual Care, including symptom-directed rhythm control therapy** (n=1328/2633)	
Asymptomatic at baseline (n=395)	**Symptomatic** at baseline (n=910)	**Asymptomatic** at baseline (n=406)	**Symptomatic** at baseline (n=922)

No difference in treatment pattern between asymptomatic and symptomatic patients.
Excellent symptom control in both randomized groups at two years.

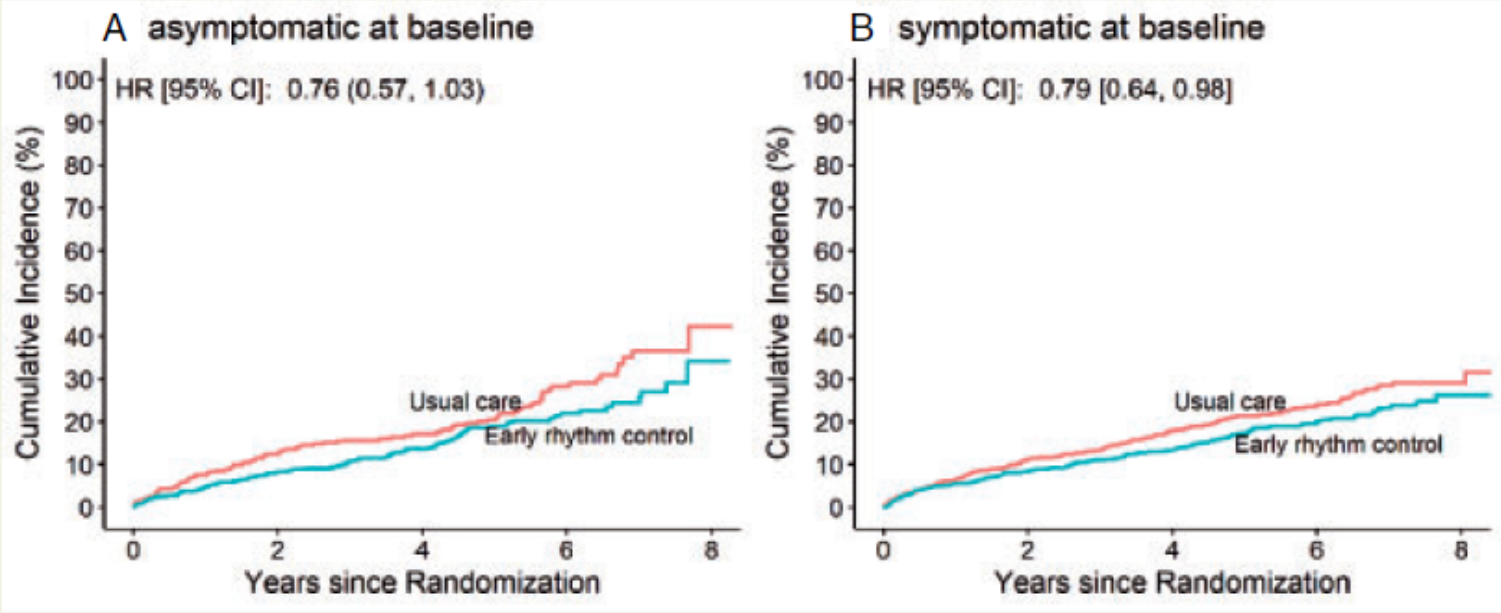
Ca. 1/4 treated with AF ablation and 3/4 treated with antiarrhythmic drugs at 2 years

Ca. 8% treated with AF ablation and 9% treated with antiarrhythmic drugs at 2 years

Willems S, et al. Eur Heart J 2022

Analyse de EAST-AFNET selon les symptômes

Similar reduction of cardiovascular death, stroke, or hospitalisation for heart failure or acute coronary syndrome in symptomatic and asymptomatic patients



Our findings support the systematic, early initiation of rhythm control therapy in asymptomatic patients with atrial fibrillation and concomitant cardiovascular conditions.

Willems S, et al. Eur Heart J 2022

Détecter la FA

It is recommended to interrogate pacemakers and implantable cardioverter defibrillators on a regular basis for AHRE.[c224,226]	I	B

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

August 25 2023

Anticoagulation with Edoxaban in Patients with Atrial High-Rate Episodes

P. Kirchhof, T. Toennis, A. Goette, A.J. Camm, H.C. Diener, N. Becher, E. Bertaglia, C. Blomstrom Lundqvist, M. Borlich, A. Brandes, N. Cabanelas, M. Calvert, G. Chlouverakis, G.-A. Dan, J.R. de Groot, W. Dichtl, B. Kravchuk, A. Lubiński, E. Marijon, B. Merkely, L. Mont, A.-K. Ozga, K. Rajappan, A. Sarkozy, D. Scherr, R. Sznajder, V. Velchev, D. Wichterle, S. Sehner, E. Simantirakis, G.Y.H. Lip, P. Vardas, U. Schotten, and A. Zapf, for the NOAH-AFNET 6 Investigators*

Device-detected atrial high-rate episodes (AHREs)
Age ≥ 65 years
1 additional stroke risk factor
AHREs lasting at least 6 mn
1:1 Randomization Edoxaban or placebo

Primary efficacy outcome: composite of CV death, stroke, systemic embolism

Safety outcome: death from any cause or major bleeding

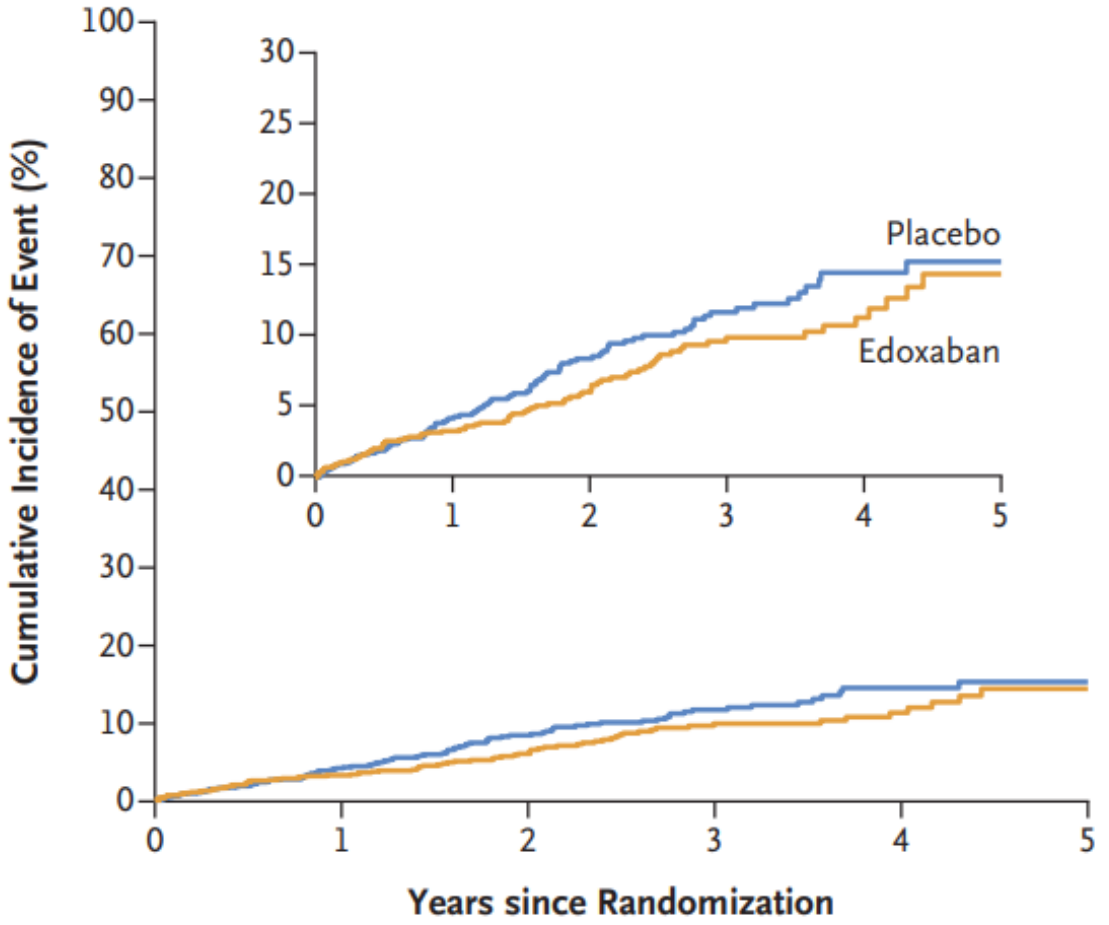
Patient characteristics

Characteristic	Edoxaban (N=1270)	Placebo (N=1266)	Total (N=2536)
Age — yr	77.4±6.5	77.5±6.8	77.5±6.7
Age ≥75 yr — no./total no. (%)	845/1270 (66.5)	855/1266 (67.5)	1700/2536 (67.0)
Female sex — no./total no. (%)	469/1270 (36.9)	480/1266 (37.9)	949/2536 (37.4)
Device used to record AHREs — no./total no. (%)			
Pacemaker	1017/1270 (80.1)	1055/1266 (83.3)	2072/2536 (81.7)
Defibrillator	100/1270 (7.9)	88/1266 (7.0)	188/2536 (7.4)
Cardiac resynchronization device	138/1270 (10.9)	113/1266 (8.9)	251/2536 (9.9)
Implanted loop recorder	15/1270 (1.2)	10/1266 (0.8)	25/2536 (1.0)
Median duration of AHREs (IQR) — hr†	2.8 (0.8–9.2)	2.8 (0.7–9.5)	2.8 (0.8–9.4)
AHREs with atrial rates >200 beats/ min — no./total no. (%)	918/944 (97.2)	896/925 (96.9)	1814/1869 (97.1)
Median CHA_2DS_2-VASc score (IQR)‡	4 (3–5)	4 (3–5)	4 (3–5)
Median CHA_2DS_2-VA score (IQR)‡	3 (3–4)	3 (3–4)	3 (3–4)
Heart failure — no./total no. (%)§	361/1270 (28.4)	335/1266 (26.5)	696/2536 (27.4)
Hypertension — no./total no. (%)¶	1096/1270 (86.3)	1109/1266 (87.6)	2205/2536 (86.9)
Diabetes mellitus — no./total no. (%)	350/1270 (27.6)	331/1266 (26.1)	681/2536 (26.9)
Previous stroke or transient ischemic attack — no./total no. (%)	122/1270 (9.6)	131/1266 (10.3)	253/2536 (10.0)

Efficacy outcome

Outcome	Edoxaban (N=1270)	Placebo (N=1266)	Adjusted Hazard Ratio (95% CI)
	no. of patients with event/patient-yr (% per patient-yr)		
Primary composite efficacy outcome†	83/2557 (3.2)	101/2495 (4.0)	0.81 (0.60 to 1.08)‡
Ischemic stroke	22/2573 (0.9)	27/2519 (1.1)	0.79 (0.45 to 1.39)
Systemic embolism	14/2579 (0.5)	28/2515 (1.1)	0.51 (0.27 to 0.96)
Myocardial infarction	10/2589 (0.4)	16/2524 (0.6)	—
Pulmonary embolism	3/2589 (0.1)	9/2533 (0.4)	—
Peripheral limb embolism	1/2592 (<0.1)	3/2536 (0.1)	—
Abdominal embolism	0	1/2540 (<0.1)	—
Cardiovascular death	52/2595 (2.0)	57/2540 (2.2)	0.90 (0.62 to 1.31)
Death due to acute myocardial infarction	1/2595 (<0.1)	4/2540 (0.2)	—
Sudden cardiac death	18/2595 (0.7)	13/2540 (0.5)	—
Death due to heart failure	13/2595 (0.5)	15/2540 (0.6)	—
Death due to stroke	1/2595 (<0.1)	3/2540 (0.1)	—
Death due to cardiovascular hemorrhage	2/2595 (0.1)	1/2540 (<0.1)	—
Death due to other cardiovascular cause	1/2595 (<0.1)	4/2540 (0.2)	—
Death of unknown cause, counted as cardiovascular cause	16/2595 (0.6)	17/2540 (0.7)	—
Major adverse cardiovascular event§	92/2532 (3.6)	102/2485 (4.1)	0.89 (0.67 to 1.18)
Ischemic stroke or systemic embolism	25/2566 (1.0)	38/2509 (1.5)	0.65 (0.39 to 1.07)

Stroke, systemic embolism, CV death

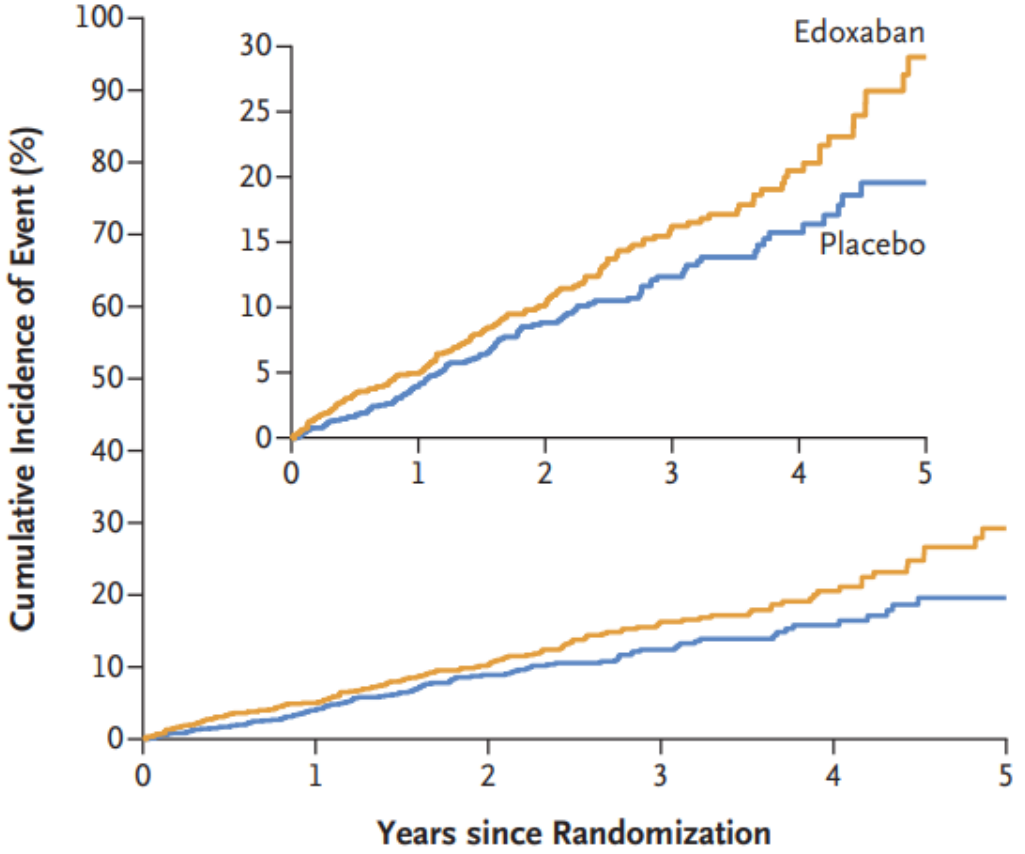


No. at Risk (no. of events)						
Edoxaban	1270 (37)	873 (20)	559 (19)	327 (3)	148 (4)	42
Placebo	1266 (44)	822 (30)	534 (16)	329 (7)	137 (1)	50

Safety outcome

Outcome	Edoxaban (N = 1270)	Placebo (N = 1266)	Adjusted Hazard Ratio (95% CI)	P Value
	no. of patients with event/patient-yr (% per patient-yr)			
Composite safety outcome†	149/2534 (5.9)	114/2508 (4.5)	1.31 (1.02 to 1.67)	0.03
Death from any cause	111/2595 (4.3)	94/2540 (3.7)	1.16 (0.88 to 1.53)	0.28
Cardiovascular death	52/2595 (2.0)	57/2540 (2.2)	—	—
Cancer-related death	22/2595 (0.8)	9/2540 (0.4)	—	—
Covid-19–associated death	15/2595 (0.6)	12/2540 (0.5)	—	—
Death due to acute infection or sepsis	12/2595 (0.5)	9/2540 (0.4)	—	—
Death due to frailty or old age	3/2595 (0.1)	2/2540 (0.1)	—	—
Death due to accident or poly-trauma	3/2595 (0.1)	1/2540 (<0.1)	—	—
Death due to lung disease	2/2595 (0.1)	1/2540 (<0.1)	—	—
Death due to acute abdomen	0	2/2540 (0.1)	—	—
Kidney-related death	1/2595 (<0.1)	0	—	—
Dementia-related death	0	1/2540 (<0.1)	—	—
Suicide	1/2595 (<0.1)	0	—	—
Major bleeding	53/2534 (2.1)	25/2508 (1.0)	2.10 (1.30 to 3.38)	0.002
Mean no. of major bleeding events per patient	0.06±0.35	0.02±0.16	3.06 (1.74 to 5.36)‡	<0.001

Major bleeding or death from any cause



No. at Risk (no. of events)

Edoxaban	1270 (57)	866 (41)	551 (30)	324 (11)	145 (10)	44
Placebo	1266 (42)	829 (36)	538 (17)	332 (9)	138 (5)	49

American Heart Journal
Volume 189, July 2017, Pages 137-145

Rationale and design of the Apixaban for the Reduction of Thrombo-Embolism in Patients With Device-Detected Sub-Clinical Atrial Fibrillation (ARTESiA) trial

Inclusion Criteria:

1.Permanent pacemaker or defibrillator (with or without resynchronization) or insertable cardiac monitor capable of detecting SCAF

1.At least one episode of SCAF ≥ 6 minutes in duration but no single episode > 24 hours in duration at any time

2.Age ≥ 55 years

3.Risk Factor(s) for Stroke:

- **Previous stroke, TIA or systemic arterial embolism**
- **or Age at least 75**
- **or Age 65-74 with at least 2 other risk factors**
- **or Age 55-64 with at least 3 other risk factors**

Randomization: Apixaban vs aspirin 81 mg

Efficacy endpoint: ischemic stroke and ischemic embolism

Safety outcome: major bleeding

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Article soumis au NEJM le 25 septembre 2023

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Efficacy endpoint: ischemic stroke and ischemic embolism

Safety outcome: major bleeding

Dépister la FA asymptomatique: synthèse

- **Prévention du risque embolique:**

  des études d'intervention non concluantes

  que nous dira ARTESIA ?

- **Contrôle du rythme:**

  une piste à creuser

Pour la pratique en 2023 ?

Suivons les recommandations en vigueur…

Pour la pratique en 2024 ?

RDV au congrès de l'ESC en 2024…

EUROPEAN SOCIETY OF CARDIOLOGY®

ESC Congress 2024

European Society of Cardiology Congress
Dates: 8/30/2024 - 9/2/2024
Venue: London, London, United Kingdom

Pour la pratique en 2024 ?

RDV à CARDIORUN 2024 ?