Détecter la FA

Philippe Mabo
Université Rennes 1, CHU de Rennes

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

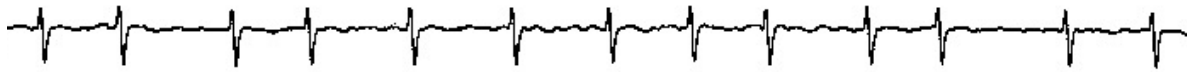
The Task Force for the diagnosis and management of atrial fibrillation of the European Society of Cardiology (ESC)

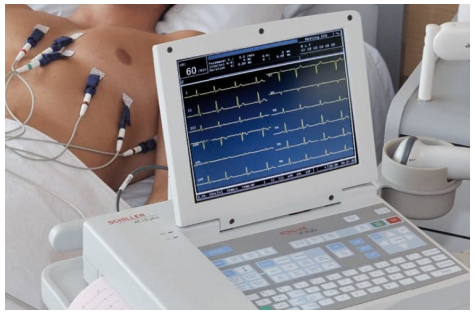
Developed with the special contribution of the European Heart Rhythm Association (EHRA) of the ESC

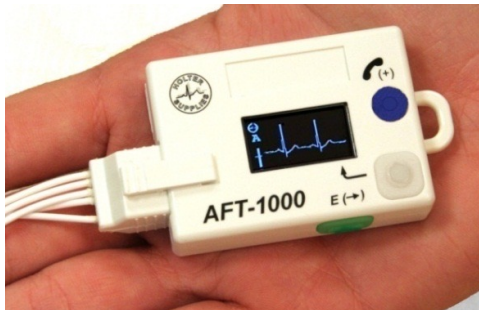
Authors/Task Force Members: Gerhard Hindricks* (Chairperson) (Germany), Tatjana Potpara* (Chairperson) (Serbia), Nikolaos Dagres (Germany), Elena Arbelo (Spain), Jeroen J. Bax (Netherlands), Carina Blomström-Lundqvist (Sweden), Giuseppe Boriani (Italy), Manuel Castella[1] (Spain), Gheorghe-Andrei Dan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

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





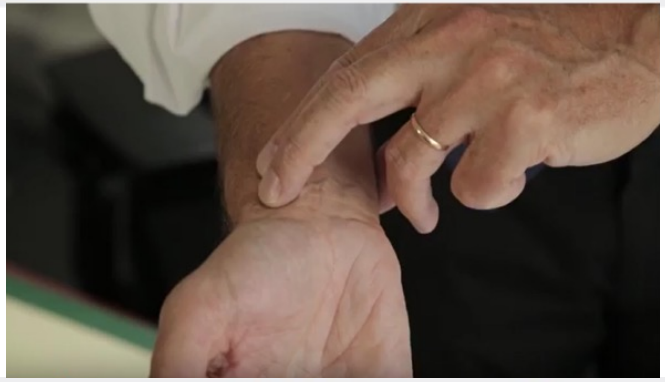


ECG 12 D

Tracé monopiste ≥ 30 s

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



Détecter la FA

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)

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

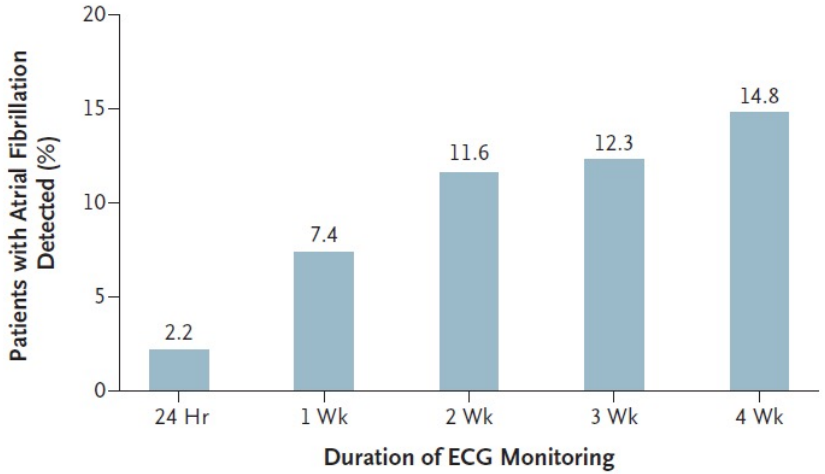
Atrial Fibrillation in Patients with Cryptogenic Stroke

David J. Gladstone, M.D., Ph.D., Melanie Spring, M.D., Paul Dorian, M.D., Val Panzov, M.D., Kevin E. Thorpe, M.Math., Judith Hall, M.Sc., Haris Vaid, B.Sc., Martin O'Donnell, M.B., Ph.D., Andreas Laupacis, M.D., Robert Côté, M.D., Mukul Sharma, M.D., John A. Blakely, M.D., Ashfaq Shuaib, M.D., Vladimir Hachinski, M.D., D.Sc., Shelagh B. Coutts, M.B., Ch.B., M.D., Demetrios J. Sahlas, M.D., Phil Teal, M.D., Samuel Yip, M.D., J. David Spence, M.D., Brian Buck, M.D., Steve Verreault, M.D., Leanne K. Casaubon, M.D., Andrew Penn, M.D., Daniel Selchen, M.D., Albert Jin, M.D., David Howse, M.D., Manu Mehdiratta, M.D., Karl Boyle, M.B., B.Ch., Richard Aviv, M.B., Ch.B., Moira K. Kapral, M.D., and Muhammad Mamdani, Pharm.D., M.P.H., for the EMBRACE Investigators and Coordinators*

Cryptogenic Stroke and Underlying Atrial Fibrillation

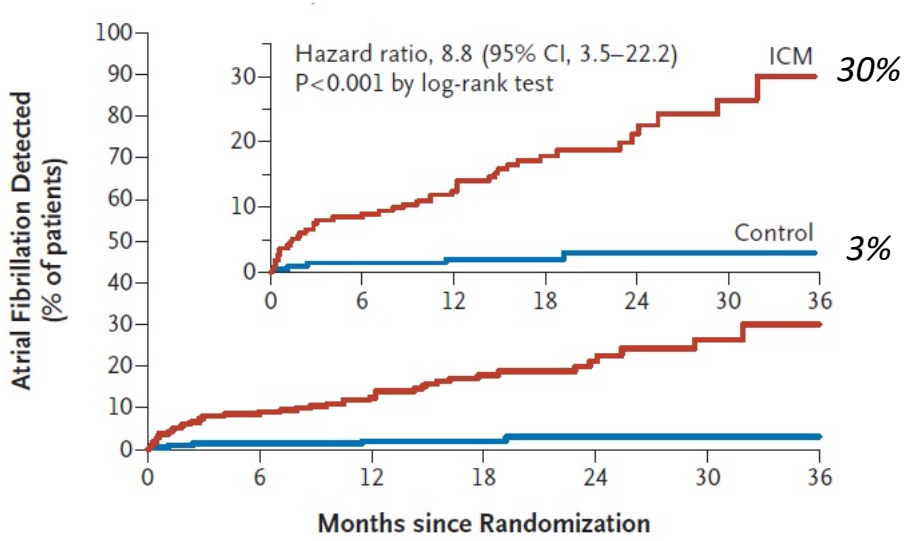
Tommaso Sanna, M.D., Hans-Christoph Diener, M.D., Ph.D., Rod S. Passman, M.D., M.S.C.E., Vincenzo Di Lazzaro, M.D., Richard A. Bernstein, M.D., Ph.D., Carlos A. Morillo, M.D., Marilyn Mollman Rymer, M.D., Vincent Thijs, M.D., Ph.D., Tyson Rogers, M.S., Frank Beckers, Ph.D., Kate Lindborg, Ph.D., and Johannes Brachmann, M.D., for the CRYSTAL AF Investigators*

EMBRACE



. 572 patients
. Holter 24h *vs.* 30 jours
. 3 mois: 3.2% *vs.* 16.1%, p<0.001

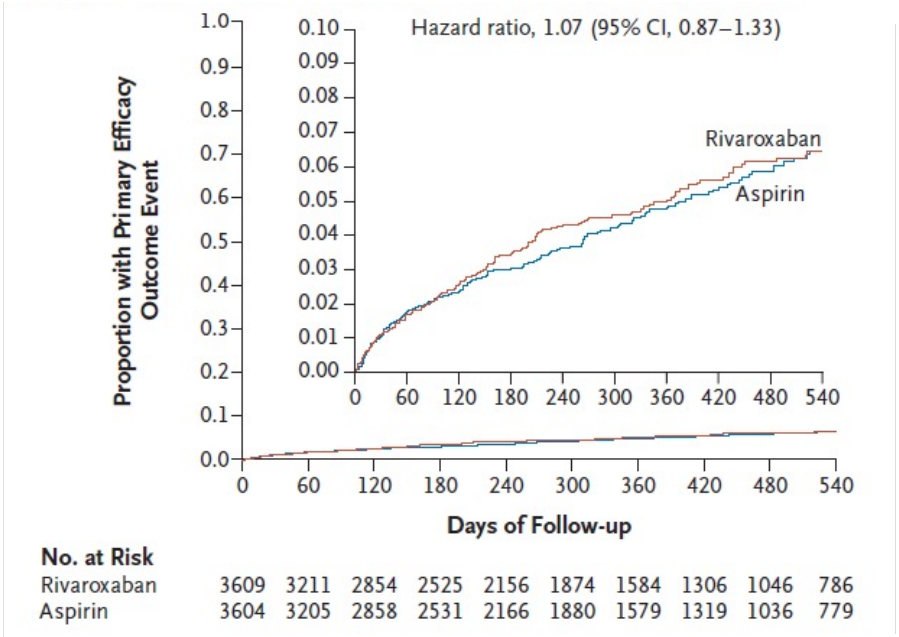
CRYSTAL-AF

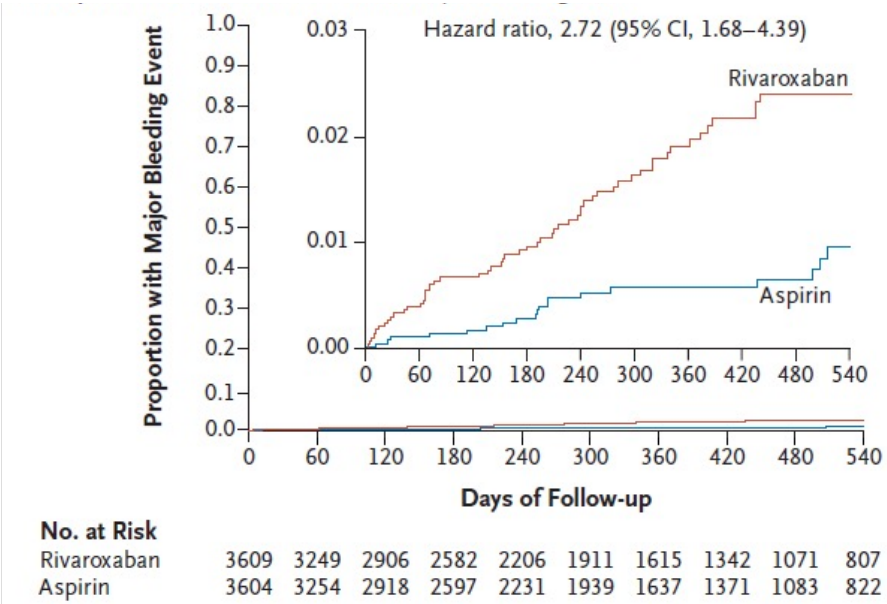


. 441 patients
. Holter 24h *vs.* Enregistreur évènements
. 6 mois: 1.4% *vs.* 8.9%, p<0.001
. 12 mois: 2.0% *vs.* 12.4%, p<0.001

Sanna, NEJM, 2012
Gladstone, NEJM, 2014

Faut-il rechercher la FA avant d'anticoaguler ?
NAVIGATE ESUS
Rivaroxaban 15mg vs aspirin 100mg





Ischemic or hemorrhagic stroke or systemic embolism

Major bleeding event

7213 pts
Mean age 67 ± 10 y
Mean FU: 11 months

Trial was terminated early because of a lack of benefit with regard to stroke risk and because of bleeding associated with rivaroxaban

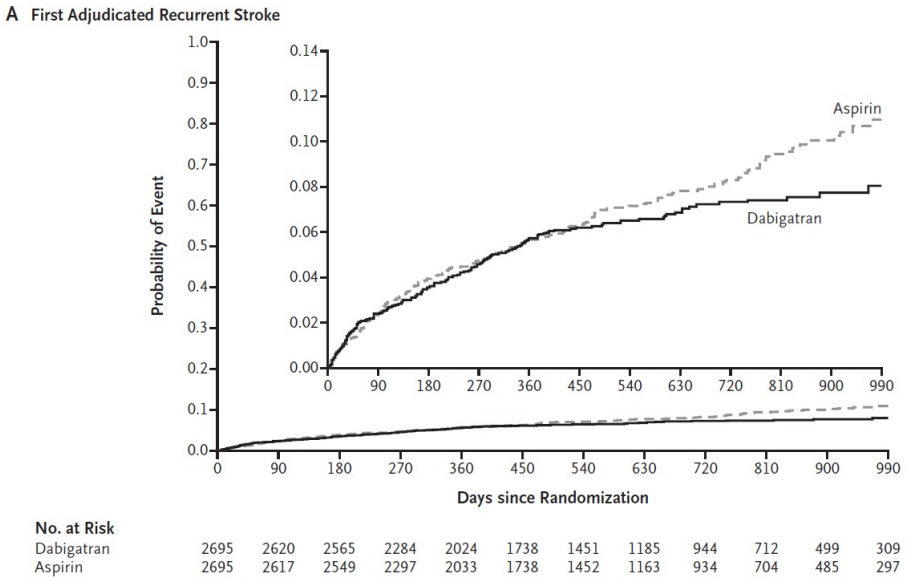
ESUS = embolic stroke of undetermined source

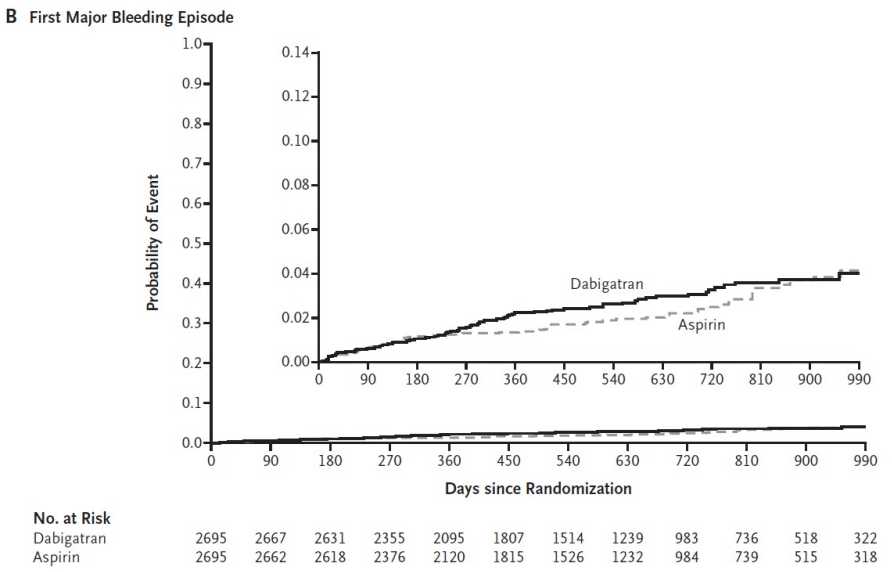
Hart RG, NEJM 2018; 378: 2191-201

RE-SPECT ESUS

Dabigatran for Prevention of Stroke after Embolic Stroke of Undetermined Source

H.-C. Diener, R.L. Sacco, J.D. Easton, C.B. Granger, R.A. Bernstein, S. Uchiyama, J. Kreuzer, L. Cronin, D. Cotton, C. Grauer, M. Brueckmann, M. Chernyatina, G. Donnan, J.M. Ferro, M. Grond, B. Kallmünzer, J. Krupinski, B.-C. Lee, R. Lemmens, J. Masjuan, M. Odinak, J.L. Saver, P.D. Schellinger, D. Toni, and K. Toyoda, for the RE-SPECT ESUS Steering Committee and Investigators*





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%)

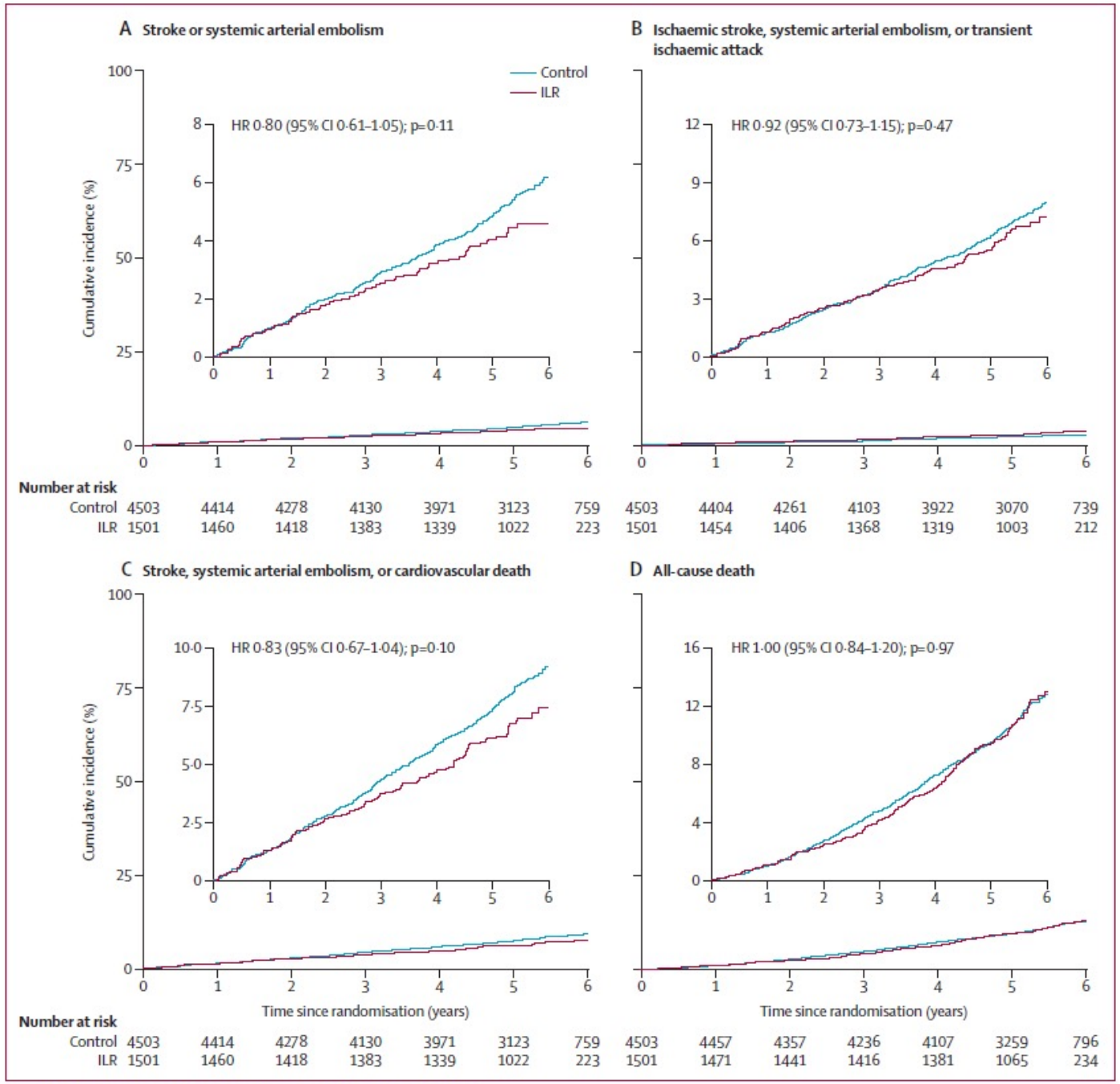
The LOOP Study

	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

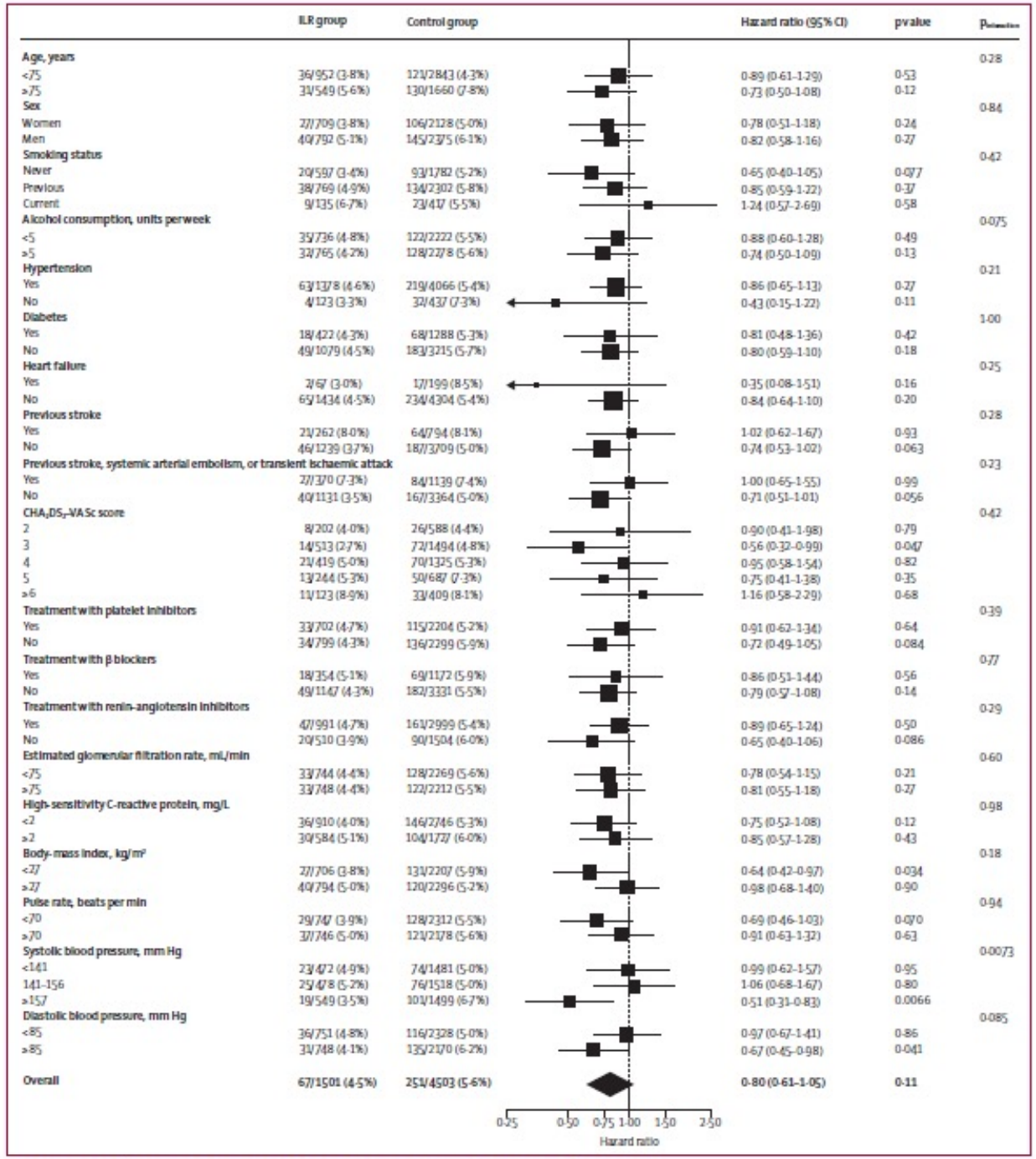
Data are n (%) or as specified. ILR=implantable loop recorder.

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

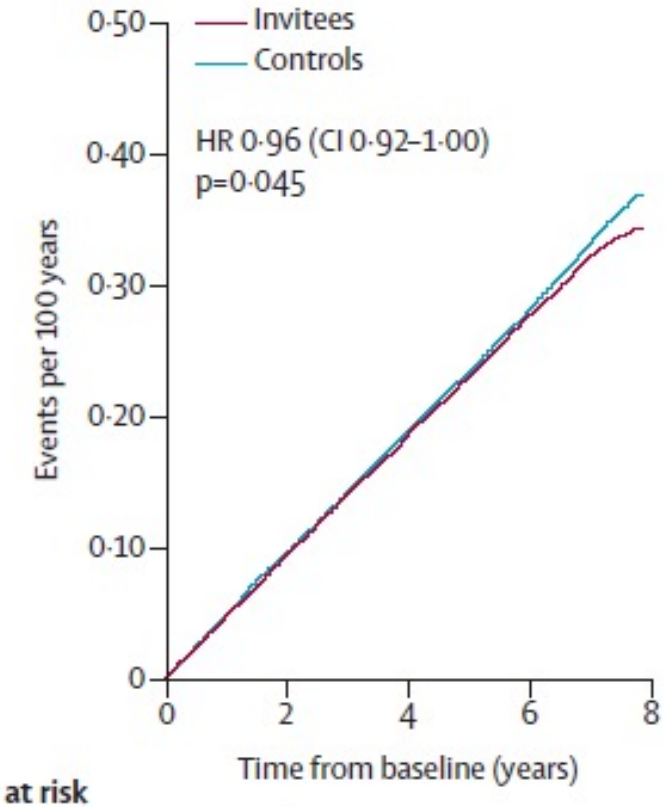
STROKESTOP Study

	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

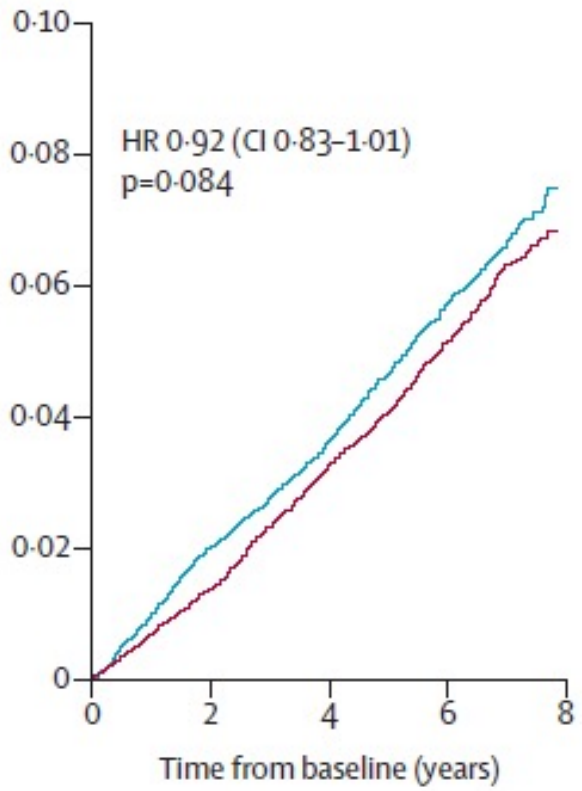
STROKESTOP Study



Number at risk

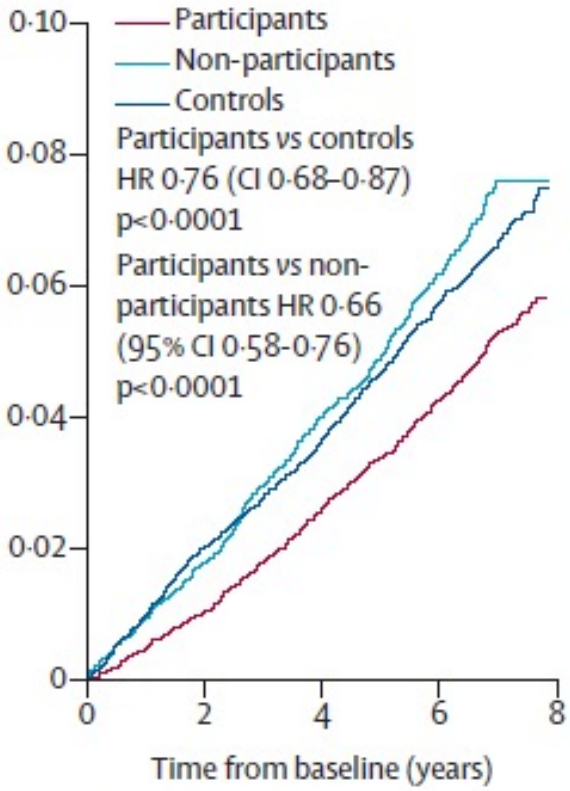
Invitees	13979	12639	11342	9747	..
Controls	13996	12614	11300	9727	..

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.

The LOOP and STROKESTOP studies

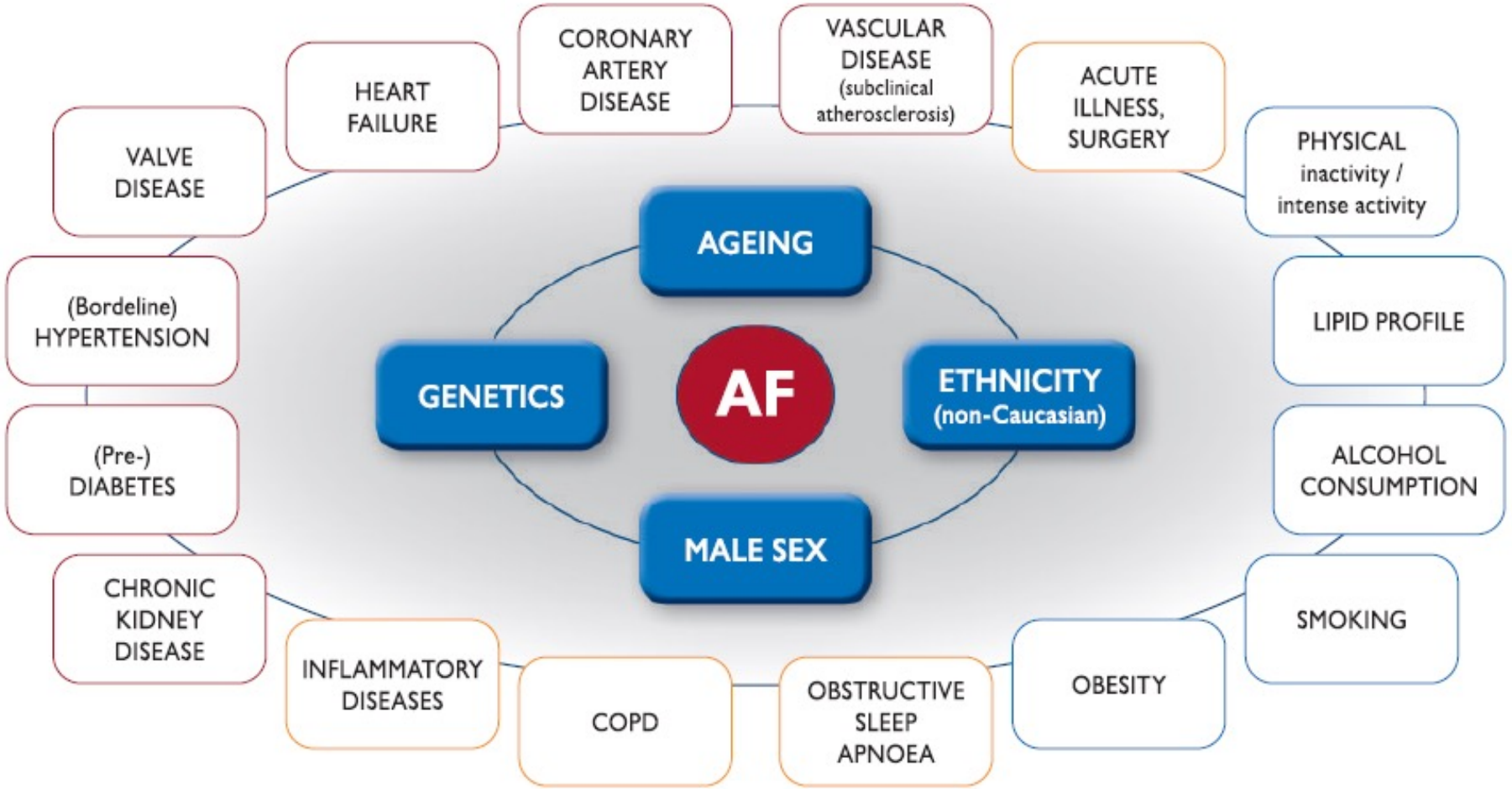
Pour la pratique ?

The LOOP and STROKESTOP studies

Pour la pratique ?

Revenons au recommandations…

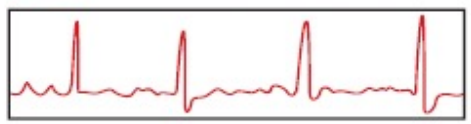
La FA : une arythmie multifactorielle



FA: une stratégie globale

CC To ABC

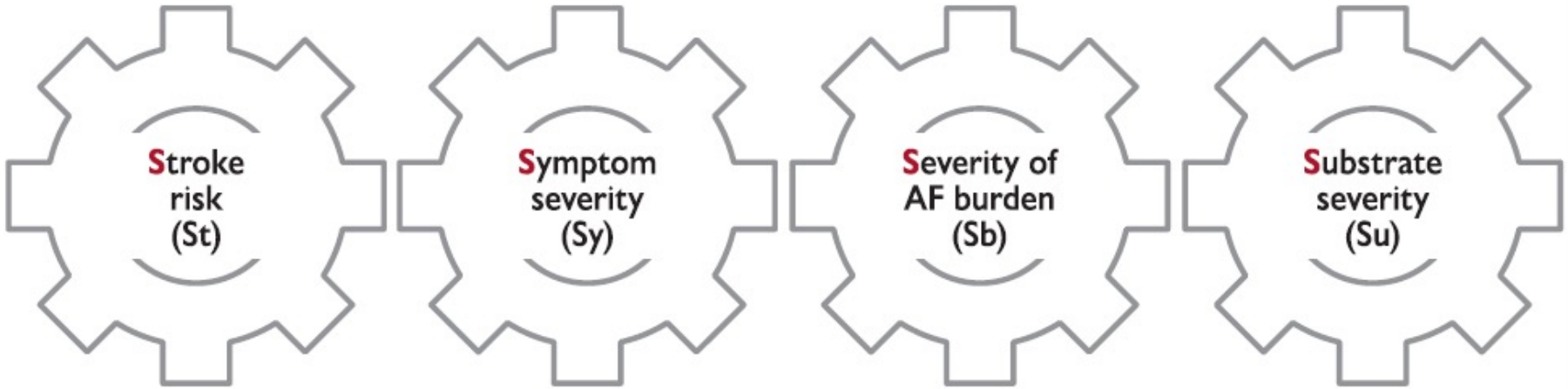
Confirm AF



A 12-lead ECG or a rhythm strip showing AF pattern for ≥30 s

CC To ABC

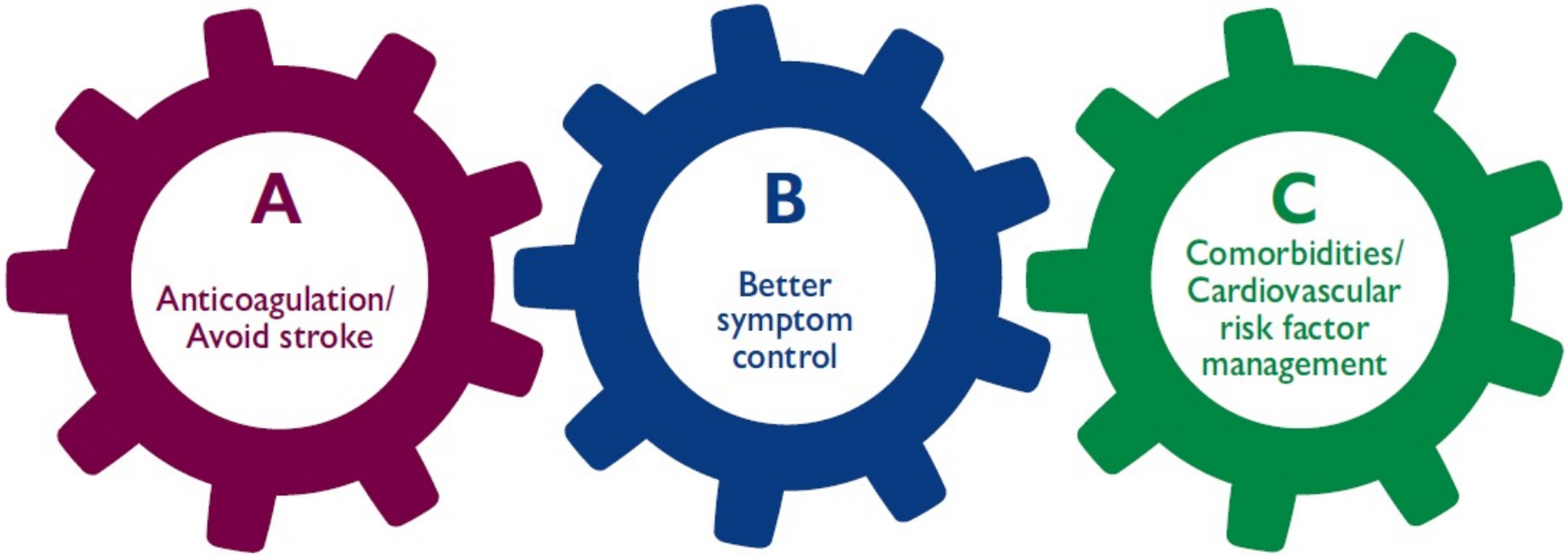
Characterise AF (the 4S-AF scheme)



	Stroke risk (St)	Symptom severity (Sy)	Severity of AF burden (Sb)	Substrate severity (Su)
DESCRIPTION	Truly low risk of stroke • Yes • No	• Asymptomatic/mildly symptomatic • Moderate • Severe or disabling	• Spontaneously terminating • AF duration and density of episodes per unit of time	• Comorbidities/ cardiovascular risk factors • Atrial cardiomyopathy (atrial enlargement / dysfunction / fibrosis)
Commonly used assessment tool(s)	**CHA_2DS_2-VASc score**	**EHRA symptom score** QoL questionnaires	• **Temporal pattern of AF** (Paroxysmal, Persistent, Long-standing persistent, Permanent) • **Total AF burden** (total time in AF per monitoring period, the longest episode, number of episodes, etc.)	• **Clinical assessment** Incident AF risk scores, AF progression risk scores • **Imaging** (TTE, TOE, CT, cardiac MRI), biomarkers

CC To ABC

Treat AF: The ABC pathway



1. Identify low-risk patients CHA_2DS_2-VASc 0(m), 1(f)
2. Offer stroke prevention if $CHA_2DS_2VASc \geq 1$(m), 2(f)

Assess bleeding risk, address modifiable bleeding risk factors

3. Choose OAC (NOAC or VKA with well-managed TTR)

Assess symptoms, QoL and patient's preferences

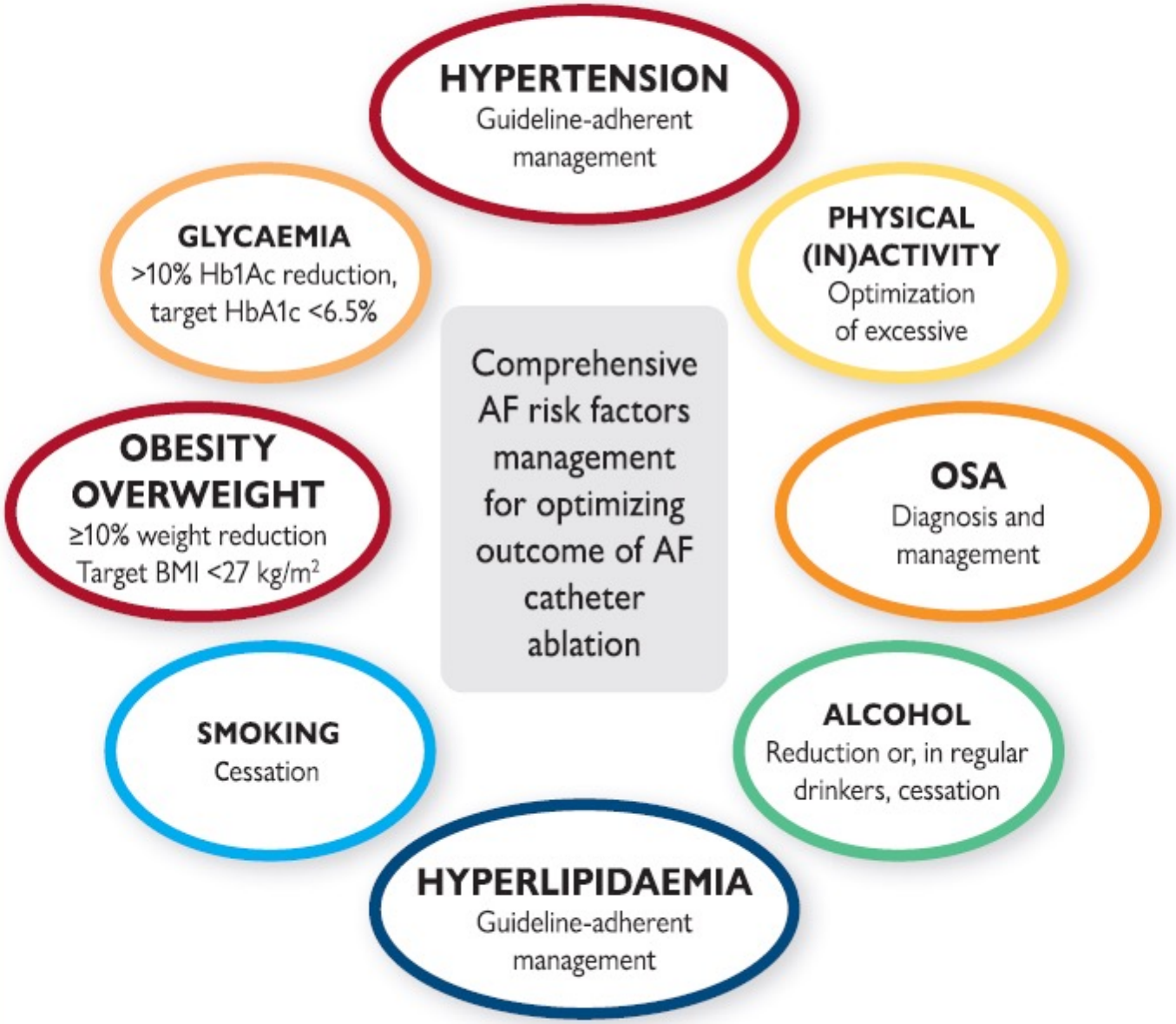
Optimize rate control

Consider a rhythm control strategy (CV, AADs, ablation)

Comorbidities and cardiovascular risk factors

Lifestyle changes (obesity reduction, regular exercise, reduction of alcohol use, etc.)

FA: toujours corriger les facteurs de risque



Et n’oubliez pas la parité…

Recommendation	Class[a]	Level[b]
It is recommended that women and men with AF are equally offered diagnostic assessment and therapies to prevent stroke and other AF-related complications.[423,1433]	I	A
Women with symptomatic paroxysmal or persistent AF should be offered timely access to rhythm control therapies, including AF catheter ablation, when appropriate for medical reasons.[1448,1451]	IIa	B