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Place of LAAC in the Era of New OATs

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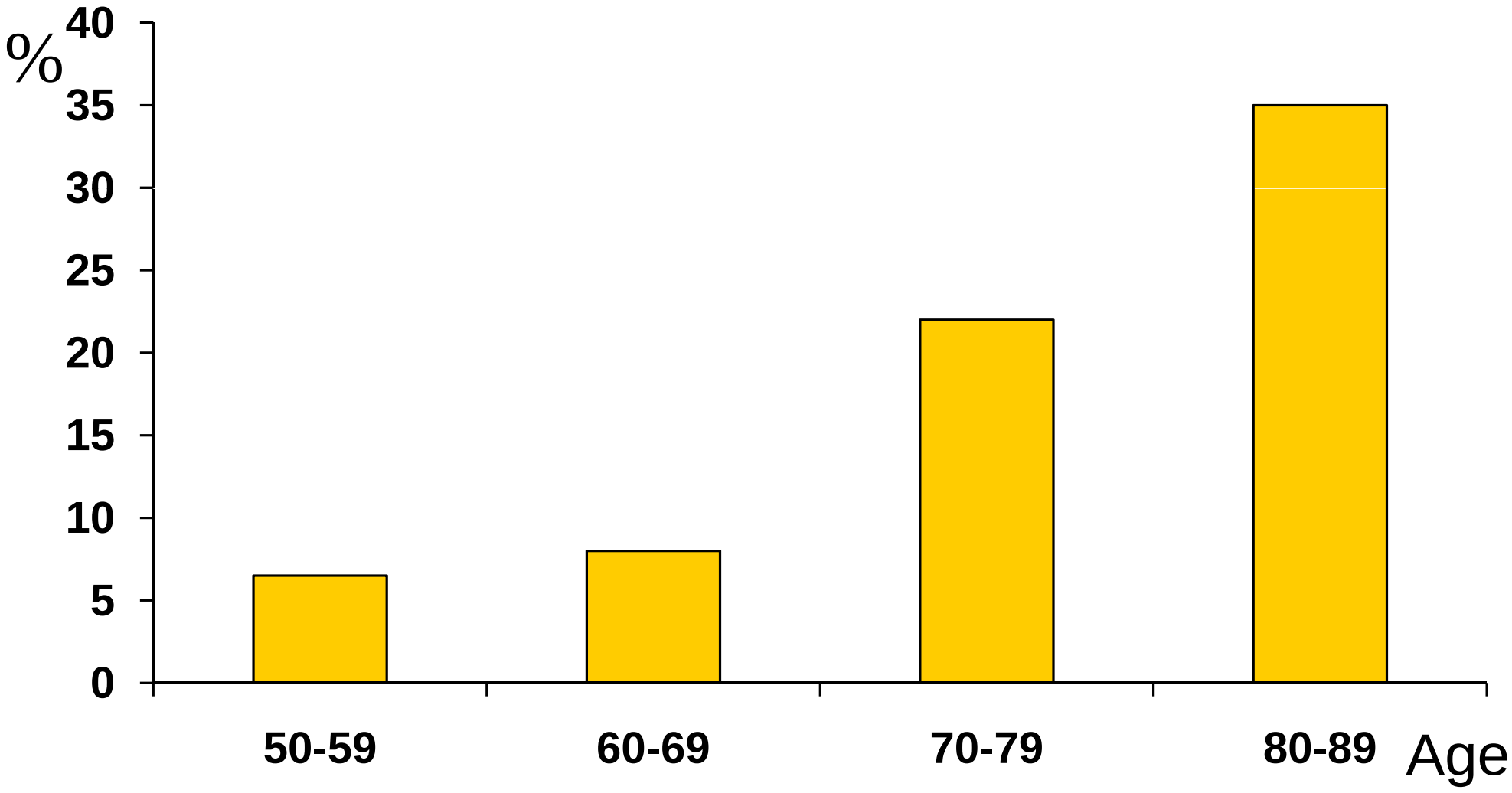
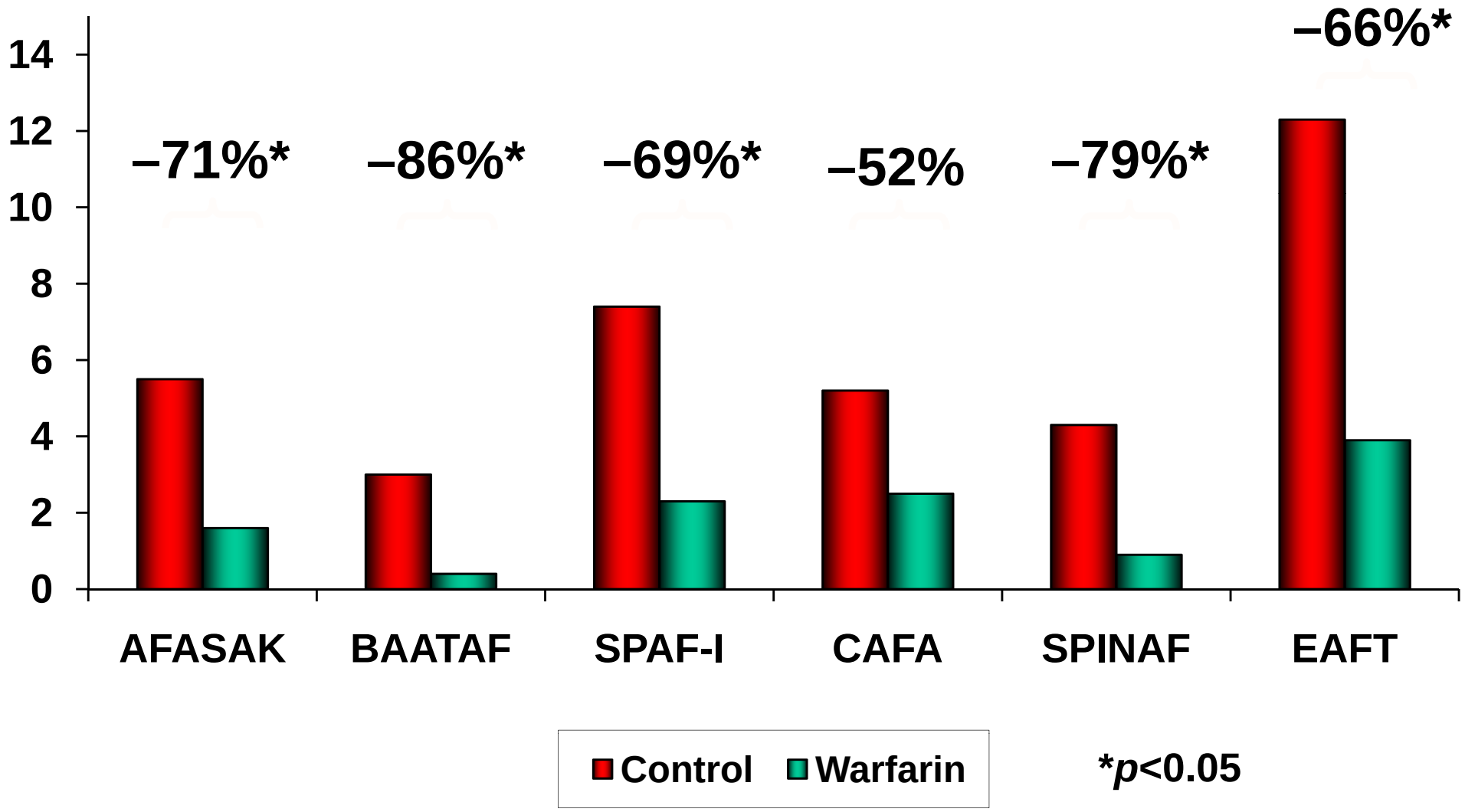
Atrial fibrillation is one of the most important stroke causes, especially in the elderly

Framingham Study, Wolf, 1991



Anticoagulation in AF
Randomised Trials



Anticoagulation is effective, …

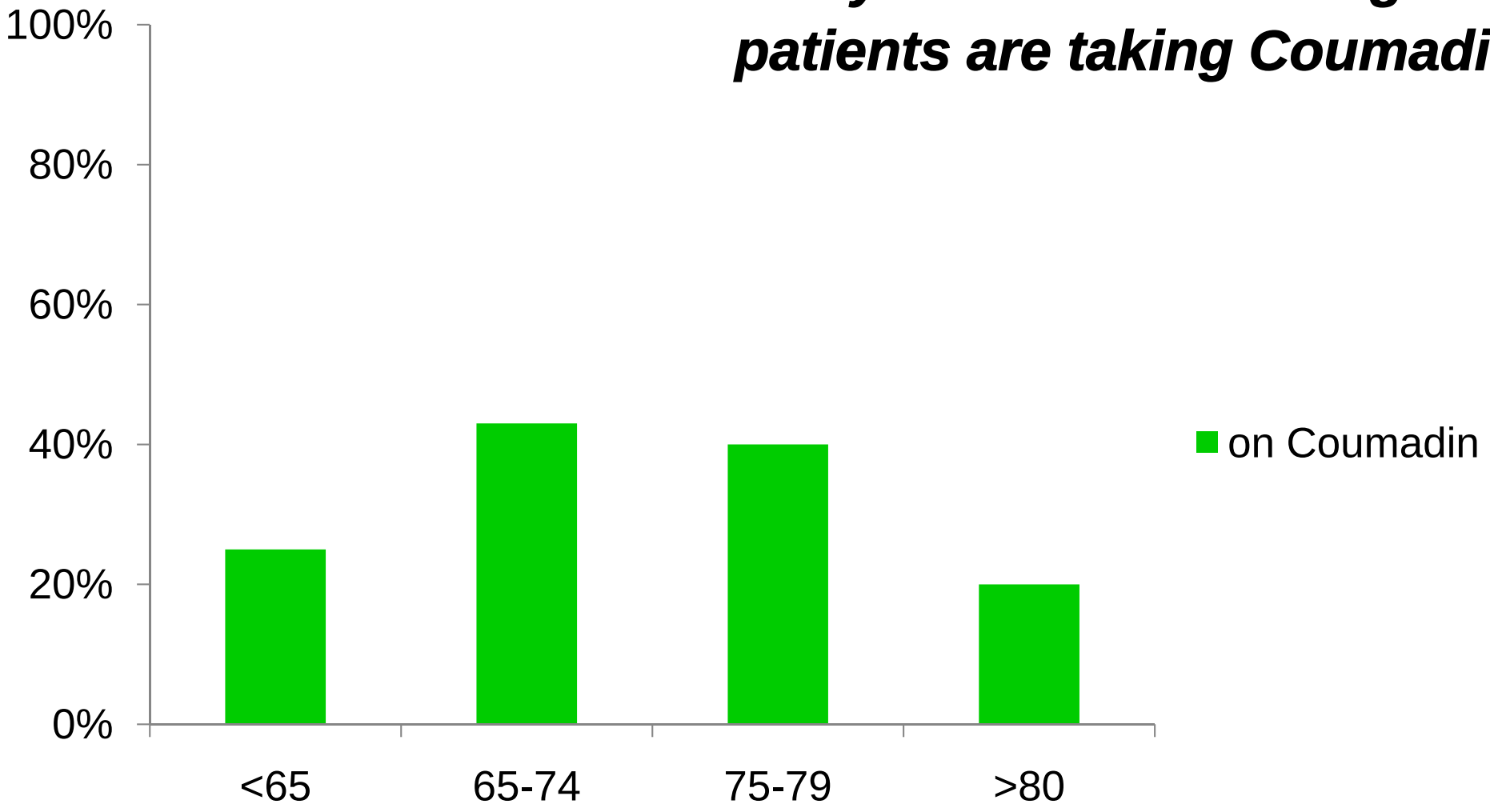
… but unfortunately it does not work in clinical practice…

… not with coumadin and not with newer drugs

- Any localized or general physical condition in which the hazard of hemorrhage might be greater than the potential clinical benefits of anticoagulation
- Any personal circumstance in which the hazard of hemorrhage might be greater than the potential clinical benefits of anticoagulation
- Pregnancy
- Hemorrhagic tendencies
- Blood dyscrasias.
- Recent or contemplated surgery of central nervous system
- Recent or contemplated surgery of the eye
- Recent or contemplated traumatic surgery resulting in large open surfaces
- Gastrointestinal bleeding
- Genitourinary tract bleeding
- Respiratory tract bleeding
- Cerebrovascular hemorrhage
- Cerebral aneurysms
- Dissecting aorta
- Pericarditis
- Pericardial effusions
- Bacterial endocarditis
- Threatened abortion
- Eclampsia
- Preeclampsia
- Inadequate laboratory facilities
- Unsupervised patients
- Senility
- Alcoholism
- Psychosis
- Lack of patient cooperation
- Spinal puncture
- Other diagnostic procedures with potential for uncontrollable bleeding
- Therapeutic procedures with potential for uncontrollable bleeding
- Major regional anesthesia
- Lumbar block anesthesia
- Malignant hypertension

Lone Atrial Fibrillation

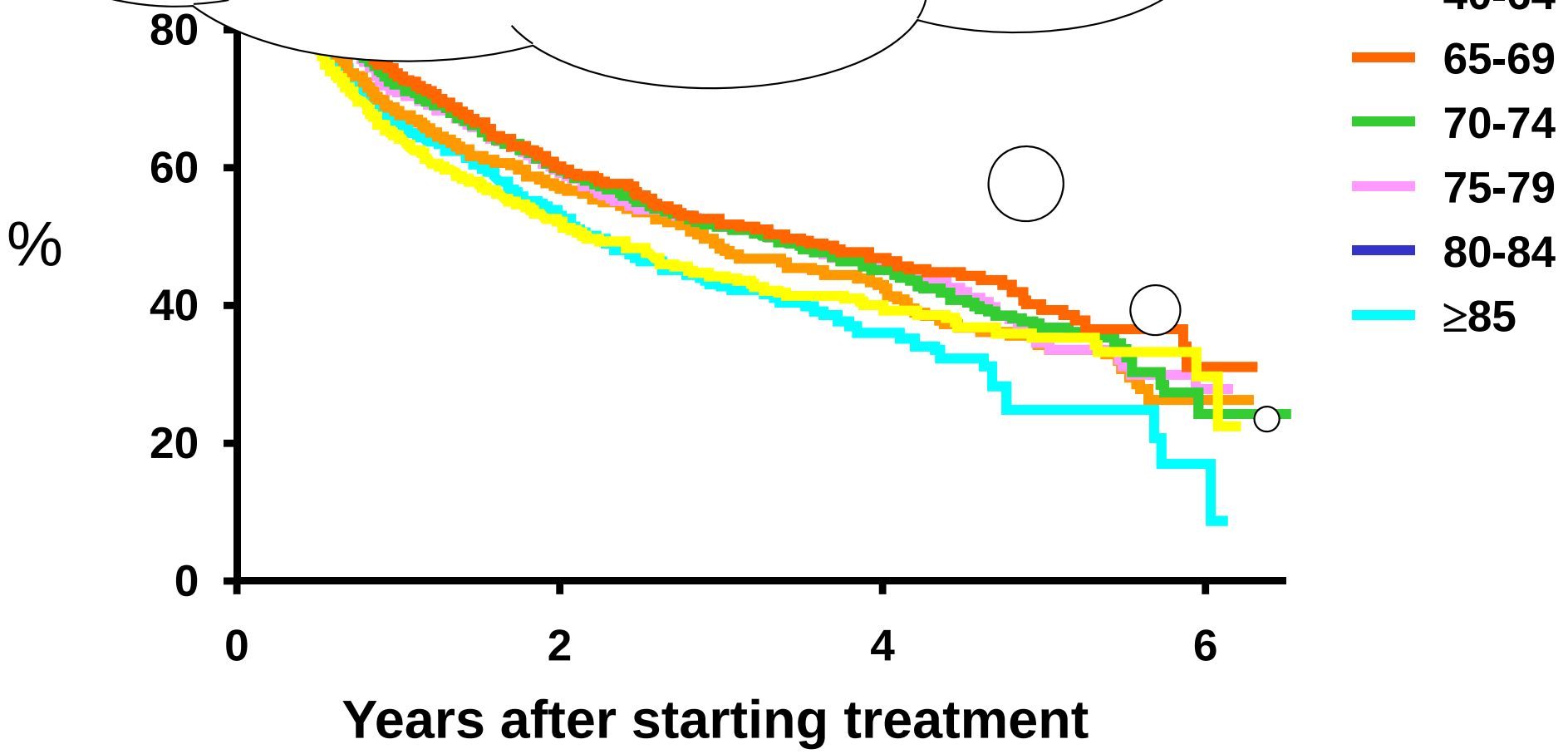
Only about 1/3 of all eligible patients are taking Coumadin



Stafford and Singer, Arch Int Med, 1996

W ctice

70% stroke risk reduction due to anticoagulation is only true for these 25%



Gallagher AM et al: J Thromb Haemost 6:1500, 2008

But we know that thrombi arise in the LAA!

Not all of them but 90 %

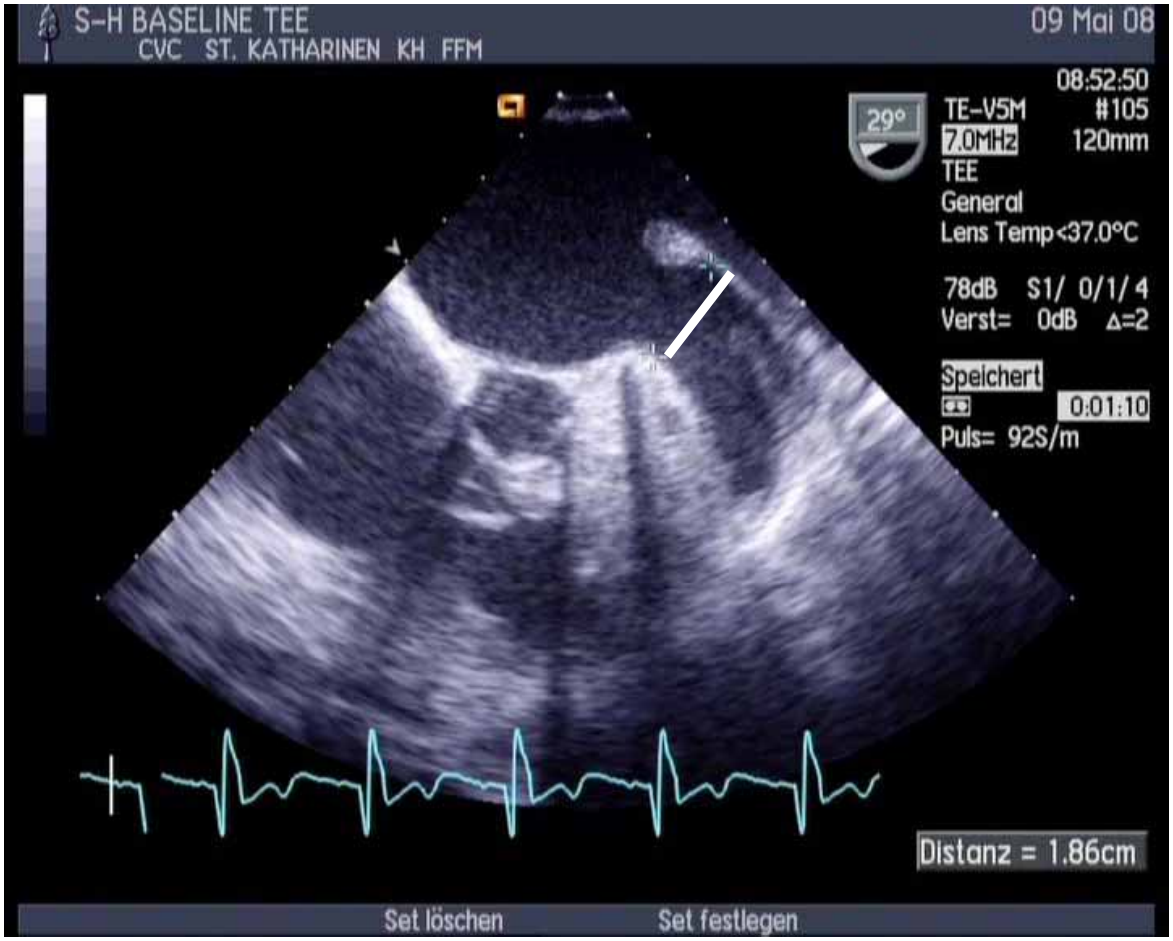
Therefore it is logical to close the LAA

LAA closure
is a causal therapy

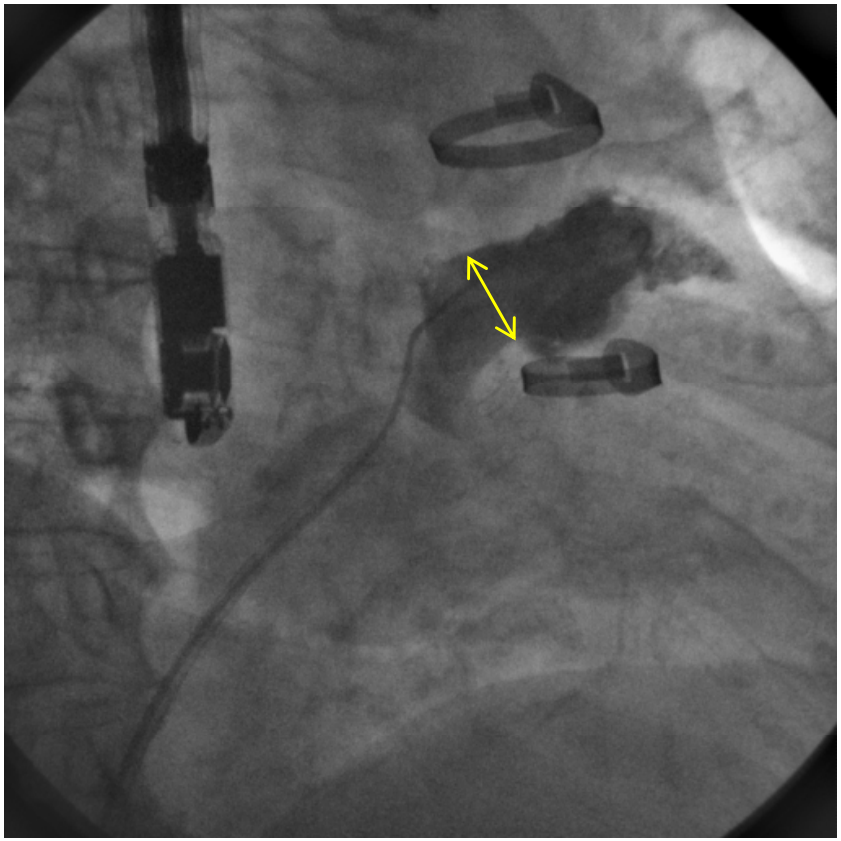
Watchman Occluder

- Nitinol
- PET membrane
- Hooks
- 21, 24, 27, 30, 33 mm

Watchman Implantation

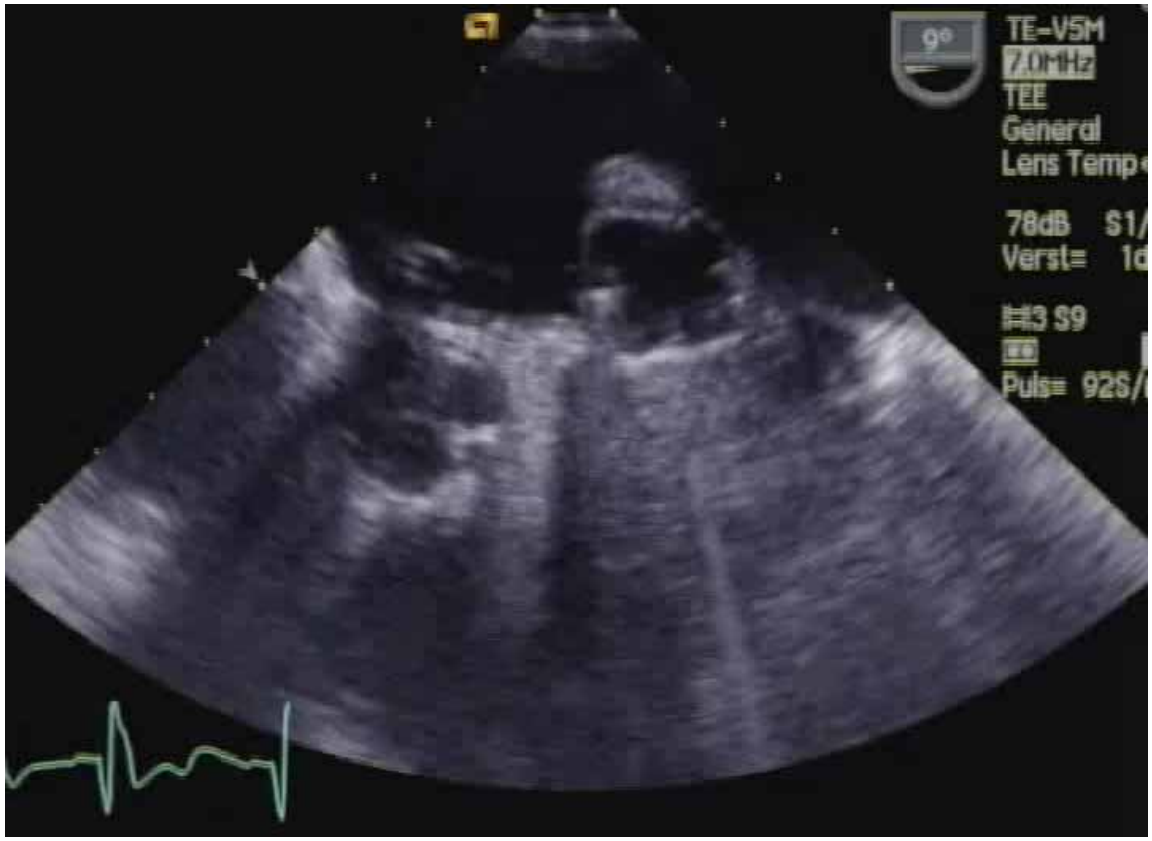


- LAA diameter in TEE 19 mm



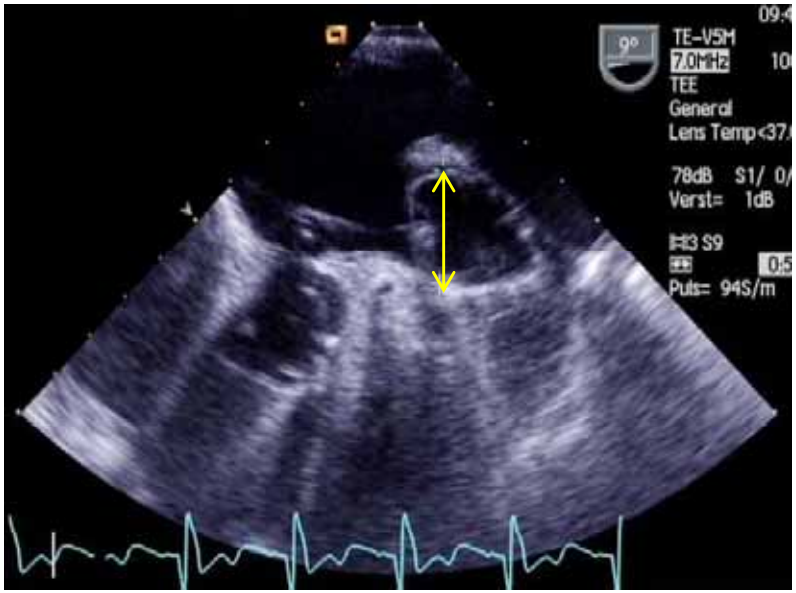
Watchman Implantation

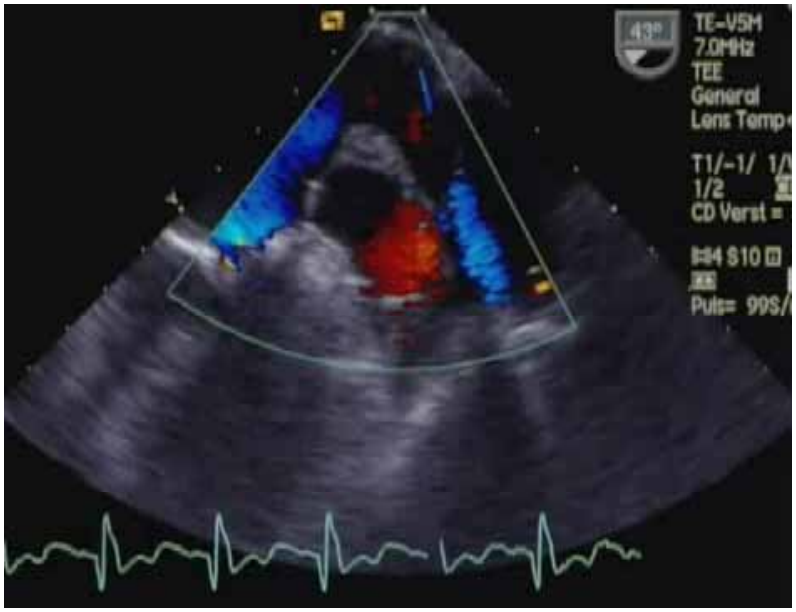
Maximum measured LAA ostium (mm)	Implant diameter (mm)
17 -19.5	21
20 - 22.9	24
23 - 25.9	27
26 – 28.9	30
29 – 31.9	33



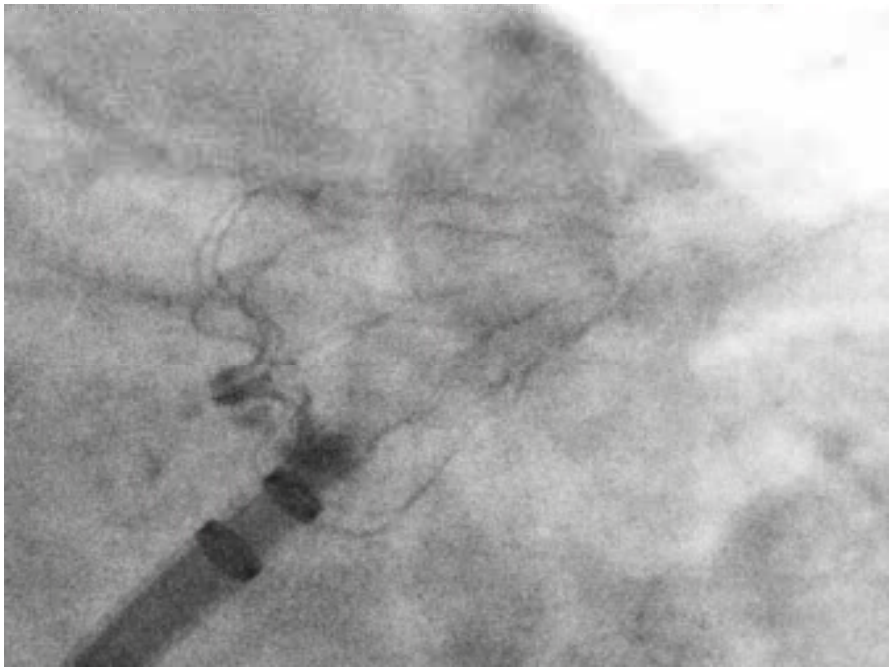
- device selection according to measurements
- Implantation of 21mm Watchman Occluder

Watchman Implantation





- Check position
- Check device compression
- Check residual flow
- Tug test
- Release



Where is the evidence?

Protect AF

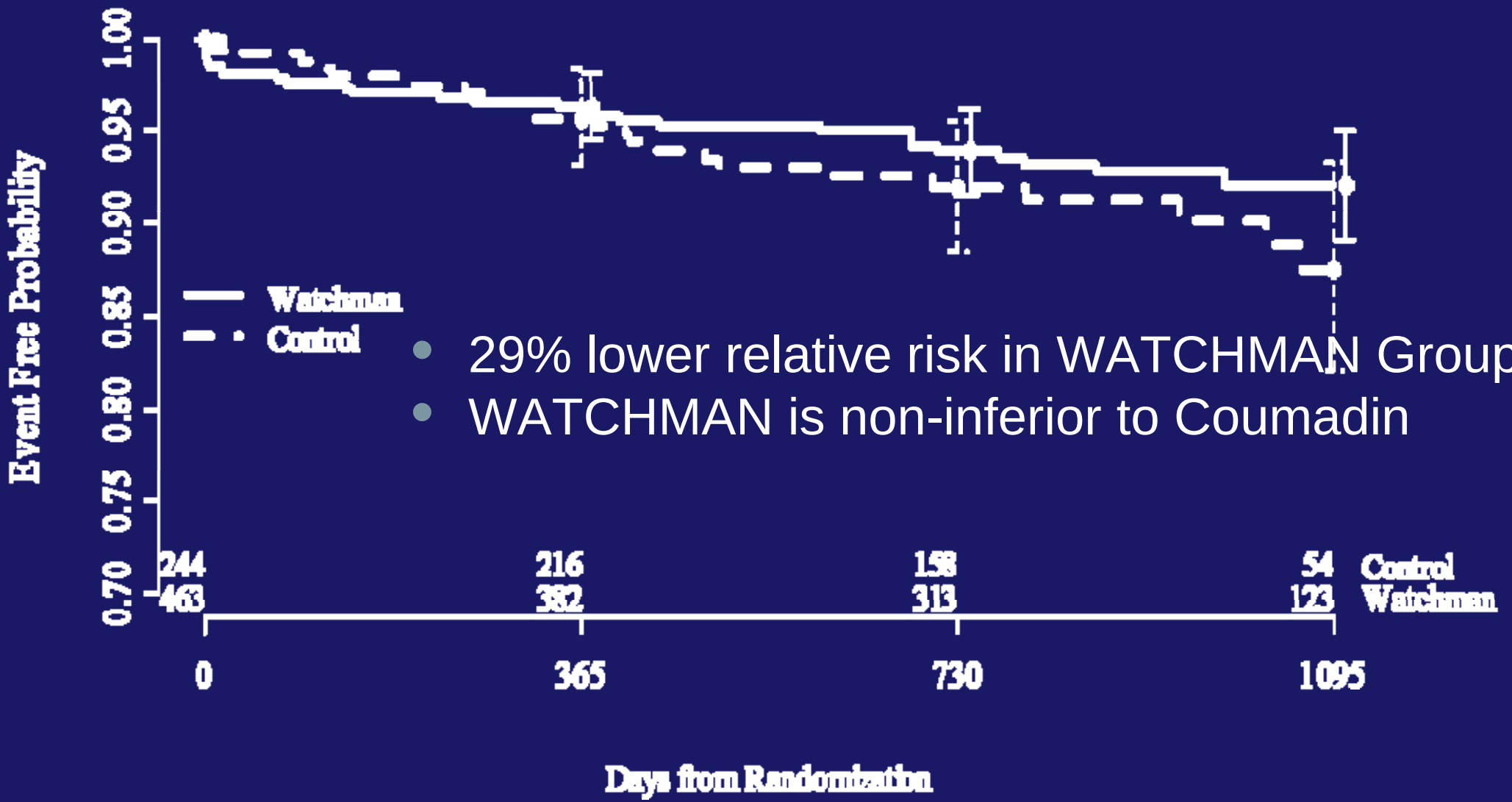
(System for Embolic **PROTECT**ion
in Patients with **A**trial **F**ibrillation)

- Multicenter
- Prospective randomized, FDA controled
- WATCHMAN gen 2 vs coumadin 2:1
- Non-inferiority trial
- 800 pts
- 1500 patient-years

Holmes D, et al Lancet 2009

Primary Efficacy Endpoint

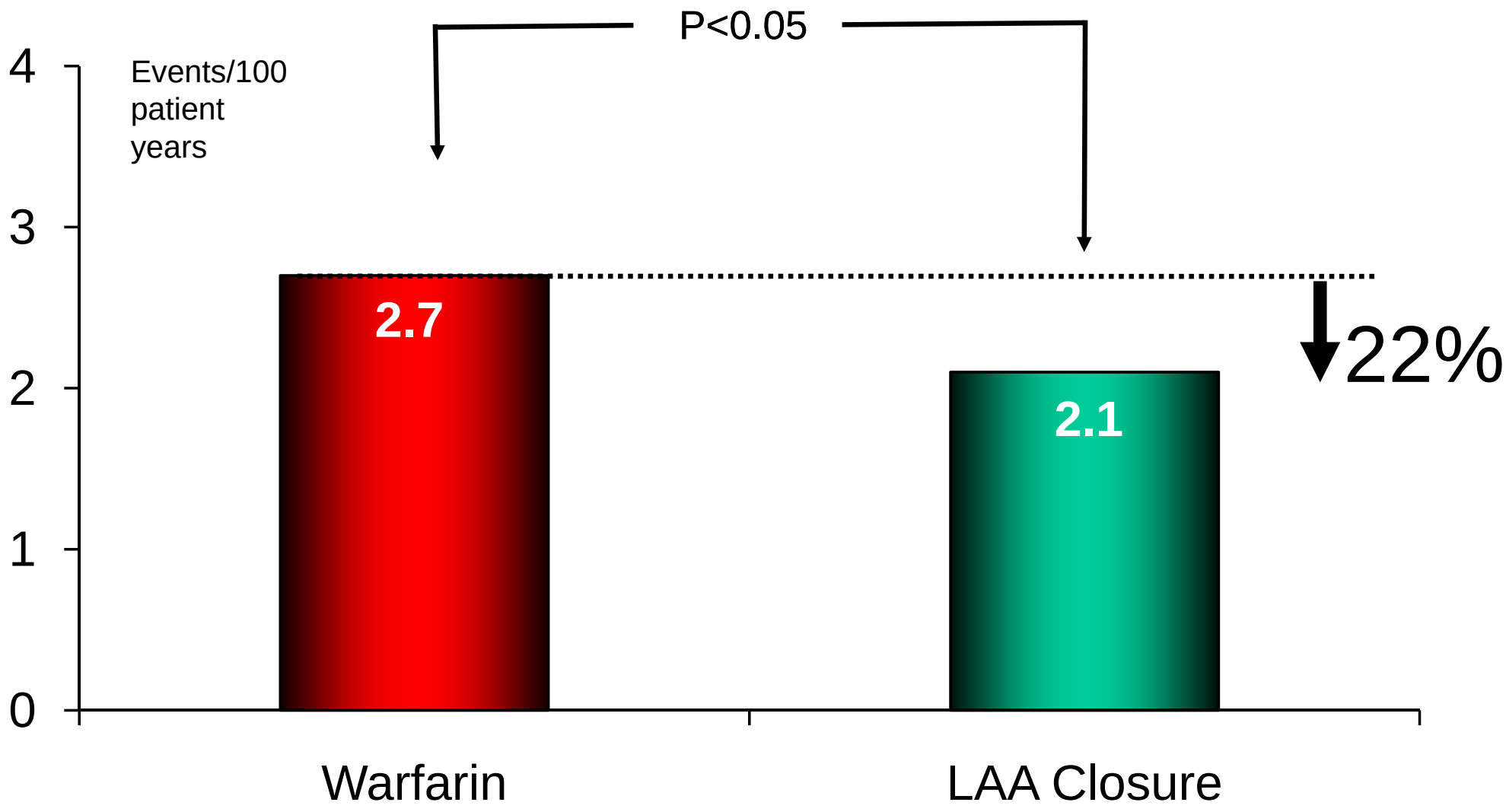
Freedom from Stroke, Death, Systemic Embolization



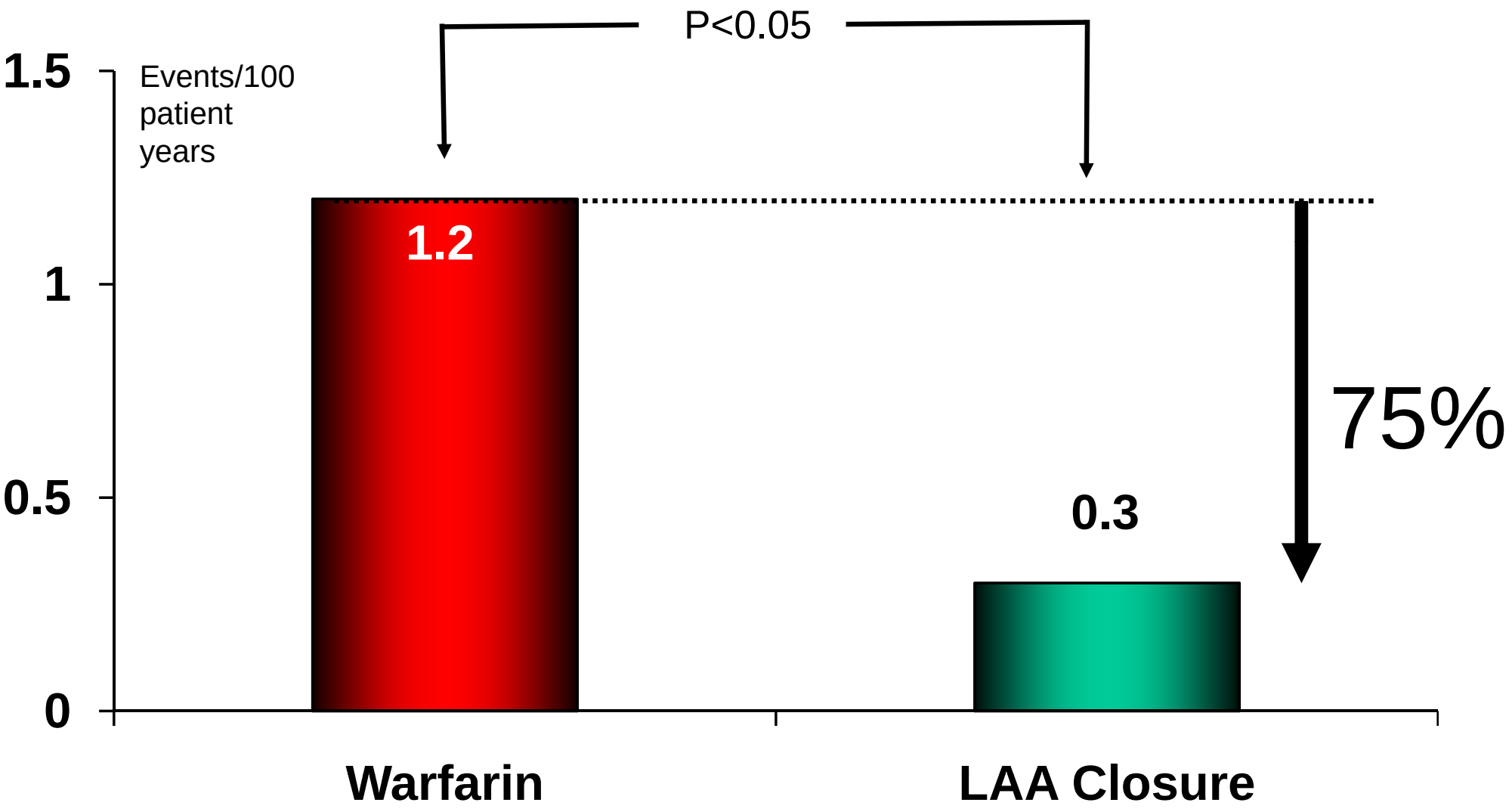
- 29% lower relative risk in WATCHMAN Group
- WATCHMAN is non-inferior to Coumadin

Other significant findings

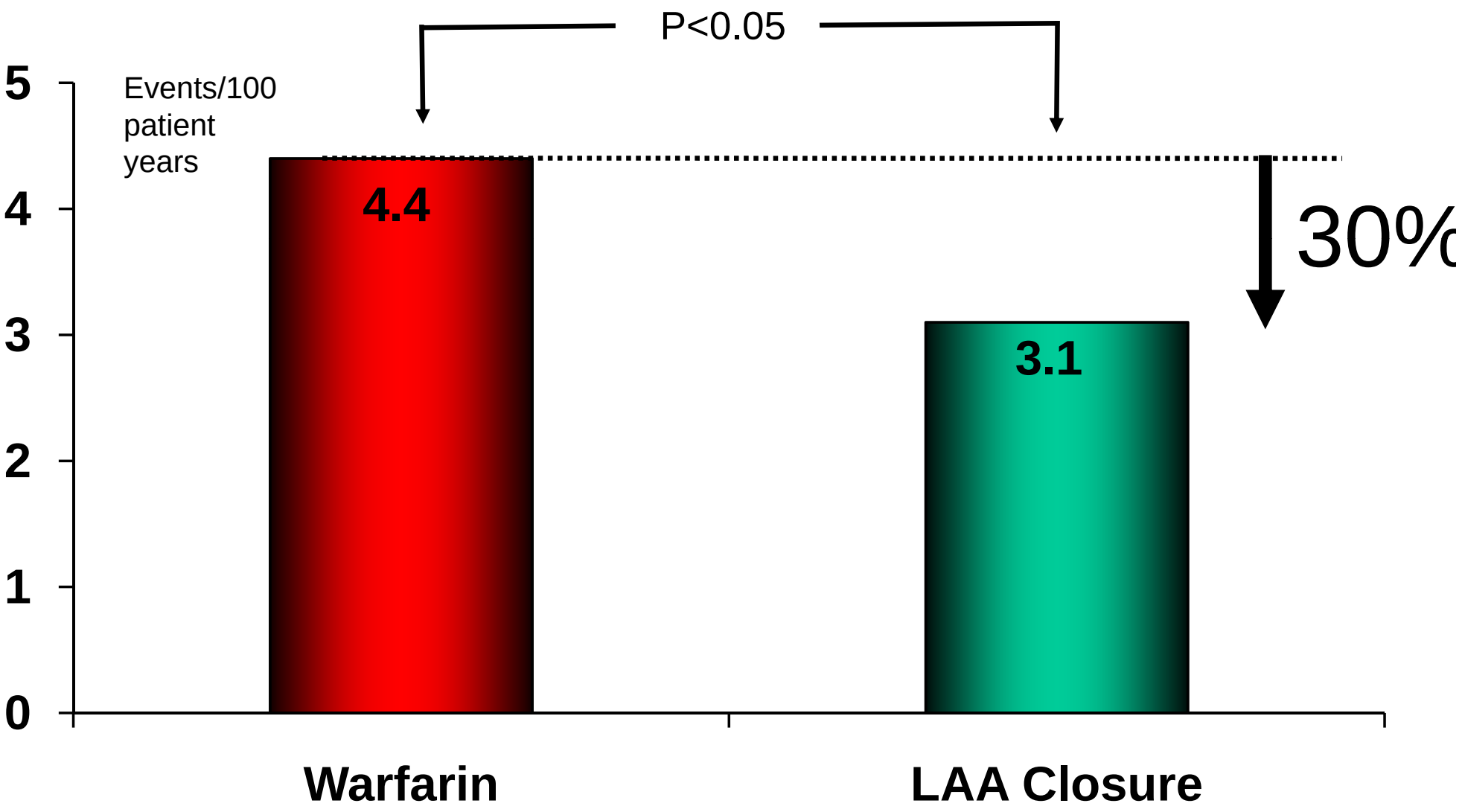
All Stroke


P<0.05
Events/100 patient years
4
3
2
1
0
2.7
2.1
22%
Warfarin
LAA Closure

Hemorrhagic Stroke

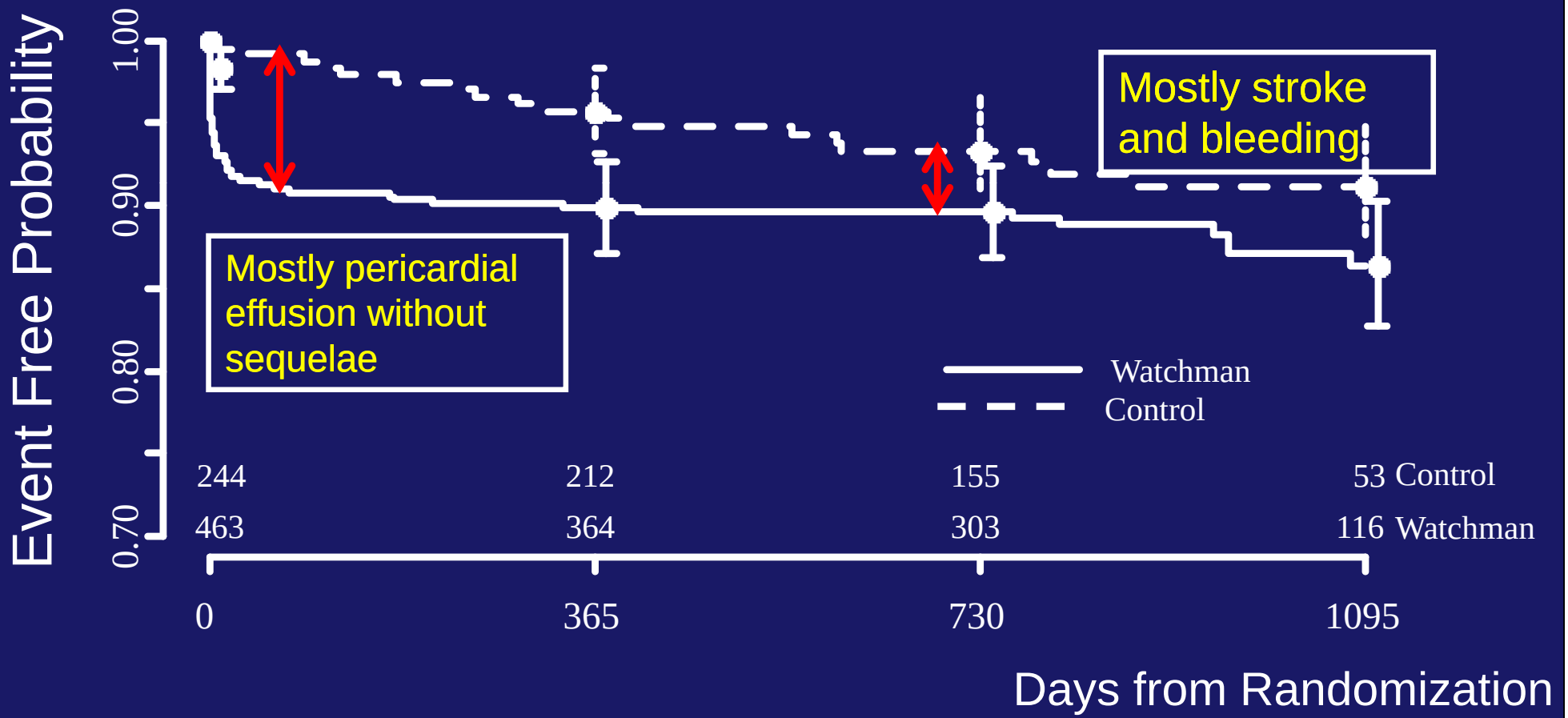


Mortality


P<0.05
Events/100 patient years
5
4
3
2
1
0
4.4
3.1
30%
Warfarin
LAA Closure

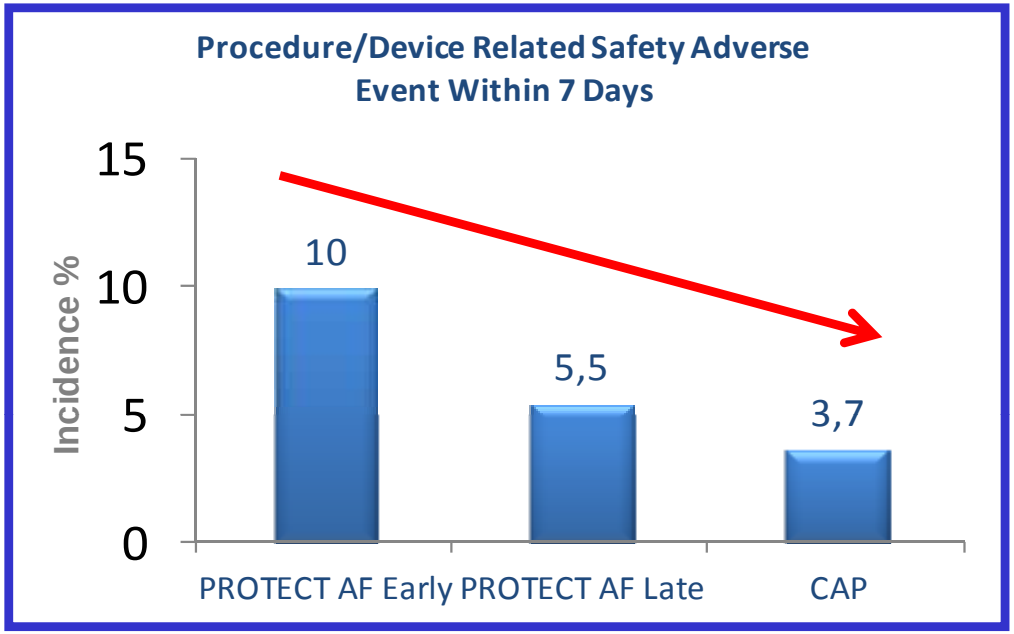
Safety

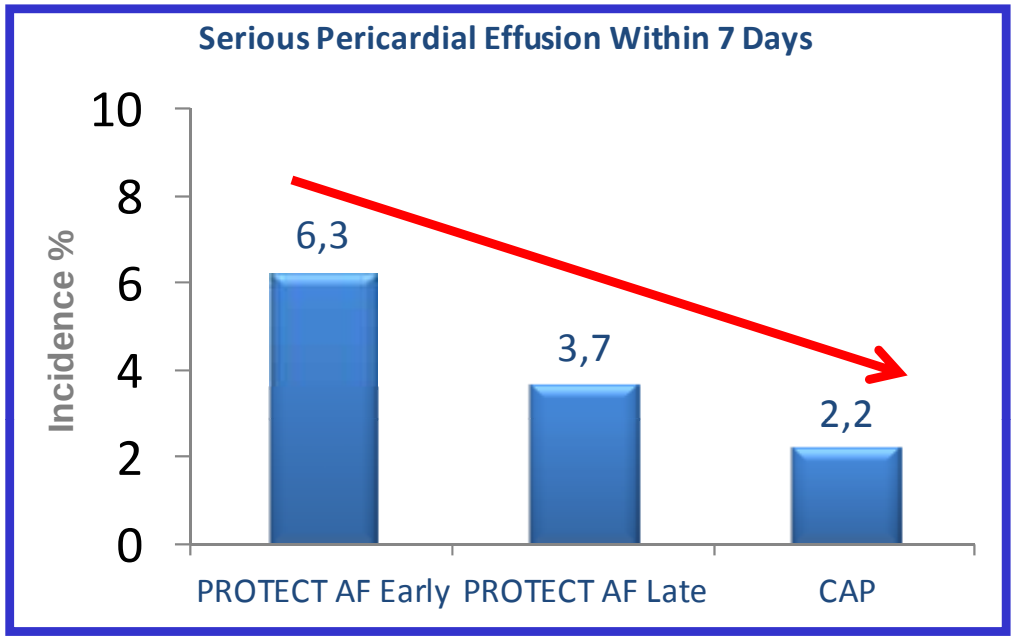
Freedom from device embolization, pericardial effusion, severe bleeding

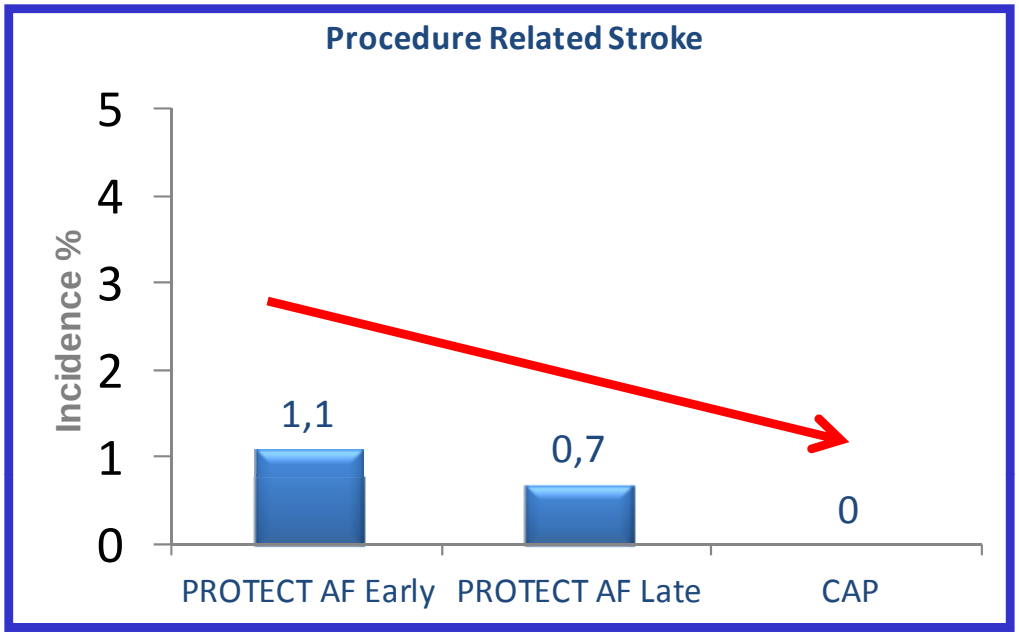


Performance – Learning Curve Effect

PROTECT-AF vs. CAP







With increased operator experience, the procedure related adverse events and serious pericardial effusions were reduced significantly. Peri-procedural strokes were eliminated

PREVAIL

- Similar design to PROTECT AF:
  - prospective randomized 2:1 (device: control)
- 407 randomized patients
- Purpose
  - Confirm the results of PROTECT AF
  - Demonstrate improved safety profile
  - Inclusion of new operators to show enhancements to the training program are effective

PREVAIL Primary Endpoints

- **7-day** death, ischemic stroke, systemic embolism and procedure or device related major complications
- **18 months** composite of stroke, systemic embolism, and cardiovascular/unexplained death
- **18 months** ischemic stroke or systemic embolism occurring >7 days post randomization

PREVAIL did confirm the results of PROTECT AF

- Significant less procedural complications than in PROTECT AF
  - Despite including new operators
- 18 months stroke, embolism, death rate almost non-inferior to anticoagulation
  - Not significant yet due to small patient number and low event rate
- 18 months stroke/embolism rate non inferior to anticoagulation

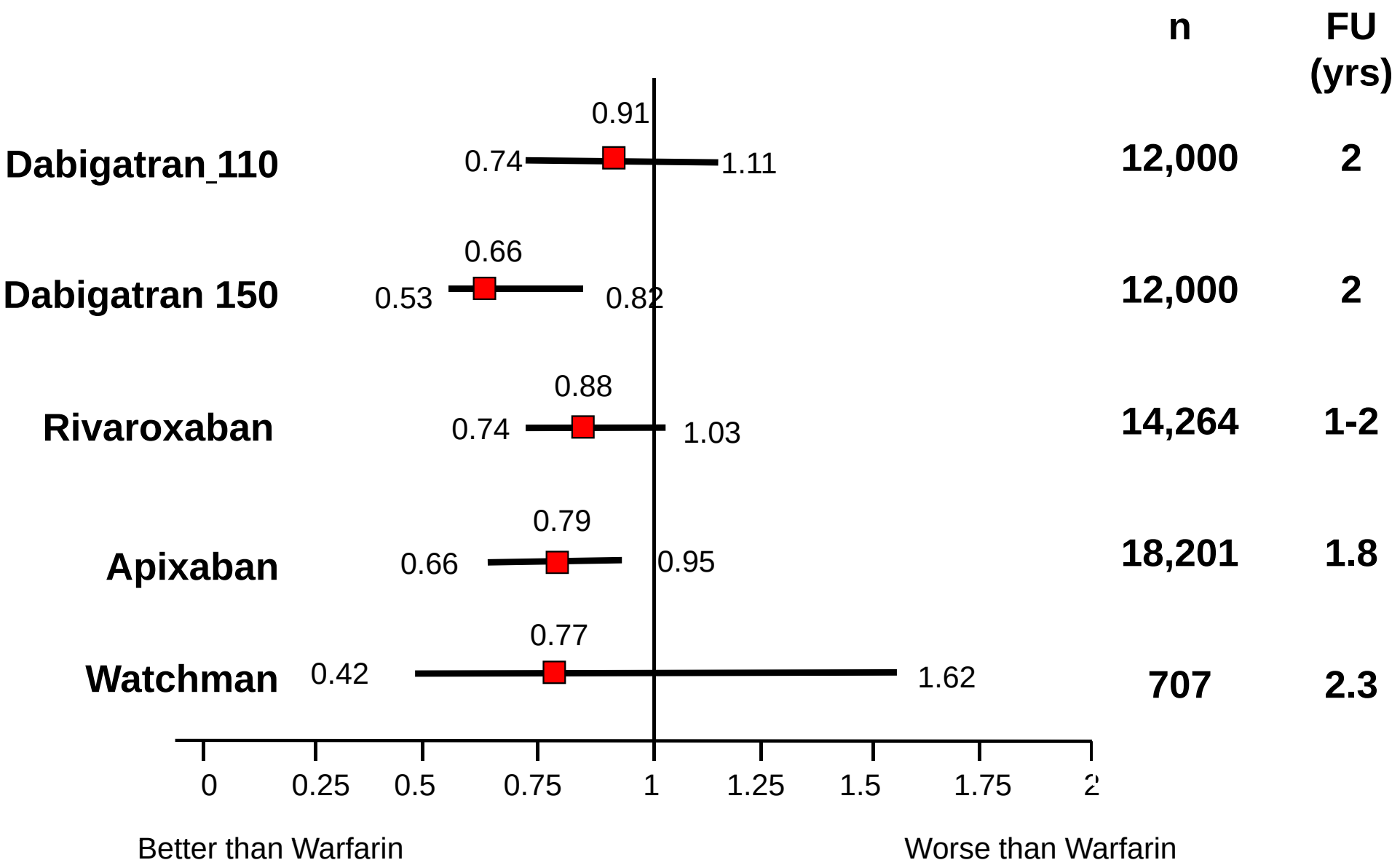
"We now have new anticoagulants"

"Do we still need LAA closure?"

"New anticoagulants are better than coumadin"

Yes, but....

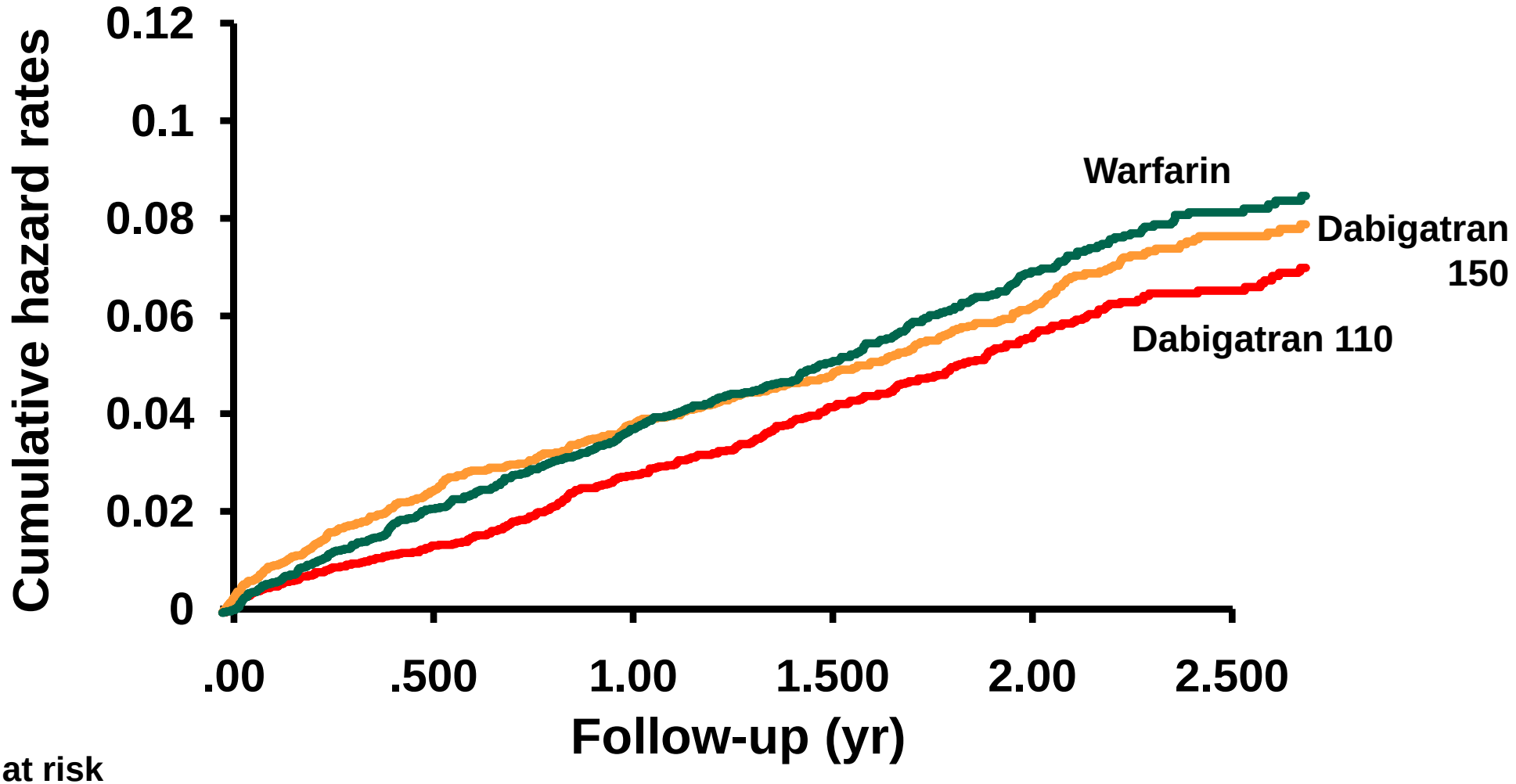
New anticoagulants are better than warfarin



"New anticoagulantis have less bleeding risks than coumadin!"

Yes, but....

Dabigatran - Major Bleeding

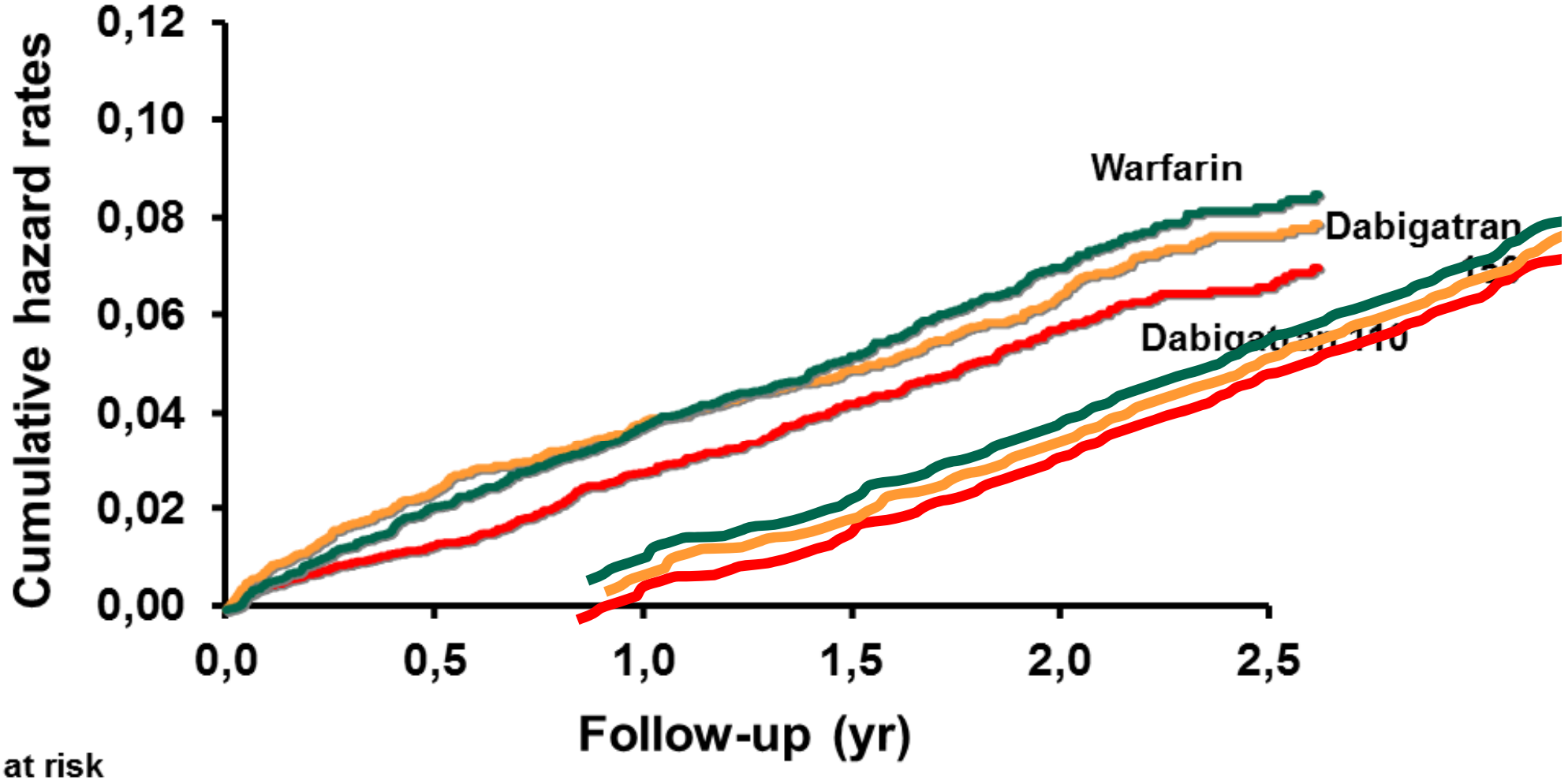


No. at risk

6,015	5,835	5,640	4,510	2,872	1,349
6,076	5,839	5,638	4,557	2,928	1,366
6,022	5,801	5,600	4,474	2,797	1,269

Connolly SJ et al: NEJM 361:1139, 2009

Dabigatran - Major Bleeding



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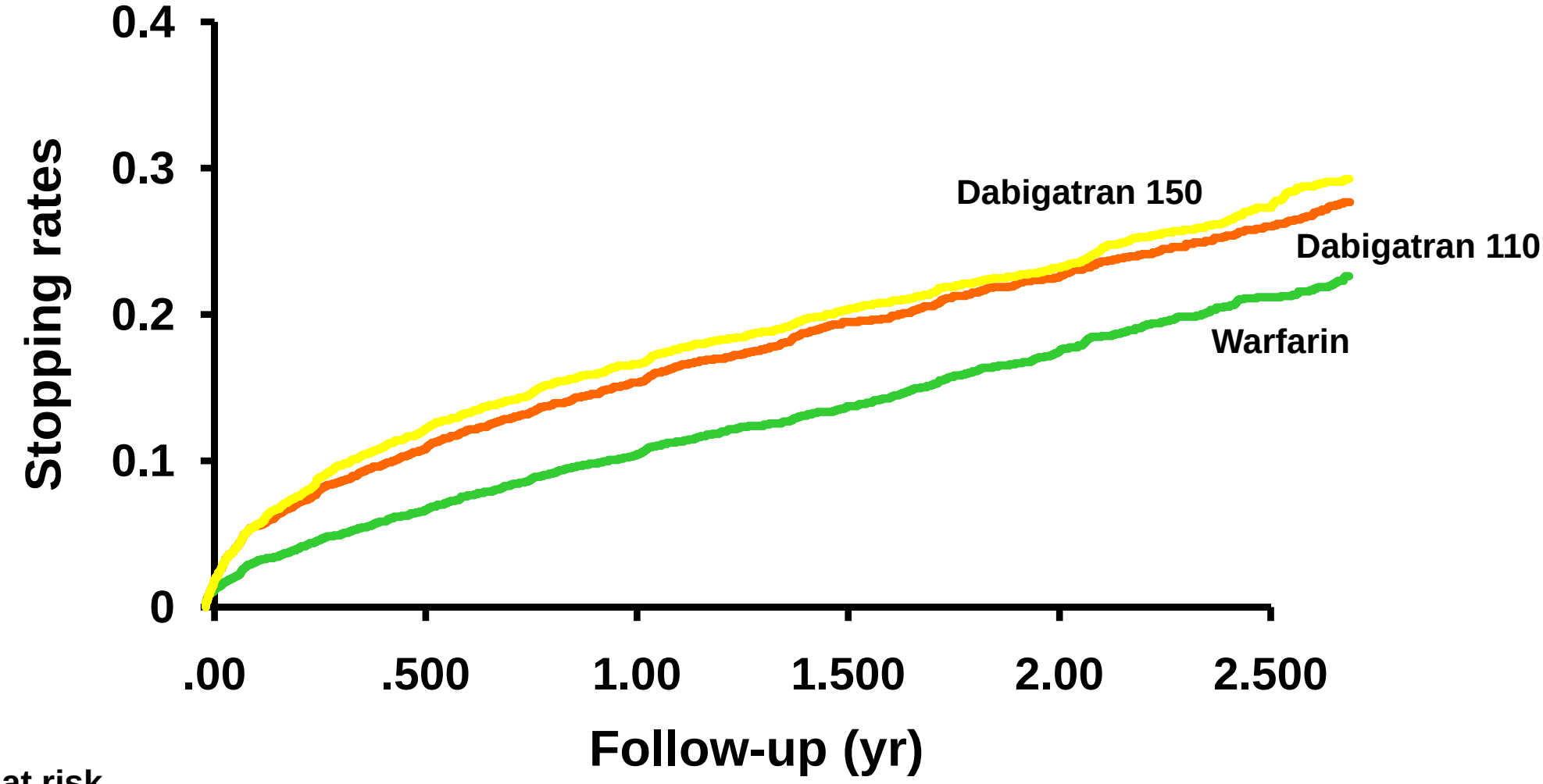
	6,022	5,801	5,600	4,474	2,797	1,269

Connolly SJ et al: NEJM 361:1139, 2009

"But new anticoagulants are much better tolerated than coumadin!"

Dabigatran

Permanent Discontinuation



No. at risk

6,015	5,336	5,026	3,950	2,491	1,176
6,076	5,329	5,015	3,955	2,528	1,172
6,022	5,563	5,269	4,158	2,561	1,187

Connolly SJ et al: NEJM 361:1139, 2009

Drug Discontinuation within 2 yrs

Rivaroxaban	Warfarin
24%	22%
Apixaban	Warfarin
25%	28%

All Anticoagulants

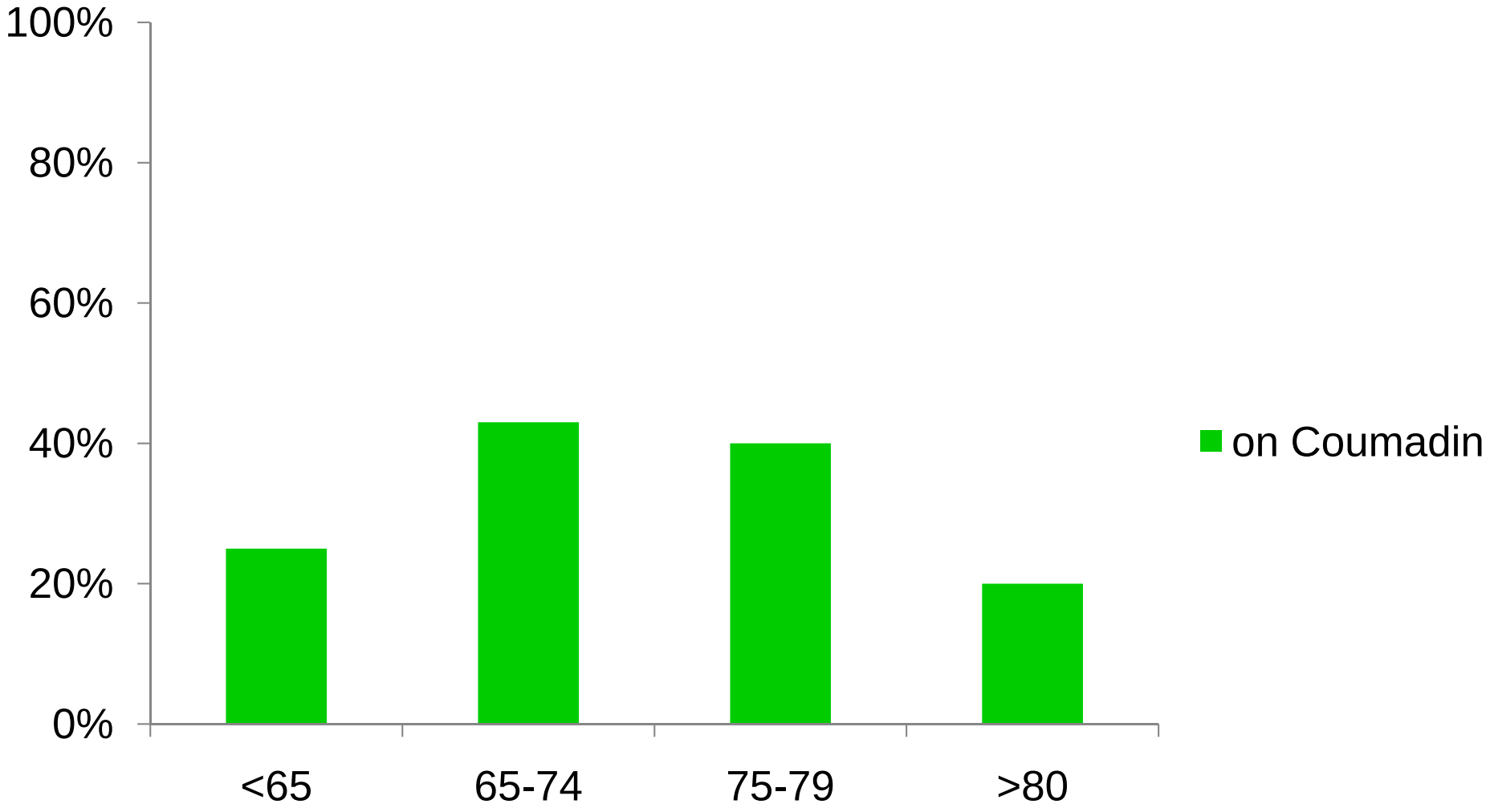
- Per definition
  - have to be given lifelong
  - have a bleeding risk
- Bleeding risk increases with age
- At some point during life anticoagulants will have to be stopped
- What does that mean in clinical practice?
  - You should avoid anticoagulants in **elderly** patients because of higher bleeding risk
  - You should avoid anticoagulants in **younger** patients because they would have to take it for a longer time period

In whom can or should LAA closure be considered?

- Patients with contraindications for anticoagulation
  - in the guidelines!
  - because there is no alternative
- Patients without contraindications anticoagulation
  - according to PROTECT AF, CAP and PREVAIL
  - and this will be in future guidelines

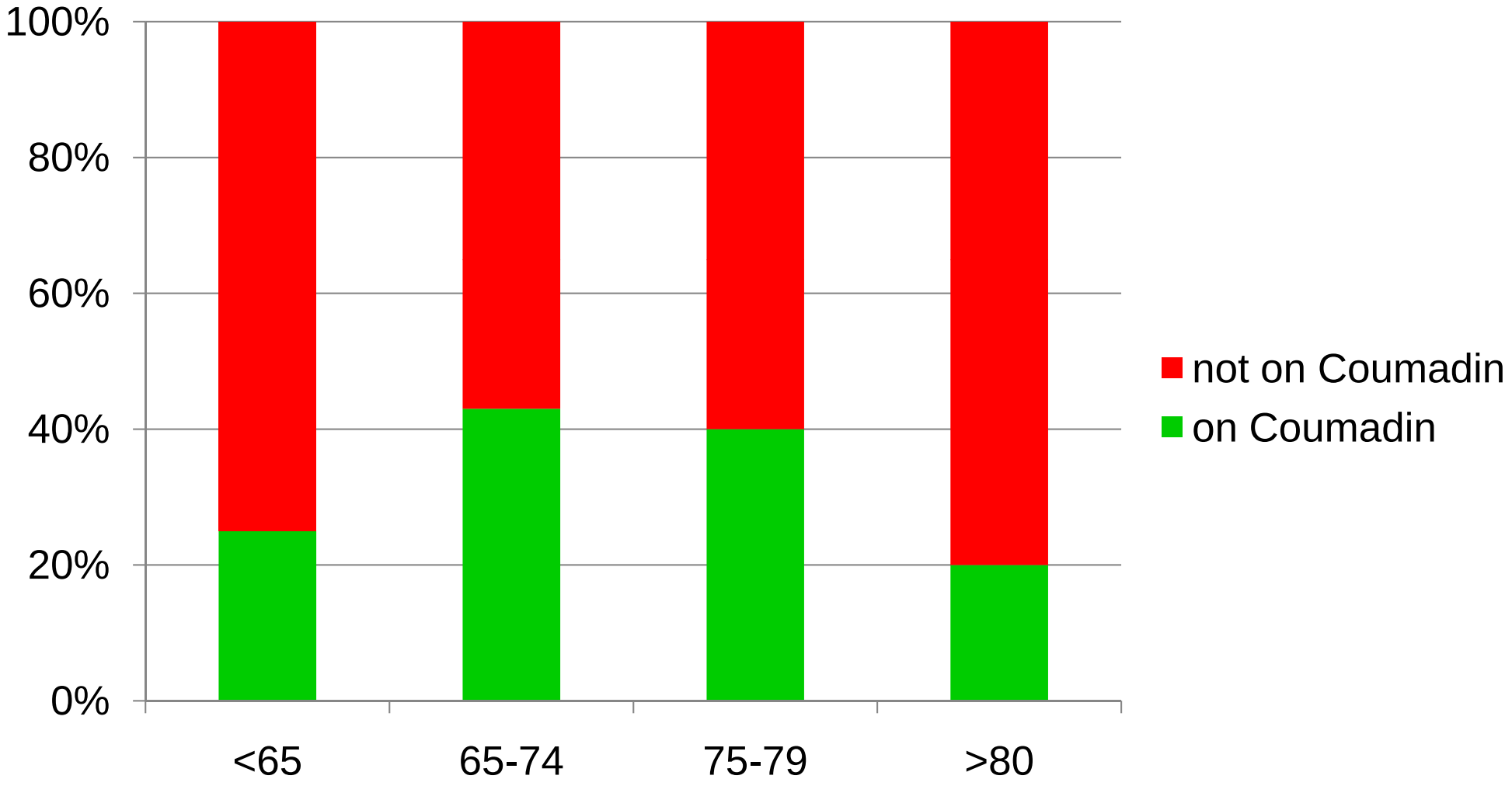
In how many of your patients with Afib should you consider LAA closure?

Lone Atrial Fibrillation



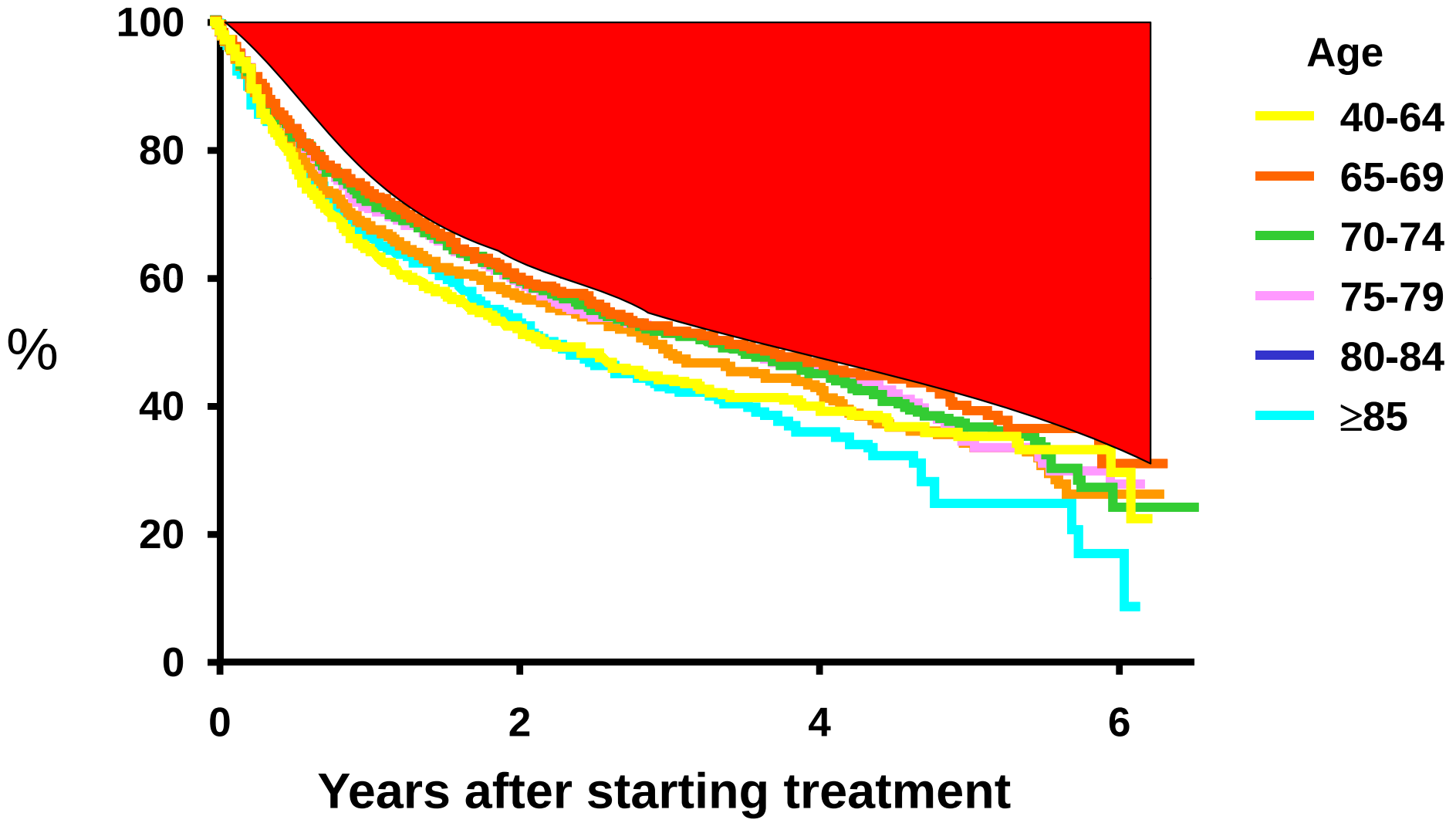
Stafford and Singer, Arch Int Med, 1996

Lone Atrial Fibrillation



Stafford and Singer, Arch Int Med, 1996

Warfarin Use in General Practice
Discontinuation



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