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Sandwell and West Birmingham Hospitals 
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Queen Elizabeth Hospital Birmingham

Device detected ~~AF~~ and atrial high rate episodes

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Atrial fibrillation

2-3% of the UK population suffer from AF

AF management requires 1-3% of the entire NHS resources

Premature cardiovascular deaths

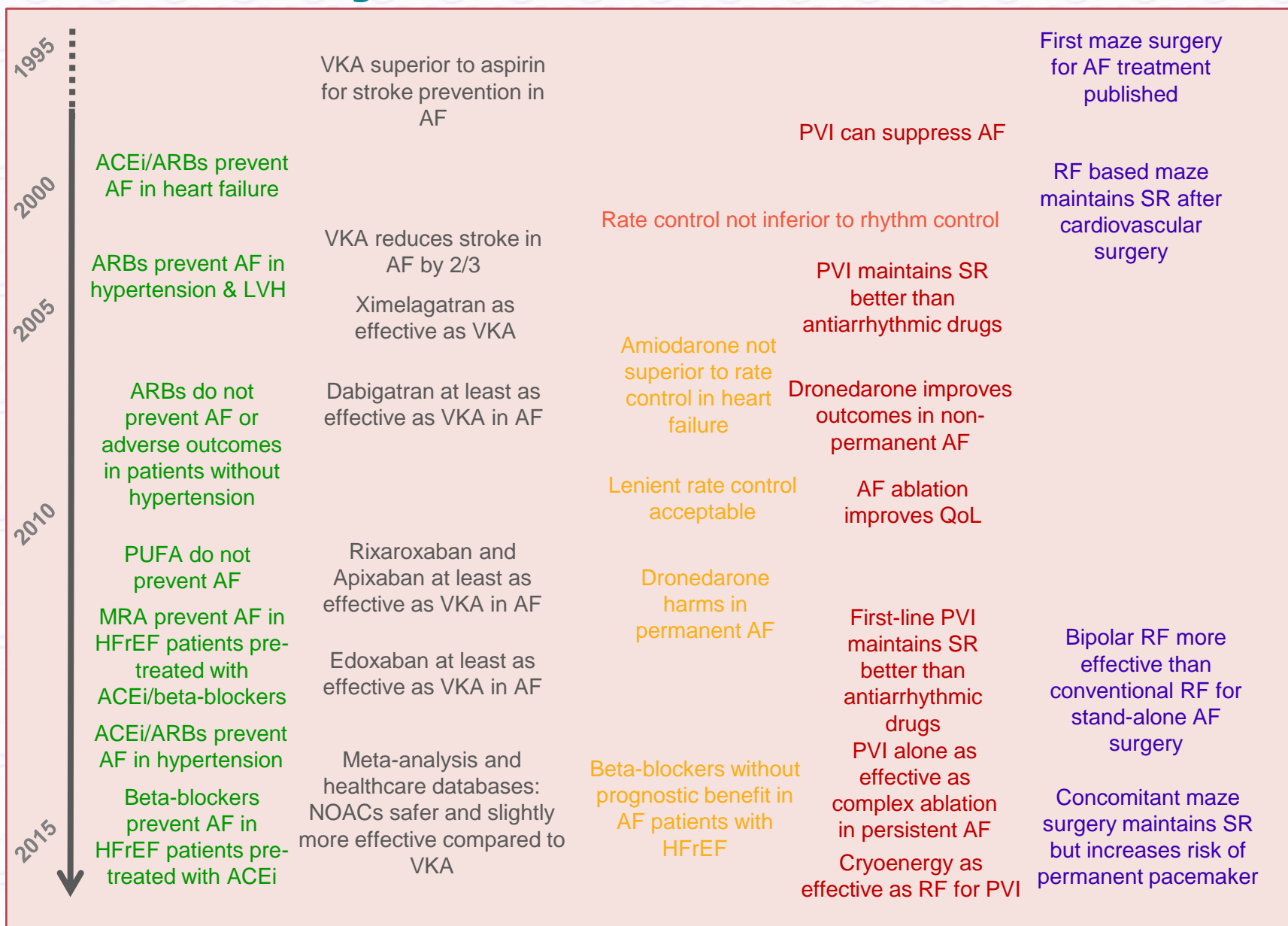
Every 4th stroke (or more)

Frequent hospitalizations

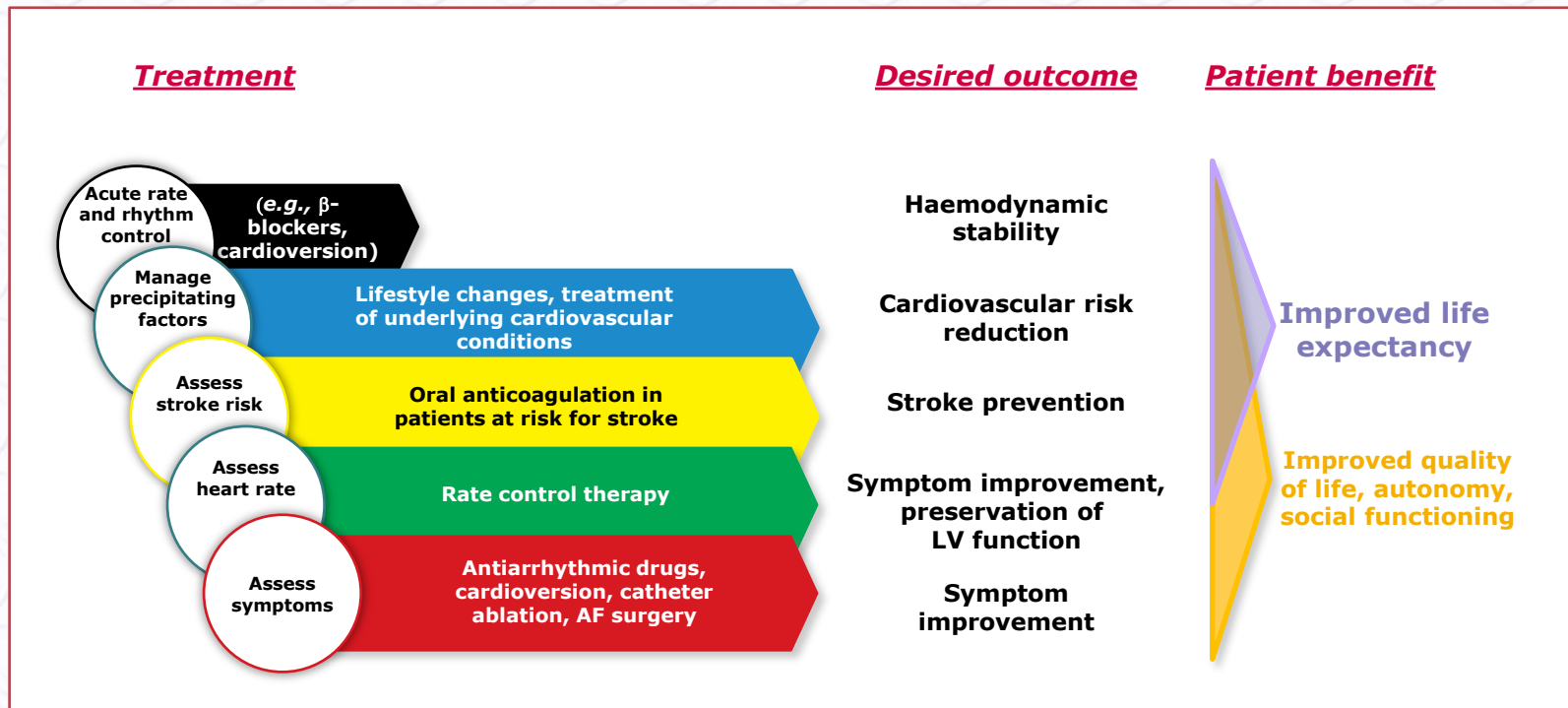
Morbidity, lost autonomy, reduced quality of life

Heart failure and sudden death are common even on optimal management

Timeline of findings from landmark trials in AF



The Five Domains of AF Management



To support integrated AF care, the ESC Guidelines task force and the CATCH ME consortium (www.catch-me.info) have developed state-of-the-art interactive tools underpinning integrated AF management. A first version including an overall treatment manager is integrated into the AF section of the ESC pocket guidelines app. Further CATCH ME tools for healthcare professionals and an associated app for AF patients will be released in late 2016 / early 2017. CATCH ME is supported by the European Union grant agreement No 633196 [CATCH ME].

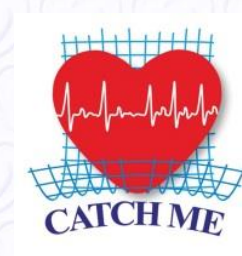
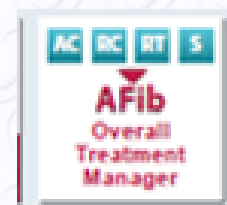
Revolutionise Your Clinical Decision - Making for AFib Patients



Download the ESC Pocket Guidelines App to access:

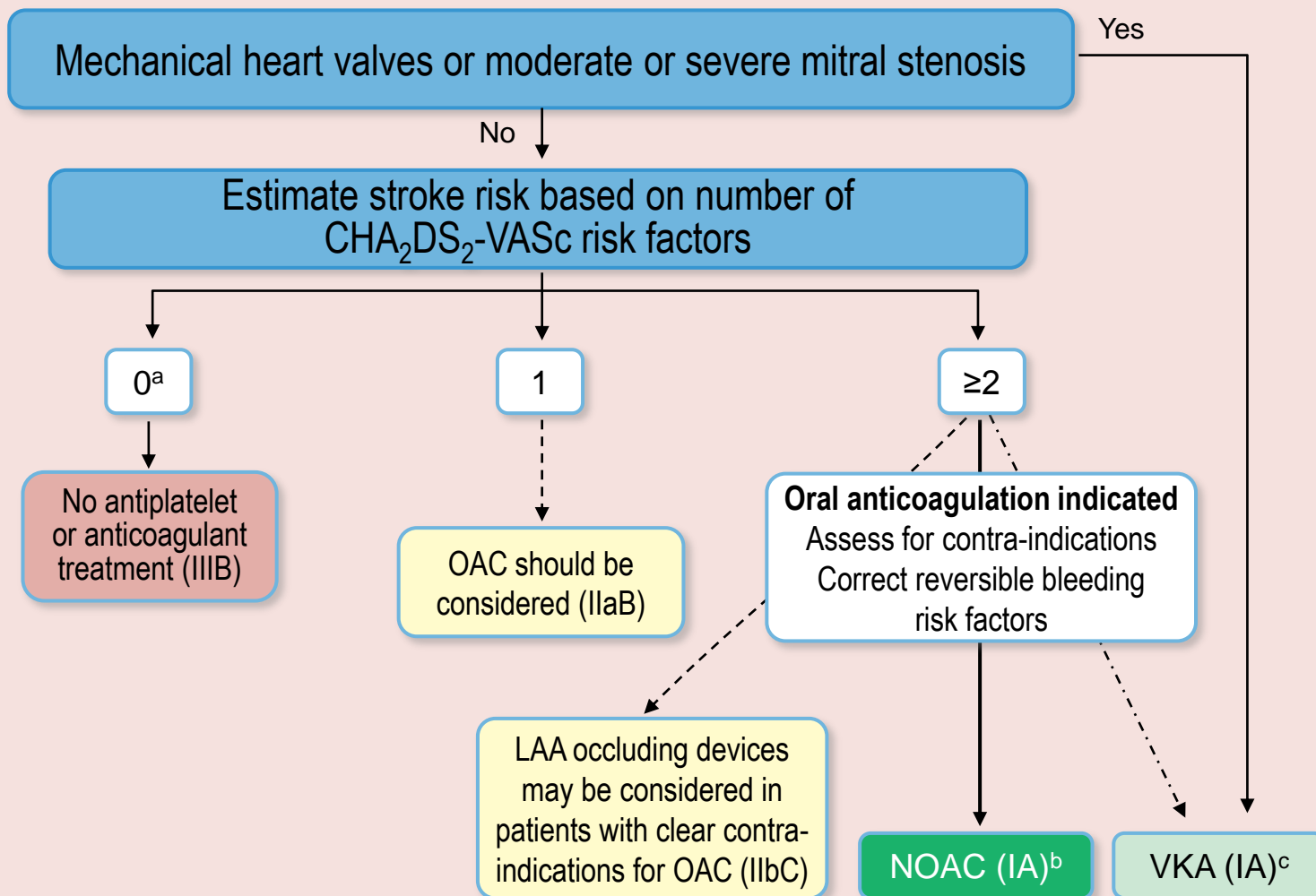
2016 ESC Clinical Practice Guidelines on AFib

Exciting new tools from **CATCH ME*** to personalise prevention and management of your AFib patients



* Funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No 633196
<http://www.catch-me.info/>

Stroke prevention in atrial fibrillation



^a Includes women without other stroke risk factors

^b IIaB for women with only one additional stroke risk factor

^c IB for patients with mechanical heart valves or mitral stenosis

The 2016 ESC AF guidelines in 17 bullet points

Here, we provide 17 simple rules to guide diagnosis and management of AF patients according to the 2016 ESC/EACTS/ESO Guidelines for the management of atrial fibrillation

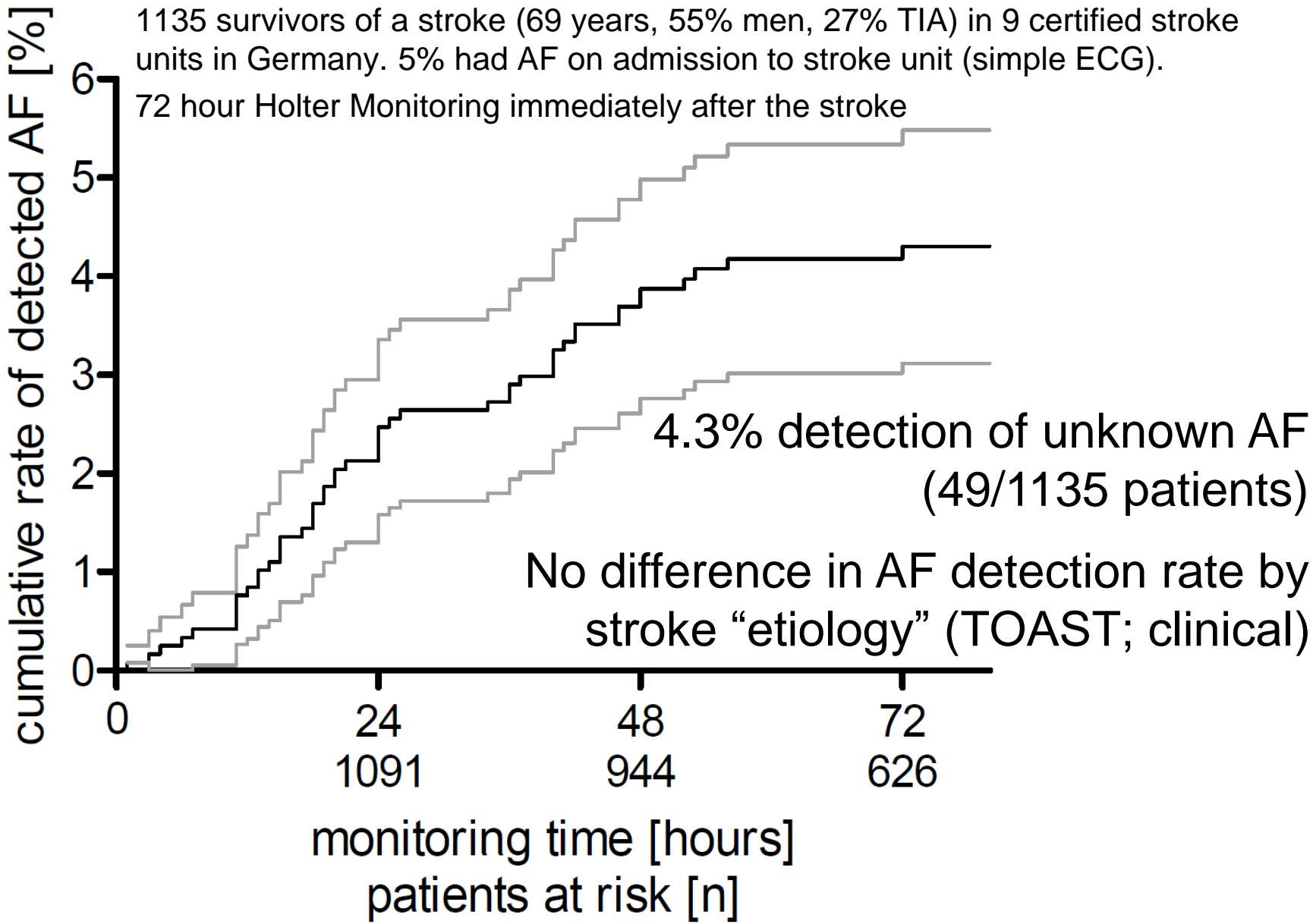
- 1. Use ECG screening in at risk populations for atrial fibrillation, especially stroke survivors and the Elderly.**
- 2. Document AF by ECG before starting treatment.**



Silent AF in stroke survivors: IDEAS

1135 survivors of a stroke (69 years, 55% men, 27% TIA) in 9 certified stroke units in Germany. 5% had AF on admission to stroke unit (simple ECG).

72 hour Holter Monitoring immediately after the stroke



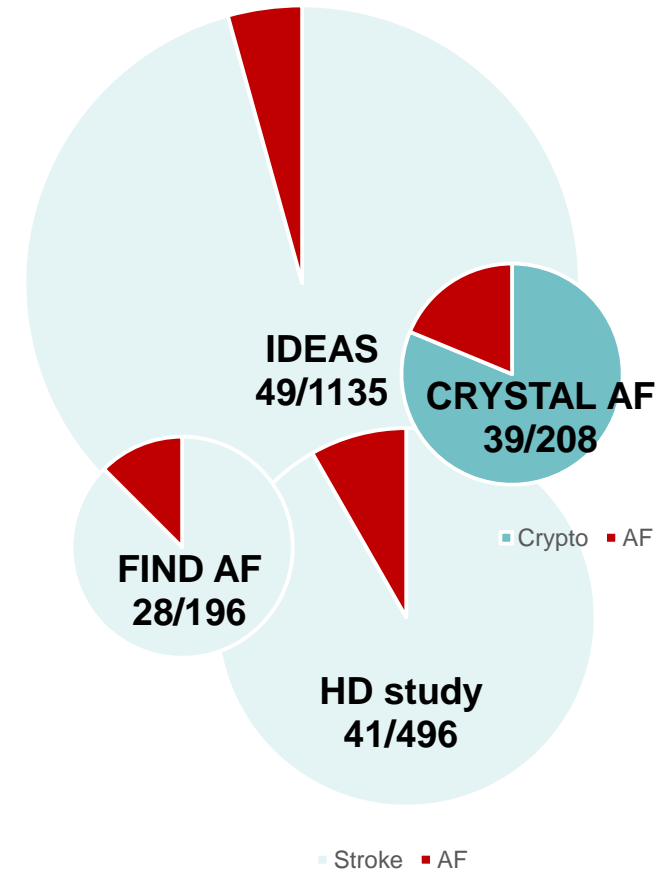
Silent, undiagnosed AF is a common cause of ischemic stroke



5% of patients presenting with an acute stroke have previously undiagnosed AF on admission (detected by ECG).

ECG monitoring identifies AF in stroke survivors:
~ 10% of unselected stroke patients
~ 30% of “cryptogenic stroke” patients

ECG detection of AF prior to the first stroke is highly desirable.

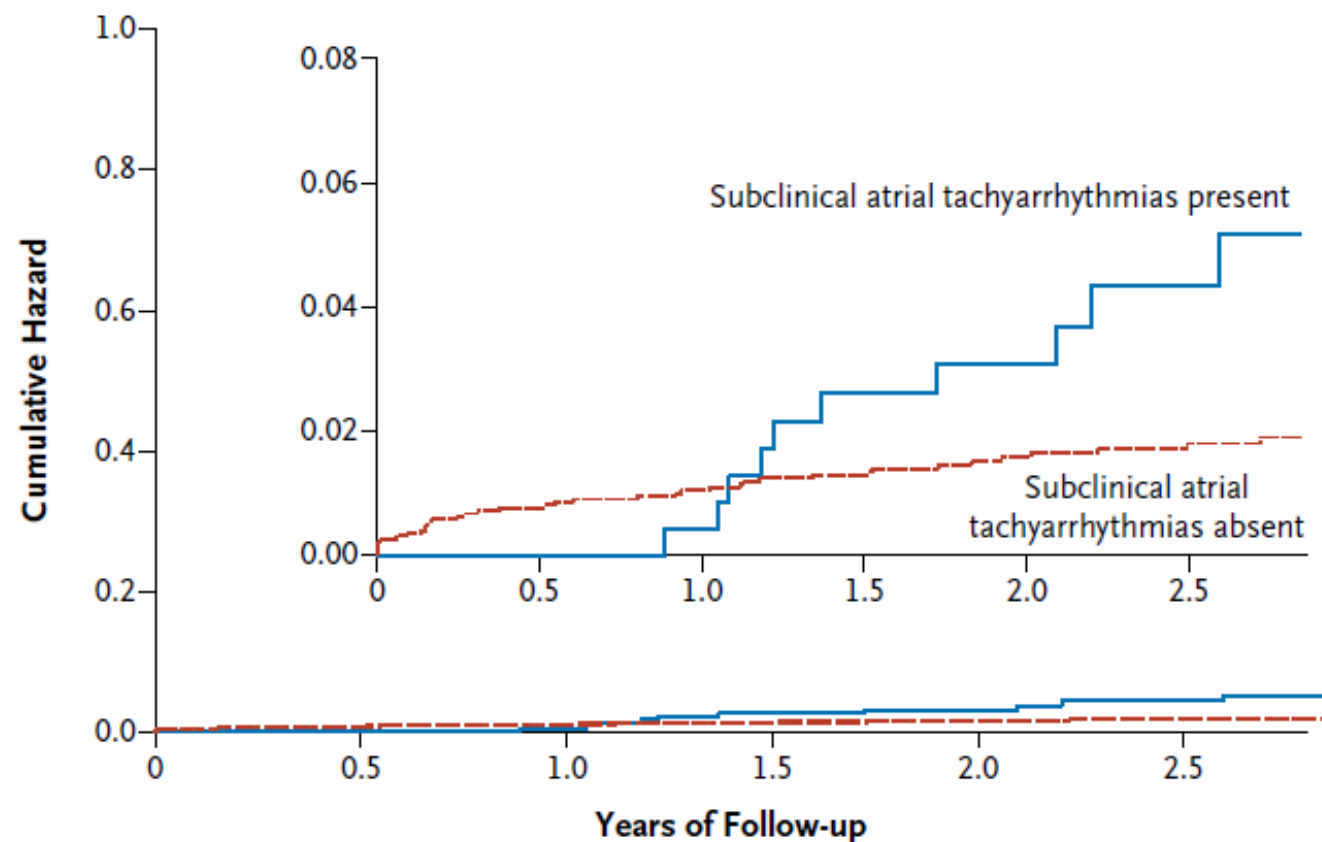


Rizos T, et al. *Stroke*. 43:2689-2694 (2012)
Grond M, et al. *Stroke*. 44:3357-3364 (2013)
Sanna T, et al. *N Engl J Med*. 370:2478-2486 (2014)
Gladstone DJ, et al. *N Engl J Med*. 370:2467-2477 (2014)



AHRE and stroke

2580 pacemaker patients over 65 years with hypertension ($\text{CHADS}_2\text{VA}_2\text{Sc} \geq 2$) without known AF; 3 months monitoring for AHRE (subclinical AT) by pacemaker



No. at Risk

Subclinical atrial tachyarrhythmias present	261	249	238	218	178	122
Subclinical atrial tachyarrhythmias absent	2319	2145	2070	1922	1556	1197



Stroke risk in patients with AHRE

Trial	Study type and duration	Study population	Criteria for the diagnosis of AHRE
MOST ²⁹	Subgroup analysis of RCT, 6 years	$n = 312$, median age 74 years, 55% female, and 60% had a history of SND	Atrial rate >220 bpm for 10 consecutive beats
TRENDS ³⁰	Prospective observational study, mean follow-up 1.4 years	$n = 2486$ with ≥ 1 risk factor for stroke	AT/AF burden = longest total AT/AF duration on any given day during the prior 30-day period and classified as subsets: zero, low (<5.5 h [median duration]), and high (≥ 5.5 h)
ASSERT ³¹	Prospective observational study, mean follow-up 2.5 years	$n = 2580$, age ≥ 65 years, with hypertension and no history of AF	Atrial rate >190 bpm for >6 min
Carelink/VA ³⁴	Case crossover study, analysis of data 30 days preceding a stroke	$n = 9850$, median age 68 years, 99% male, and 98% had a defibrillator	≥ 5.5 h of AF on ≥ 1 day in the preceding 30 days
Belgrade Atrial Fibrillation Study ³⁵	Single-centre registry study and mean follow-up 9.9 ± 6.1 years	$n = 1100$, mean age 52.7 ± 12.2 years, 13.3% had asymptomatic AF	Asymptomatic presentation of first diagnosed AF
SOS AF project ³⁶	Pooled analysis of individual patient data from five prospective studies	$n = 10\,016$, median age 70 years. Pts without permanent AF with ICDs were included if they had at least 3 months of follow-up	Device-detected AF. Cutoff points of AF burden defined as: 5 min, 1, 6, 12, and 23 h

HR 2.8 for death or stroke

HR 0.98 (<5.5 AHRE hours/30 days)
HR 2.2 (>5.5 AHRE hours/30 days)

HR 2.49 (so far no „burden“ analysis)

HR 4 for times with AHRE vs times without

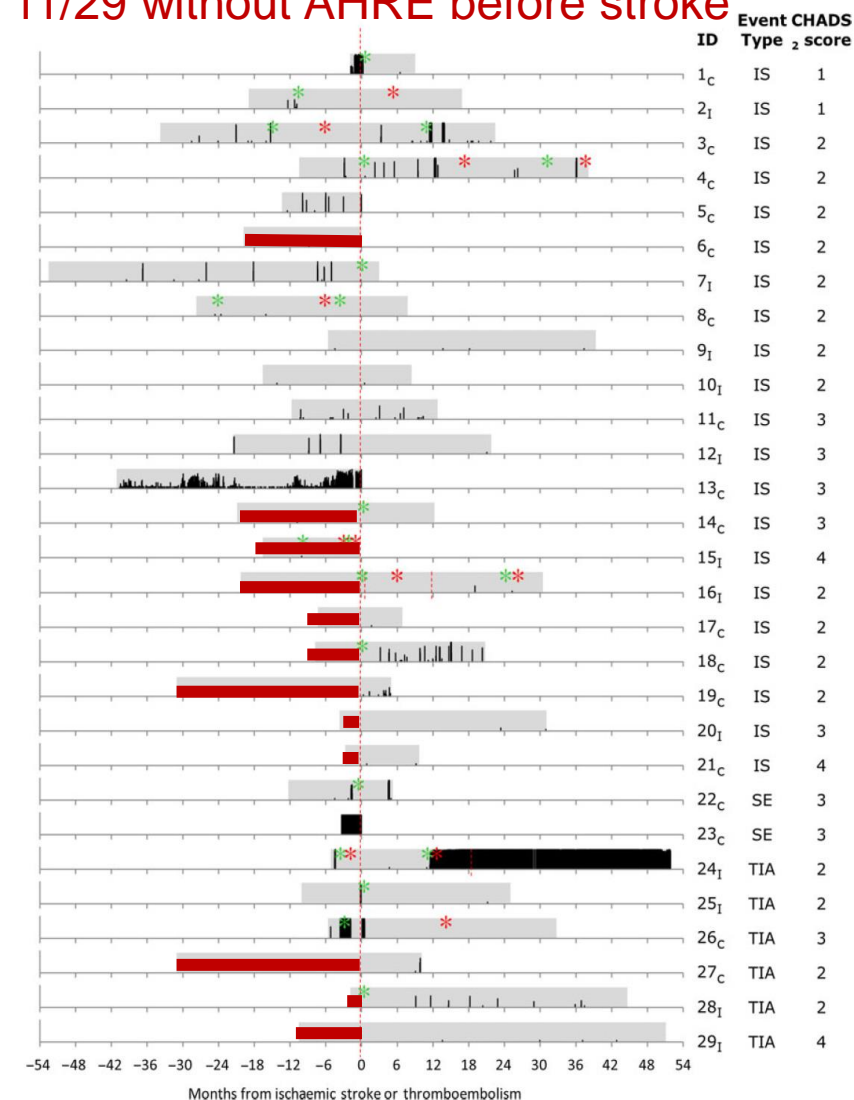
No risk increase for short AHRE
HR 2.1 for >1 ARHE hour



Timing of AHRE and ischemic stroke / TIA

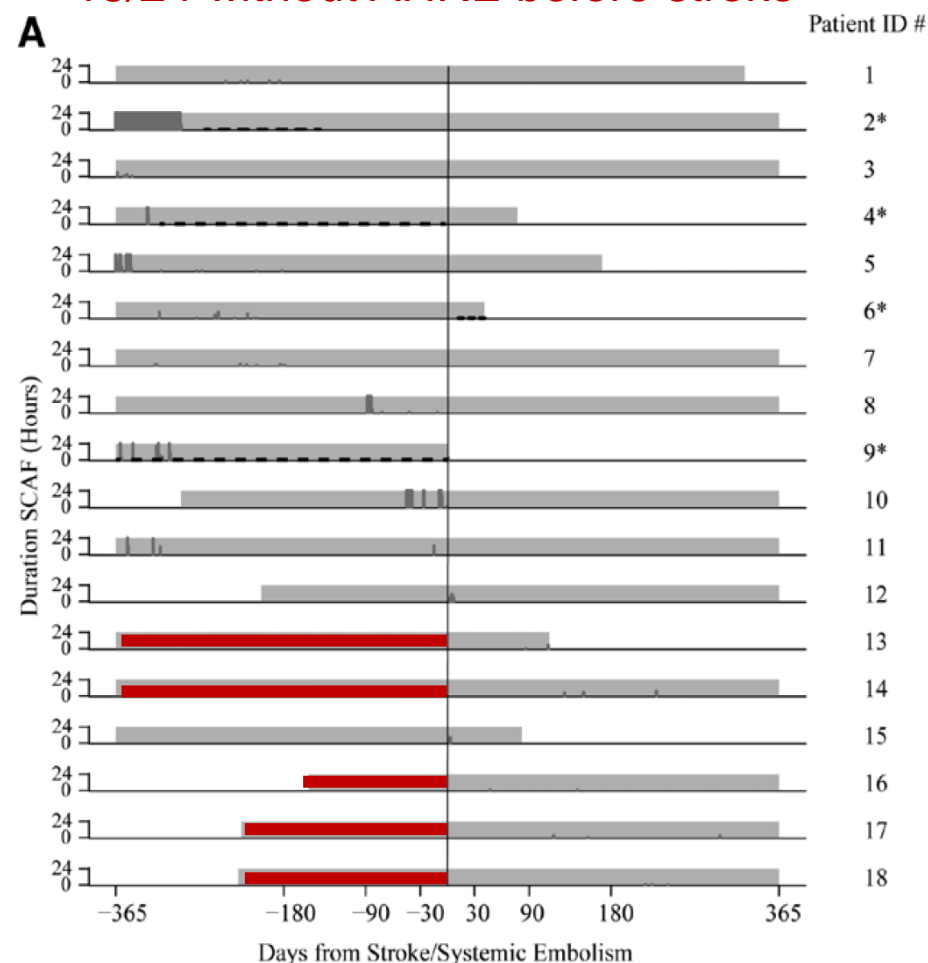
IMPACT

11/29 without AHRE before stroke



ASSERT

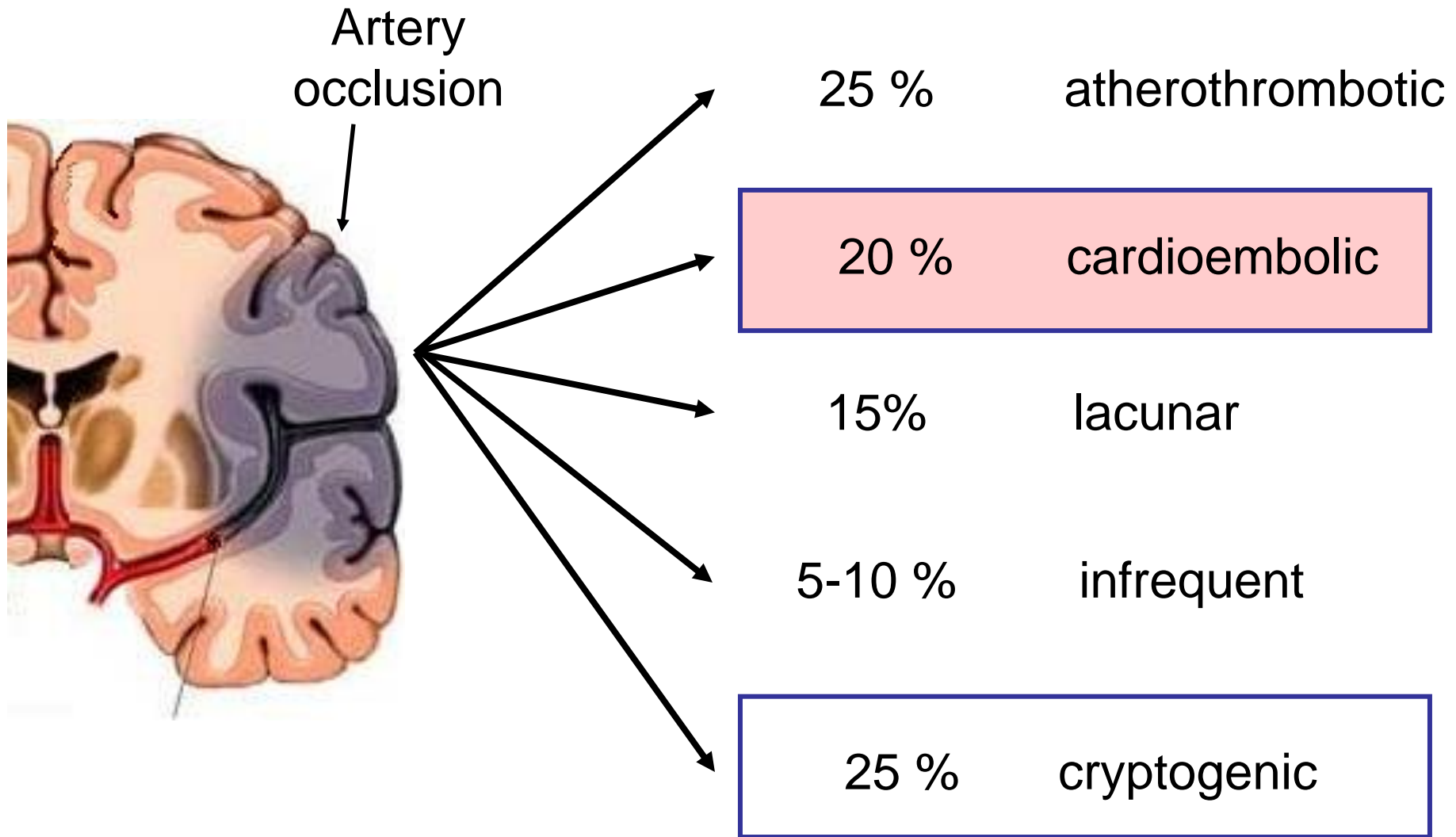
13/24 without AHRE before stroke



A further 8 patients did not have AHRE either one year before or after the event

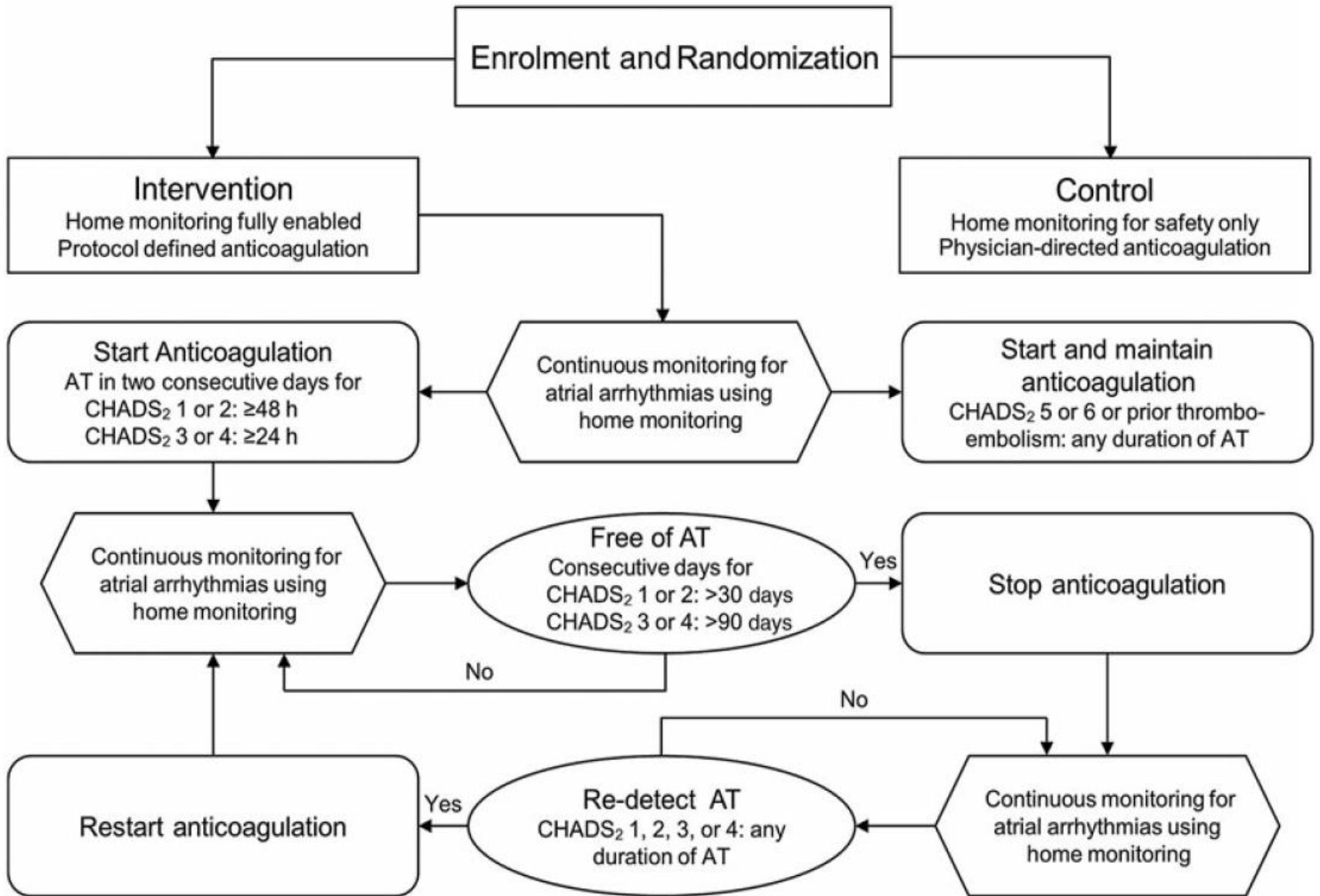


Etiology of ischemic stroke





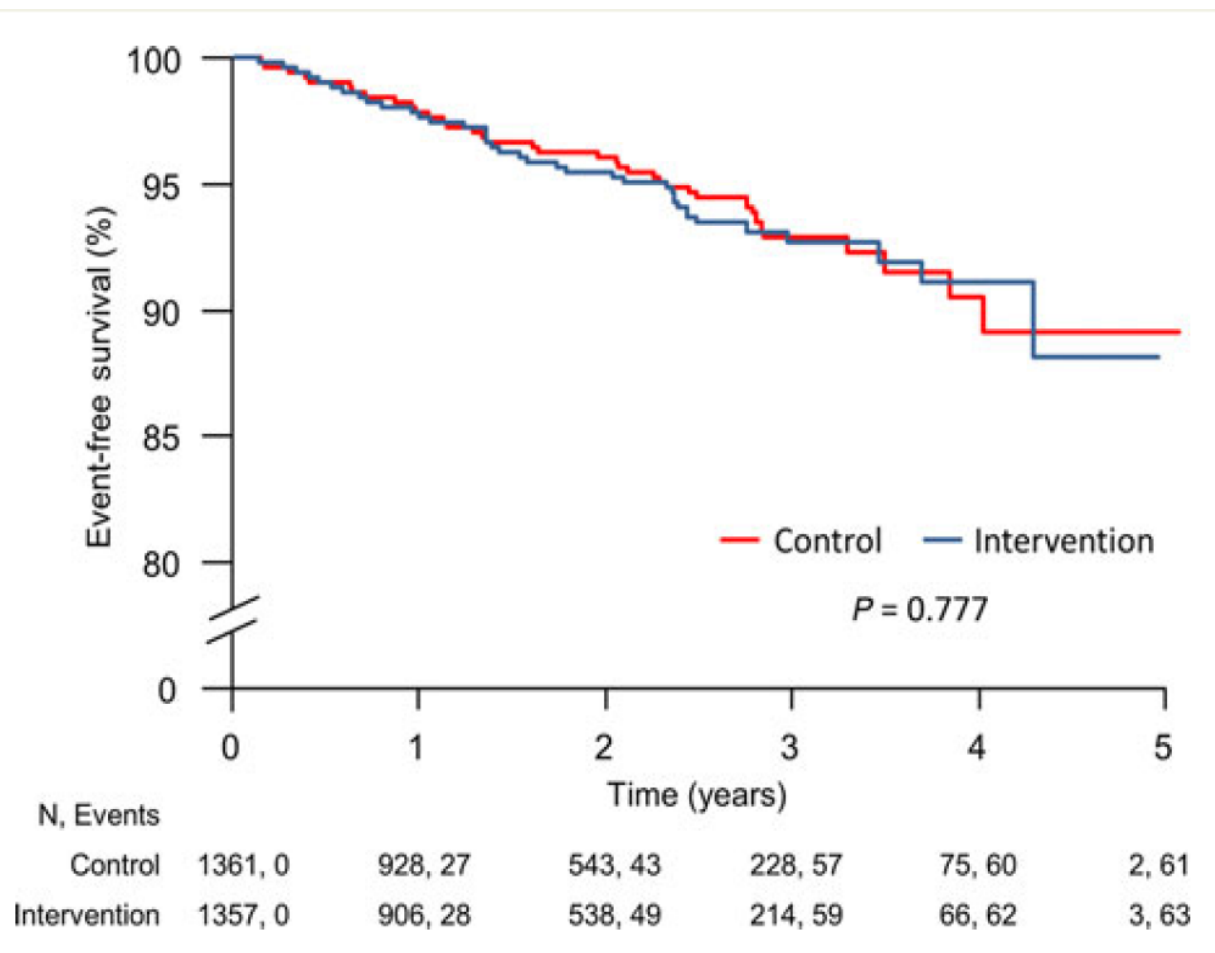
Anticoagulation in patients with AHRE: IMPACT





Anticoagulation in patients with AHRE: IMPACT

2718 pacemaker patients with AHRE (median CHADSVASC score 4) randomized to no anticoagulation (usual care) or anticoagulation initiated at times of AHRE and continued for 30 days / 90 days after last AHRE (depending on CHADS).



Outcomes:

22 strokes, 41 major bleeds

OAC vs usual care

Stroke 0.7 vs 1.3%

Bleed 1.6 vs 1.2%

Death 5.4 vs 5.1 %



AHRE and stroke prevention:

ASSERT

Stroke risk in patients with AHRE is lower than in patients with “overt” AF.
Half of strokes occurred **before** the first detected AHRE.

ASSERT, IMPACT, observational data sets

Strokes in device patients rarely happen in the days after AHRE events.

EXPECT-AF

20% of AHRE episodes are artefacts or other atrial arrhythmias

IMPACT

Anticoagulation around the time of AHRE episodes does not modify stroke rate compared to no anticoagulation in patients with AHRE.

Glutzer TV, et al. *Circulation*. 107:1614-1619 (2003)

Glutzer TV, et al. *Circ Arrhythm Electrophysiol*. 2:474-480 (2009)

Hindricks G, et al. *Circ Arrhythm Electrophysiol*. 3:141-147 (2010)

Healey JS, et al. *N Engl J Med*. 366:120-129 (2012)

Al-Khatib SM, et al. *Eur Heart J* 34:2464-71 (2013)

Brambatti M, et al. *Circulation*. 129(21):2094-9. (2014)

Boriani G, et al. *Eur Heart J*. 35:508-516 (2014)

Martin, D. T., et al. *Eur Heart J* 36: 1660-1668. (2015)



AHRE and stroke prevention: We need more data.

The pathological and prognostic significance of AHRE has not been fully established. There is a need to identify and validate further markers of risk in patients with AHRE. Finally, the use of oral anticoagulation for stroke prevention in patients with AHRE must be evaluated. Given the risks and inconvenience of OAC therapy, there are currently insufficient data to support their routine use in patients with AHRE, but no clinically detected AF.

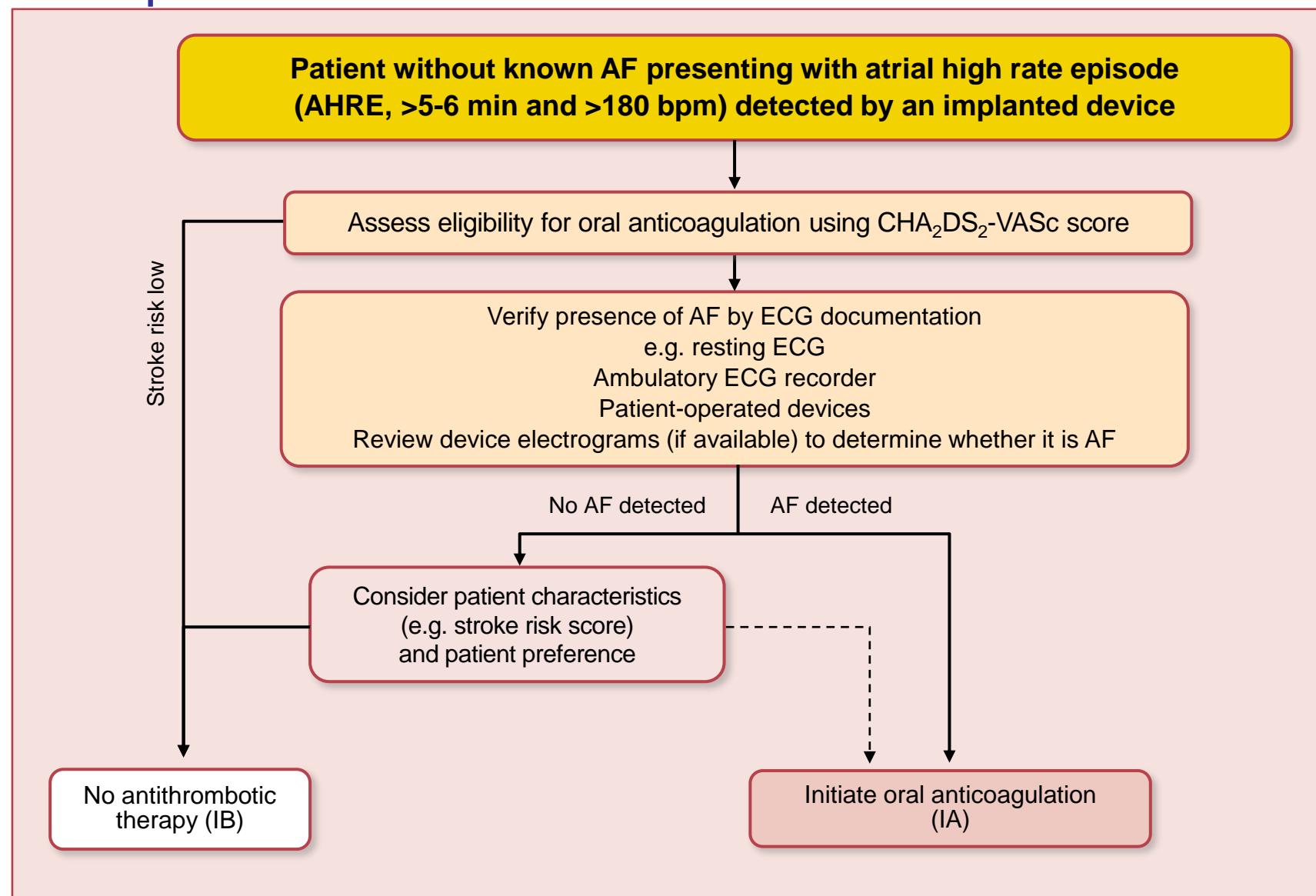
Current uncertainties relating to the detection of AHRE and to the management of patients with AHRE



1. Patients with AHRE (but without diagnosed AF) have an increased risk of future stroke compared to patients without AHRE.
2. Short AHRE episodes (e.g. shorter than 5 minutes) are prone to be artefacts.
3. The prognostic impact (e.g. increase in stroke risk) of rare and short bouts of atrial fibrillation is probably lower than that of ECG-diagnosed atrial fibrillation.
4. Some “atrial high rate episodes” reflect other atrial arrhythmias not necessarily requiring stroke prevention therapy.
5. The timing of AHRE is not related to stroke in patients with AHRE.
6. One study did not find an effect of intermittent anticoagulation at the time of AHRE and a few weeks afterwards compared to no anticoagulation.

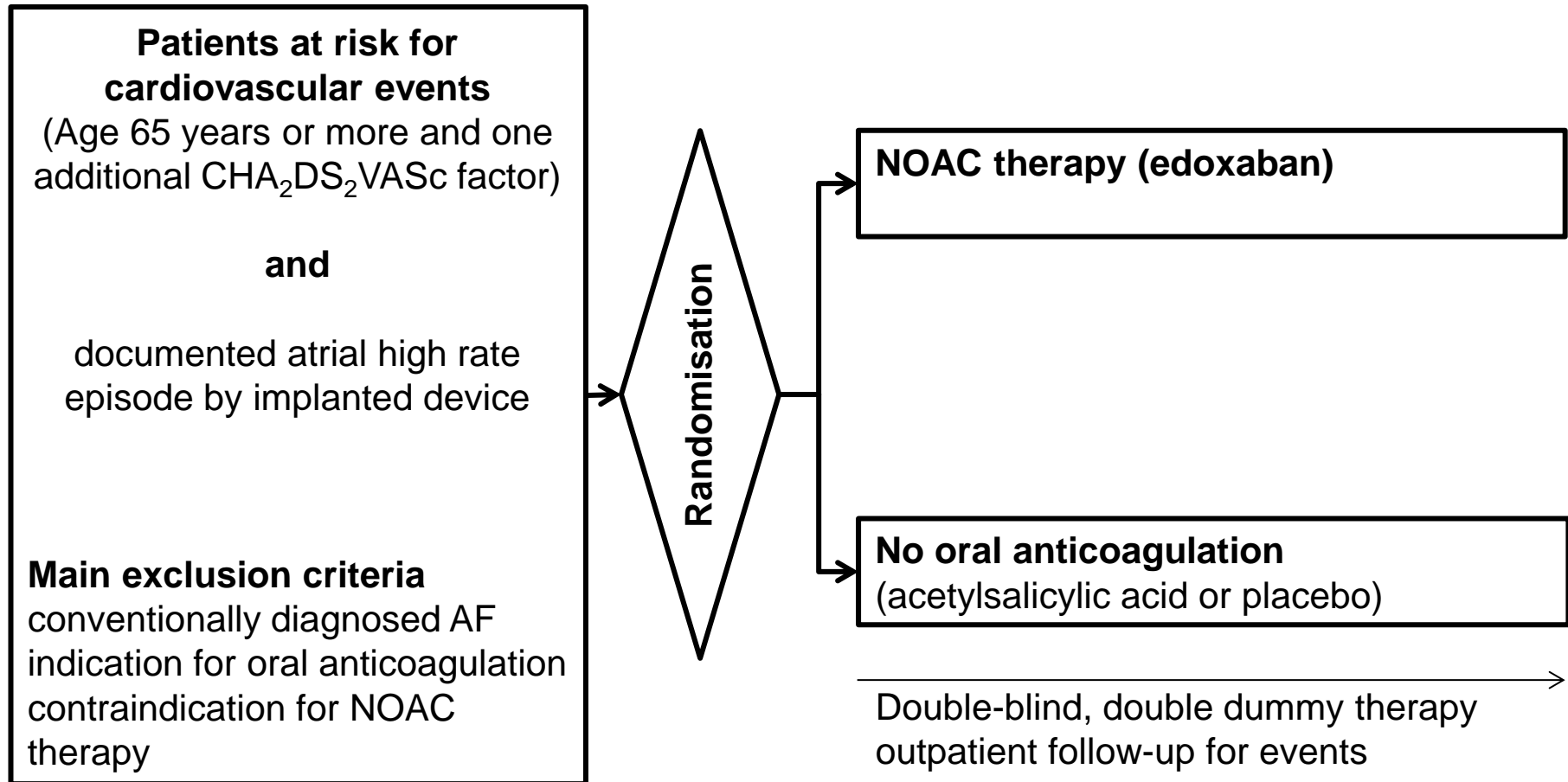
There is equipoise for oral anticoagulation in AHRE patients.

Management of atrial high rate episodes detected by an implanted device



Design of the NOAH – AFNET 6 trial

1st patient enrolled in June 2016, 15 European countries, 3400 patients



<https://clinicaltrials.gov/ct2/show/NCT02618577?term=NOAH&rank=1>, NCT02618577

A similar trial (ARTESiA, NCT01938248) is performed in Canada, US, and Europe



Document AF before initiating therapy in patients with device detected atrial high rate episodes

Thank you



DZHK
DEUTSCHES ZENTRUM FÜR
HERZ-KREISLAUF-FORSCHUNG E.V.



Fondation
Leducq

