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October
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2018
Starhotels
Majestic

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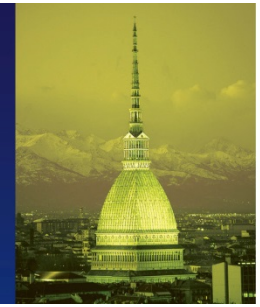

UNIVERSITÁ DEGLI STUDI DI TORINO

AZIENDA OSPEDALIERO - UNIVERSITARIA
Città della Salute e della Scienza di Torino

Atrial Fibrillation Screening

To Be Aggressive Or Not?

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Presenter Disclosure Information

- Research support:
  Boston Scientific, Medtronic; St., Bayer Healthcare, Gilead, Sanofi
- Advisory Board:
  Biotronik, Medtronic; St. Jude Medical, MSD, Sanofi, Bayer Healthcare, Boehringer, BMS, Pfizer, Daiichi/Sankyo
- Speaker Fees:
  Boston Scientific, Medtronic, St. Jude Medical, Sorin Group, Bayer Healthcare, Boehringer, BMS, Cardiome, Meda, MSD, Pfizer, Sanofi, Daiichi/Sankyo

Can We Prevent Stroke With AF Screening and OAC Treatment ?

AF is a risk factor

- 5X higher risk

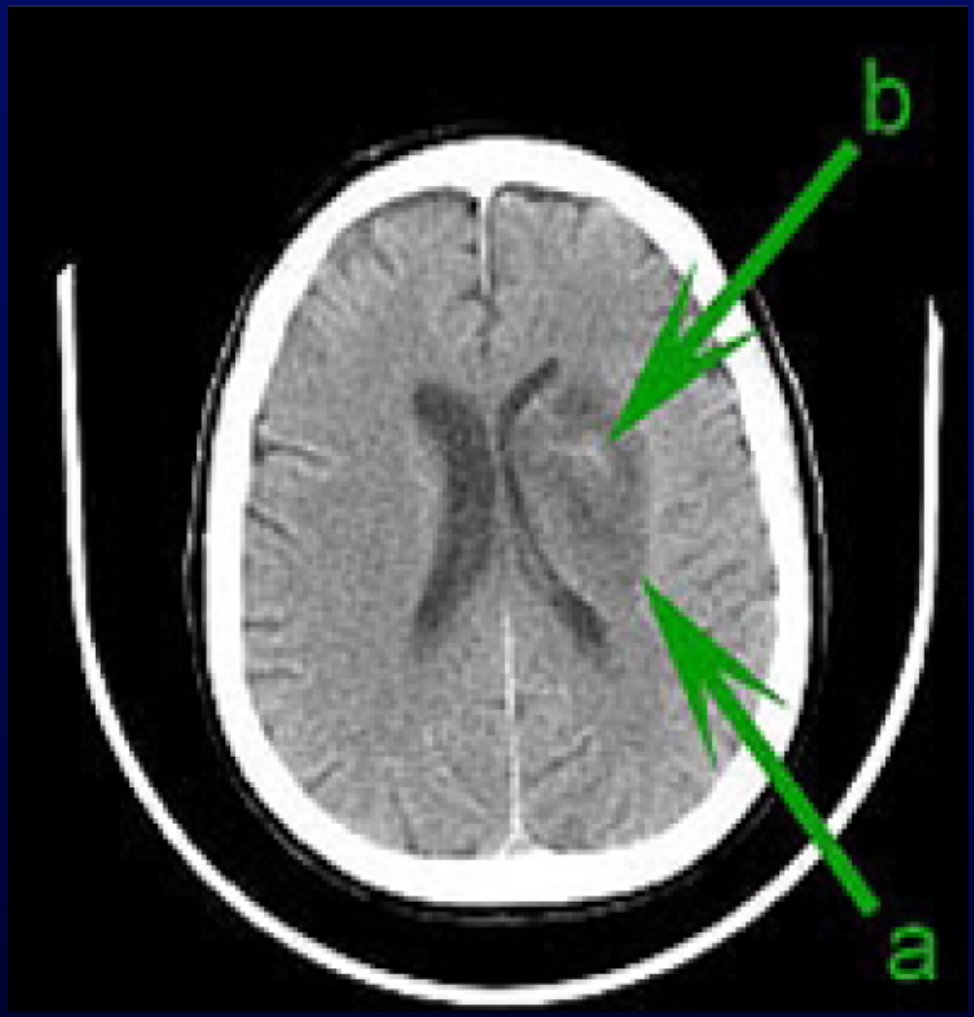
  Wolf Stroke 1991

- -67% RR reduction with OACs

  Hart Ann Int Med 1999

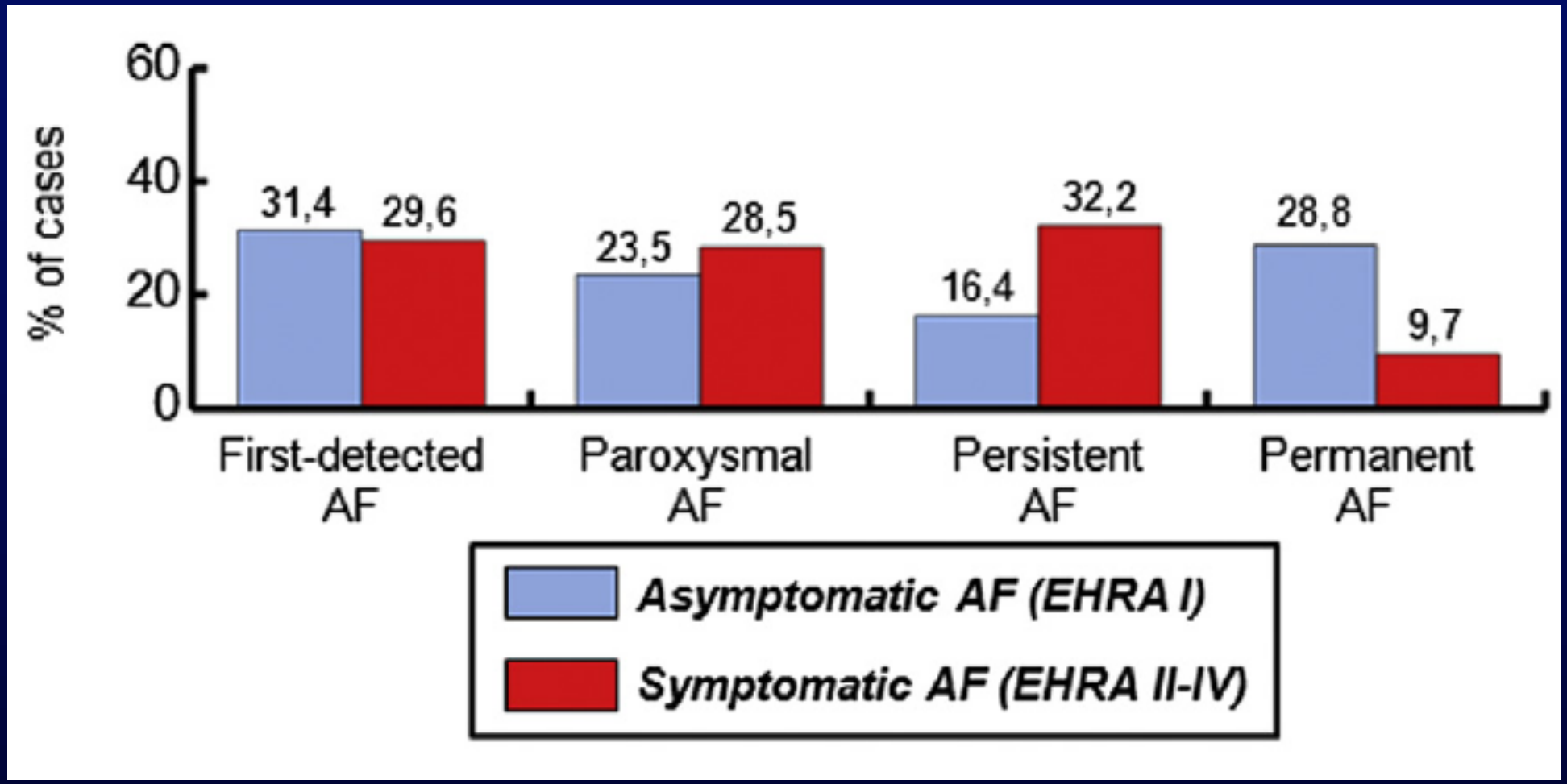
- *Further -19% RR reduction tith NOAcs*

  Ruff Lancet 2014



Type of AF at Enrollment In EORP-AF Registry

Symptomatic and Asymptomatic Pts With AF



Boriani G. Am J Med 2015; 128, 509-518

The Wilson-Jungner Criteria

For Appraising The Validity of a Screening Programme

Endorsed by WHO 1968

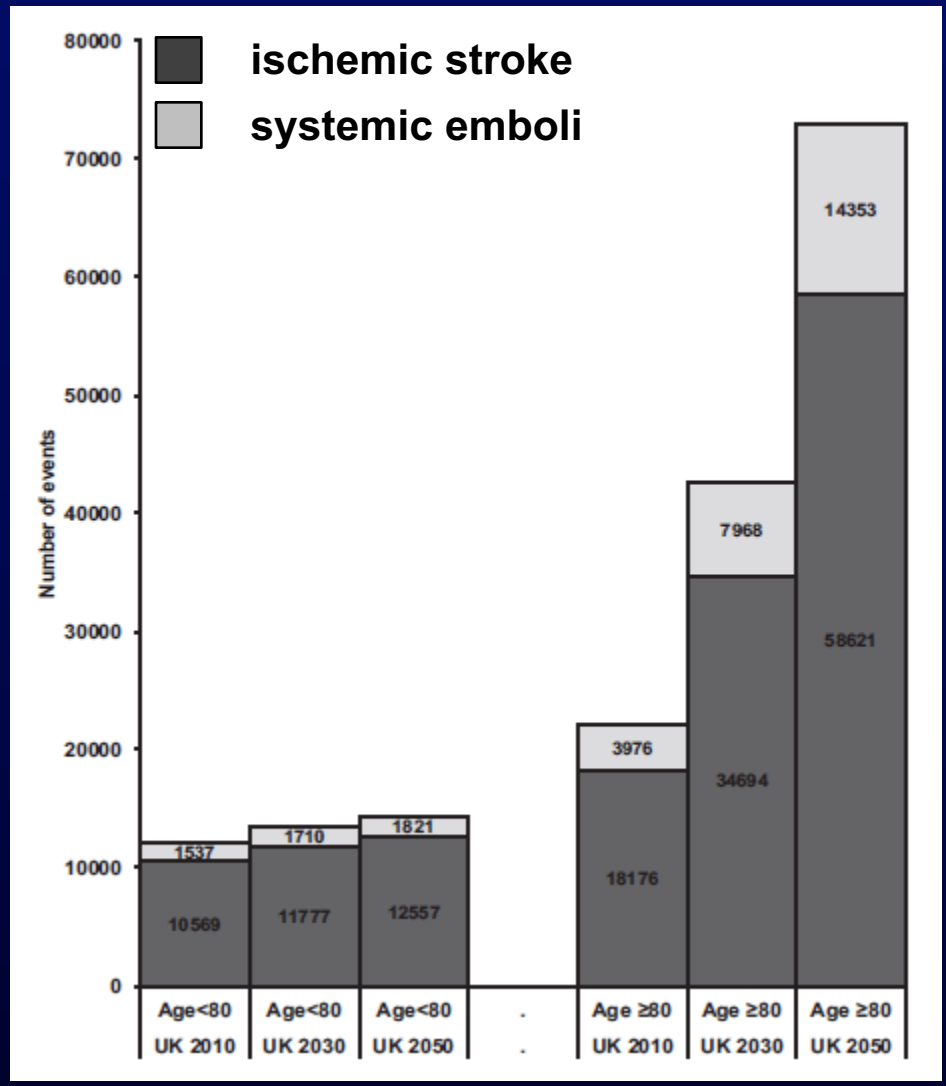
1. The condition sought should be an important health problem
2. There should be an accepted treatment for pts with recognized disease
3. Facilities for diagnosis and treatment should be available
4. There should be a recognizable latent or early symptomatic stage
5. There should a suitable test or examination
6. The test should be acceptable to the population
7. The natural history of the condition (including latent to declared disease), should be adequately understood
8. There should be an agreed policy on whom to treat as patients
9. The cost of case-finding (including diagnosis and treatment of pts diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole
10. Case-finding should be a continuing process and not a “once and for all” project.

1. Is It An Important Health Problem?

Projected Number of AF–Related Incident Ischemic Strokes And Incident Systemic Emboli

Based On The Current Incidence Rate In *the Oxford Vascular Study*

Projected number of AF–related incident ischemic strokes and incident systemic emboli extrapolated from the Oxford Vascular Study to the UK population in 2010, 2030, and 2050 stratified by age and based on the current incidence rate in the Oxford Vascular Study.

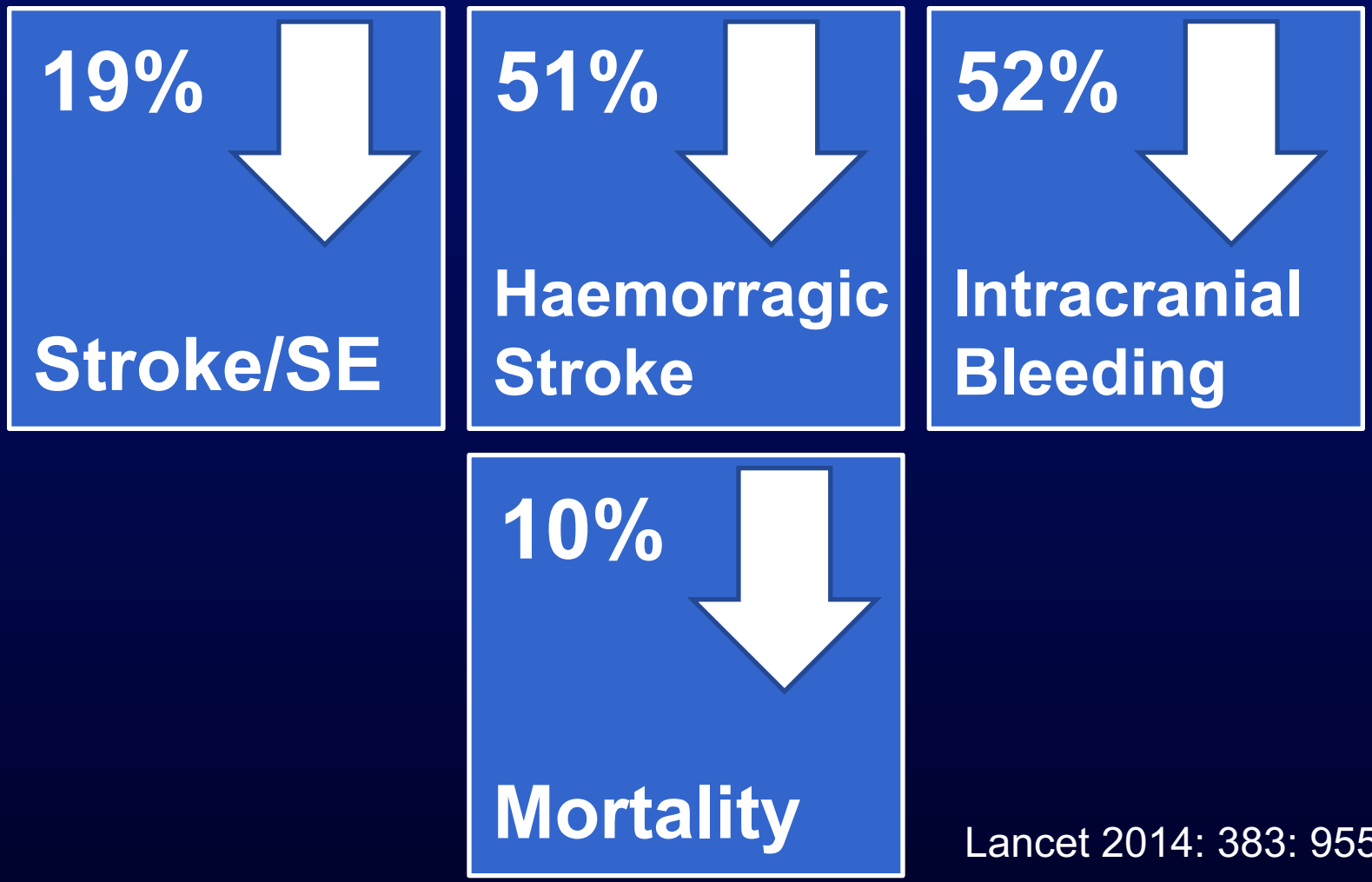


Yiin GS. Circulation 2014; 130: 1236-44

2. Is There An Acceptable Treatment ?

Stroke Prevention in AF

Favaourable Efficacy and Safety Profile of NOACs vs VKAs



Ruff CT.
Lancet 2014: 383: 955-62 (modif.)

3. Facilities for Diagnosis ?

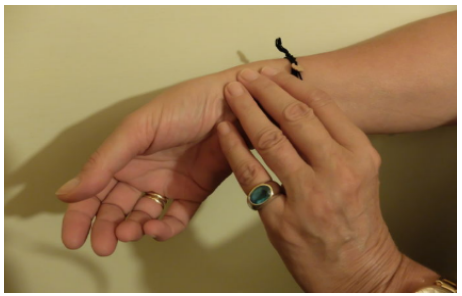
Europace(2012) **14**, 1385–1413
doi:10.1093/europace/eus305

ESC GUIDELINES

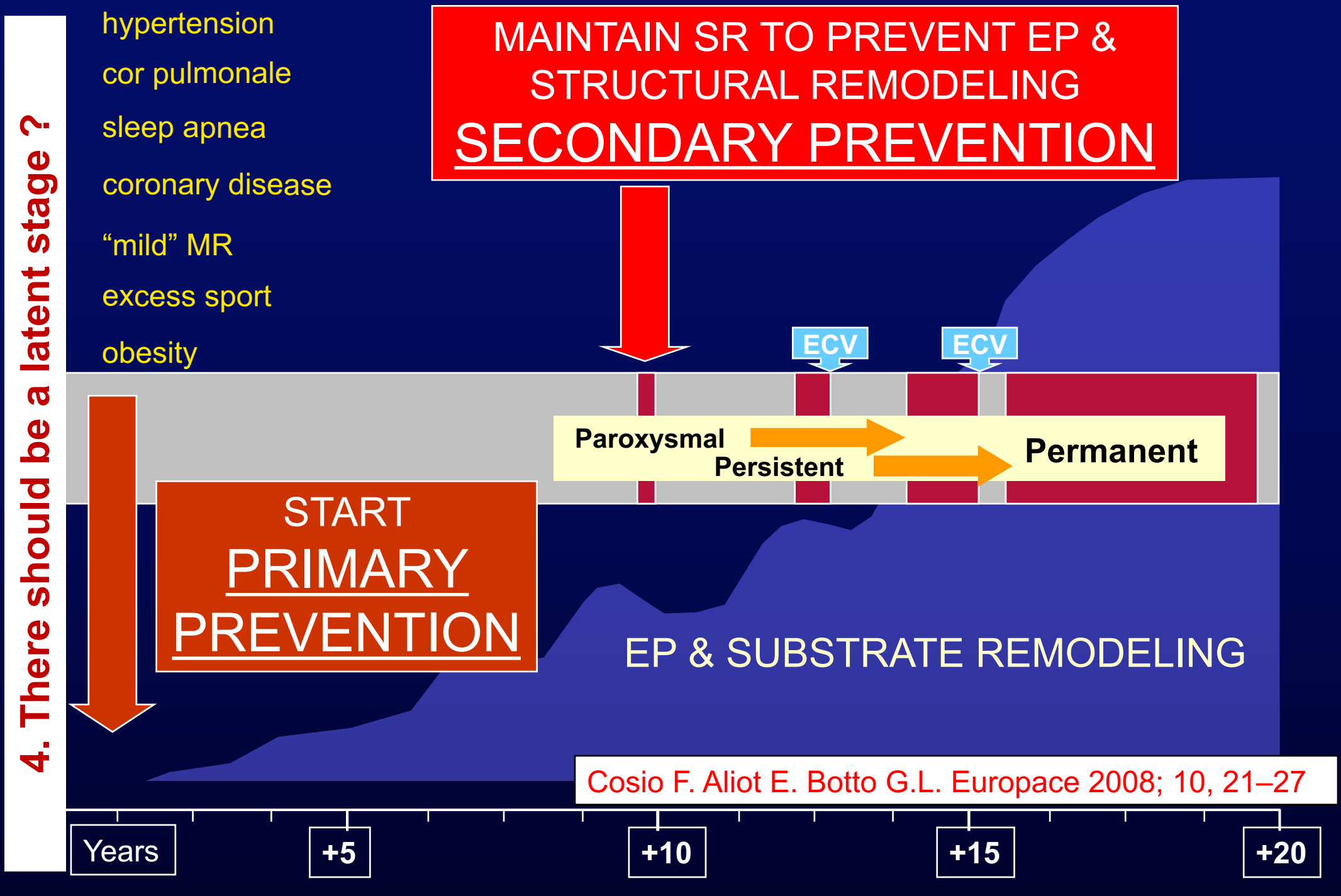
2012 focused update of the ESC Guidelines for the management of atrial fibrillation

Recommendation for screening of AF

Recommendations	Class[a]	Level[b]
Opportunistic screening for AF in patients ≥65 years of age using pulse-taking followed by an ECG is recommended to allow timely detection of AF.	I	B



Fitzmaurice DA, Lip G. Br Med J 2007; 335: 383.
Hobbs FD, Lip G. The SAFE study. Health Technol Assess 2005; 9: iii–iv, ix–x, 1–74.


4. There should be a latent stage ?
hypertension
cor pulmonale
sleep apnea
coronary disease
“mild” MR
excess sport
obesity
MAINTAIN SR TO PREVENT EP & STRUCTURAL REMODELING
SECONDARY PREVENTION
ECV
ECV
Paroxysmal
Persistent
Permanent
START
PRIMARY
PREVENTION
EP & SUBSTRATE REMODELING
Cosio F. Aliot E. Botto G.L. Europace 2008; 10, 21–27
Years
+5
+10
+15
+20

5. There should a suitable test or examination

Screening Programmes in Sweden

	Further Investigation (%)	Candidates for Treatment (%)
AAA	1,4-1,5	0,1-0,2
Colon Cancer	2	0,8
Mammography	3	0,5
Cervical cancer	4,2	0,064
Atrial Fibrillation	5-50	4-45

Acceptance to start OAC after screen-detected AF >90 %

Svennberg E. Circulation 2015; 131: 2176-84

Courtesy of Mårten Rosenqvist

6. The test should be acceptable to the population

Event recorder

Smart phone ecg

Holter ecg

Loop recorder ecg

Ecg patches

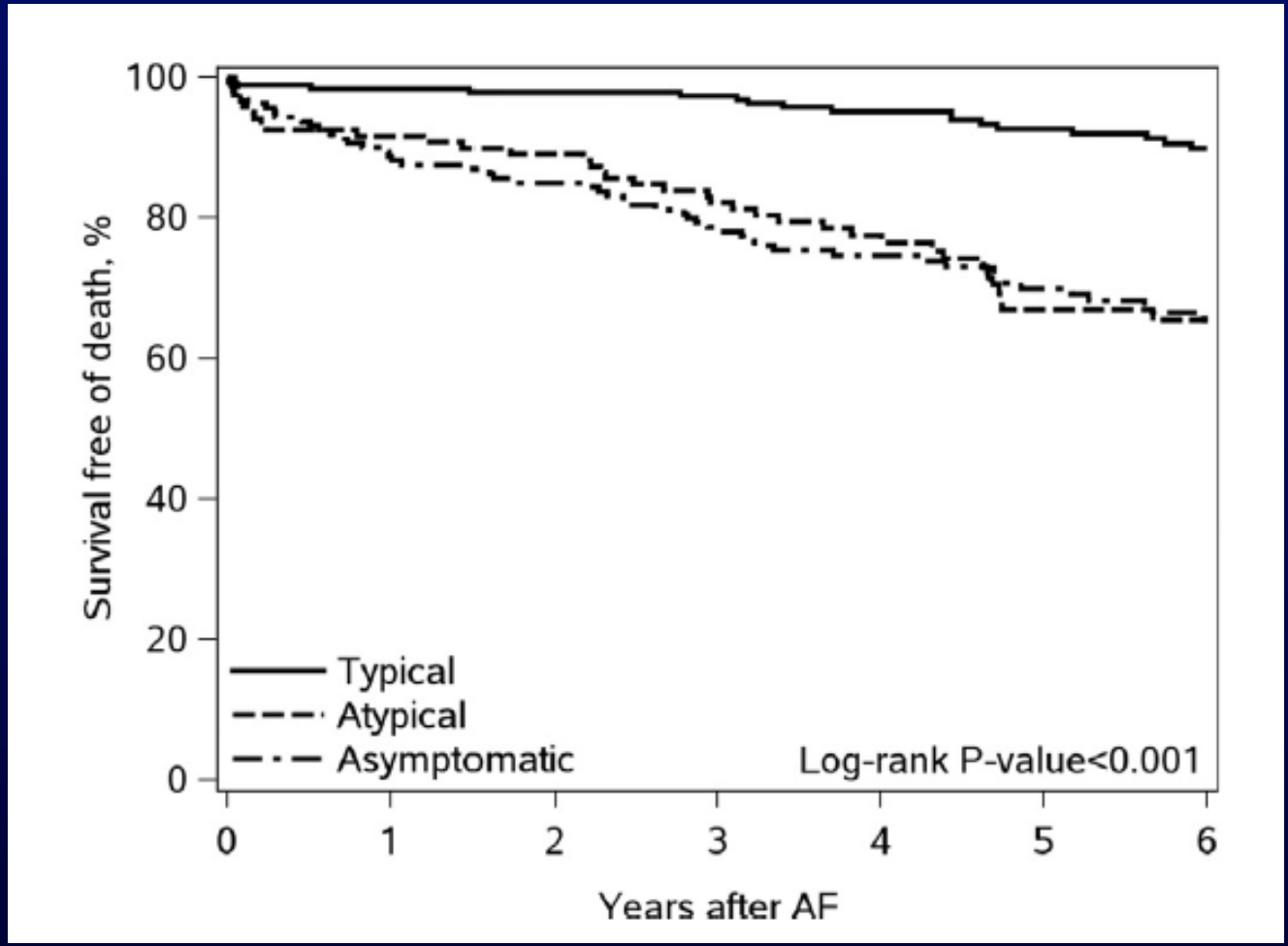
More intense screening
3% - 50% new AF
depending
on which method is used

Thumb ecg

7. Latent disease, should be adequately understood (natural history)

Death by Type of AF Presentation

Olmsted County, Minnesota



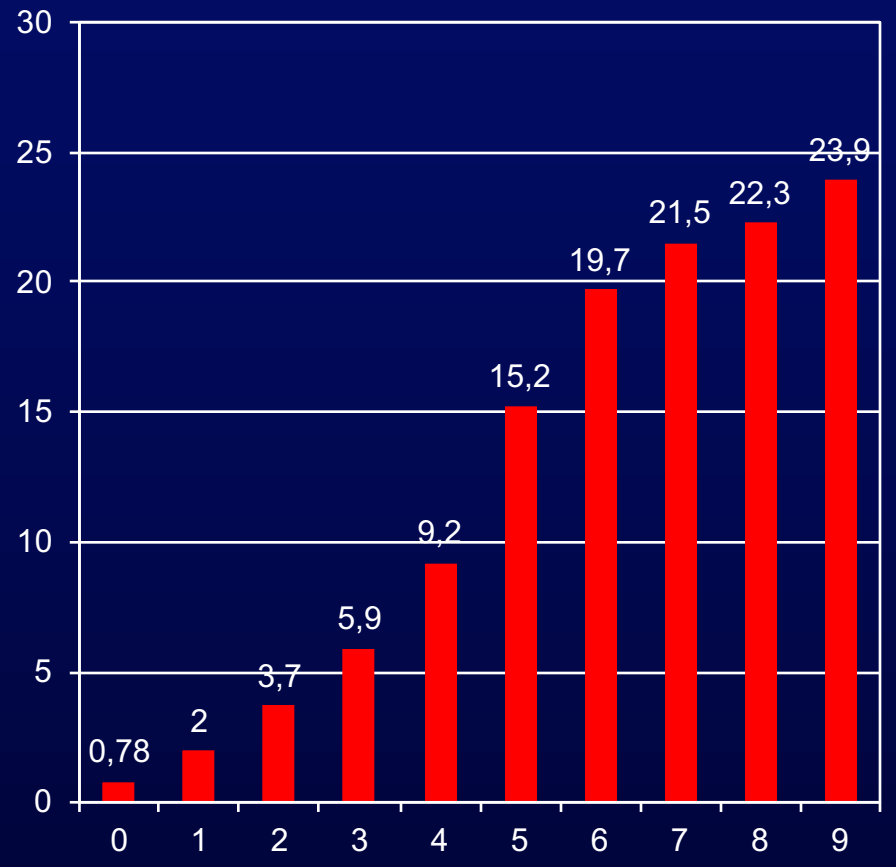
Siontis KC. Heart Rhythm2016;13:1418–1424

8.There should be an agreed policy on whom to treat as patients

Stroke Risk Stratification of AF Pts

The $CHADS_2VAS_2C$ Score

Risk factor	Points
Congestive heart failure	1
Hypertension	1
Age >75	2
Diabetes mellitus	1
Stroke/TIA	2
Vascular disease	1
Age 65–74	1
Female sex	(1)
Maximum score	**9**



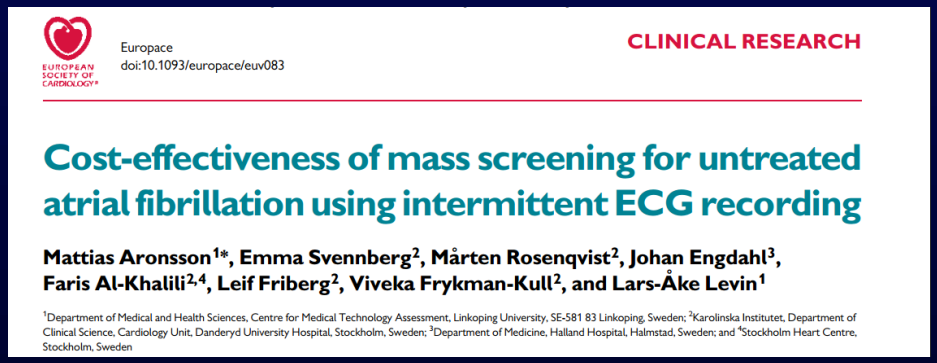
Camm J. ESC 2010 Guidelines for the management of Atrial Fibrillation
European Heart Journal. doi:10.1093/eurheartj/ehq278

9. The cost of case-finding should be balanced in relation to possible expenditure

Optimal Designs of Screening For AF

Outcome With Handheld-ECG in 75yo Pts

	Lifetime Cost (euros)	Strokes (N°)	Life Year (LY)	QALY (QY)	Cost per gained LY (euros)	Cost per gained QY (euros
No screening	3.885.879	92	9.835	6.646	-	-
Screening	3.935.891	85	9.847	6.657	4.365	4.313
Difference	+50.012	-7	12	11	-	-



Europace
doi:10.1093/europace/euv083

CLINICAL RESEARCH

Cost-effectiveness of mass screening for untreated atrial fibrillation using intermittent ECG recording

Mattias Aronsson[1]*, Emma Svennberg[2], Mårten Rosenqvist[2], Johan Engdahl[3], Faris Al-Khalili[2,4], Leif Friberg[2], Viveka Frykman-Kull[2], and Lars-Åke Levin[1]

[1]Department of Medical and Health Sciences, Centre for Medical Technology Assessment, Linkoping University, SE-581 83 Linkoping, Sweden; [2]Karolinska Institutet, Department of Clinical Science, Cardiology Unit, Danderyd University Hospital, Stockholm, Sweden; [3]Department of Medicine, Halland Hospital, Halmstad, Sweden; and [4]Stockholm Heart Centre, Stockholm, Sweden

Base-case scenario for 1000 screened individuals in the STROKESTOP

Aronsson M. Europace 2016; 17, 1023–102

10. Case finding should be a contuing process and not a once and for all projects

AF Screening

Which is the Ideal Setting ?

Opportunistic + Population Screening vs Population Only

	Participation Screening [1]	Participation & Opportunistic Screening [2]
Age	>75 yy	70-74 yy
Participation	55%	78%
CHA_2DS_2-VaSC	3.4	2.9
AF detection	3.1	5.5.

1.Svennberg E. Circulation 2015
2.Ghazal F Plos One 2018

Screening for AF

Obvious Conclusion …

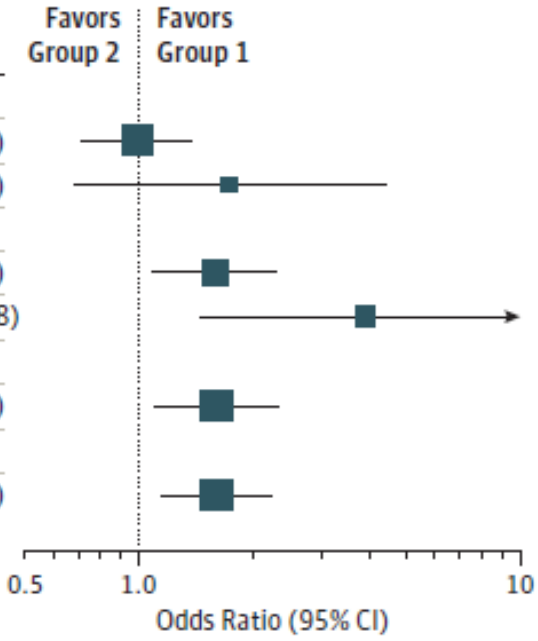
- Feasible if you choose the right patient groups
- Detection rate is high compared to other screening programmes
- Acceptance for starting OAC is very high
- The program seems cost-effective

But …

Detected AF

Odds of Detecting New Cases, by Comparison

Source	Duration of follow-up, mo	No. of New AF Cases/ Total No. of Individuals (%) Group 1	Group 2	Risk Difference, % (95% CI)	Odds Ratio (95% CI)
Systematic vs opportunistic screening					
SAFE,[23-27] 2007	12	74/4933 (1.5)	75/4933 (1.5)	-0.02 (-0.50 to 0.46)	0.99 (0.71-1.36)
Morgan,[28] 2002	6	12/1499 (0.8)	7/1502 (0.5)	0.33 (-0.23 to 0.90)	1.72 (0.68-4.39)
Systematic vs no screening					
SAFE,[23-27] 2007	12	74/4933 (1.5)	47/4936 (1.0)	0.55 (0.11 to 0.98)	1.58 (1.10-2.29)
REHEARSE-AF,[19] 2017	12	19/500 (3.8)	5/501 (1.0)	2.80 (0.91 to 4.69)	3.92 (1.45-10.58)
Opportunistic vs no screening					
SAFE,[23-27] 2007	12	75/4933 (1.5)	47/4936 (1.0)	0.57 (0.13 to 1.00)	1.61 (1.11-2.32)
Any screening vs no screening					
SAFE,[23-27] 2007	12	149/9866 (1.5)	47/4936 (1.0)	0.56 (0.20 to 0.92)	1.60 (1.15-2.22)

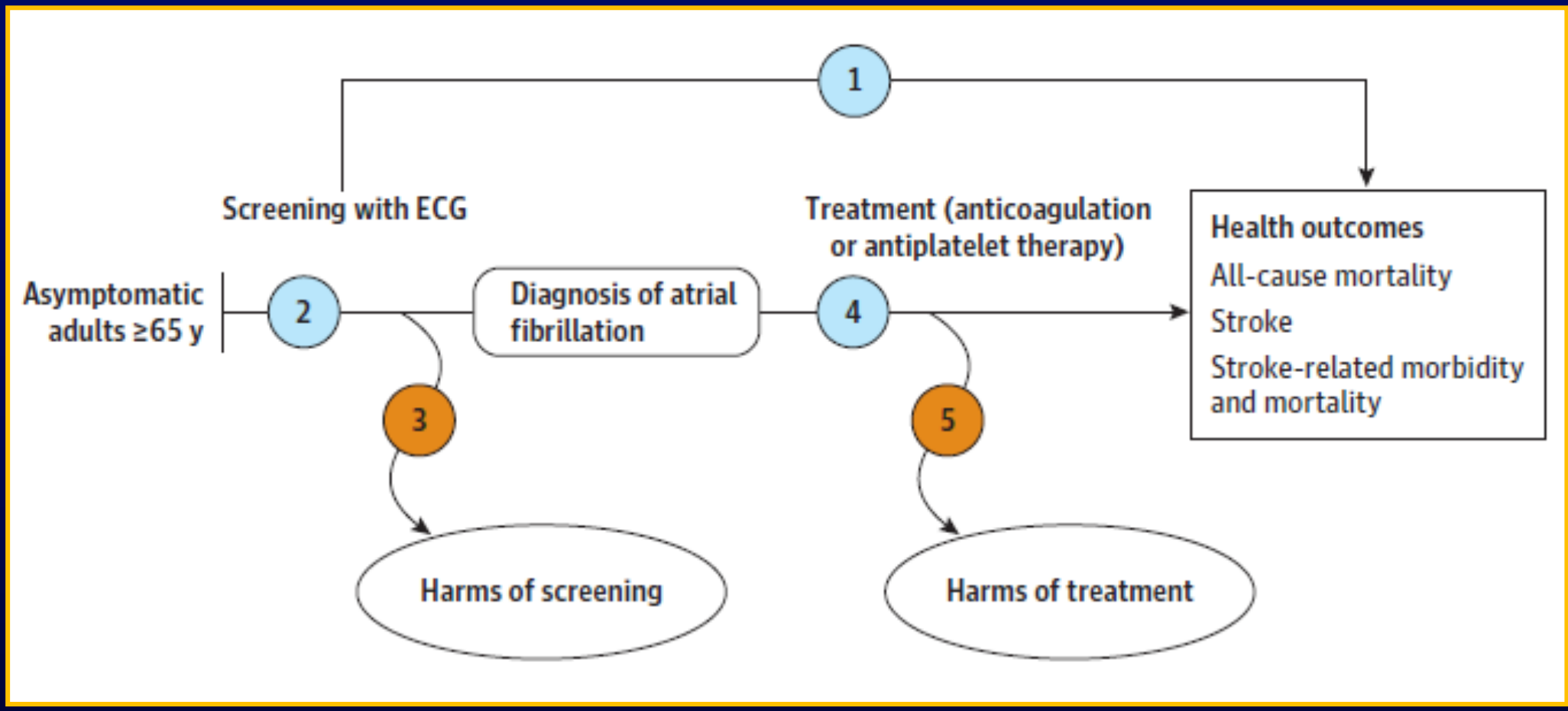


Evidence Report for the US Preventive Services Task Force

Jonas DE. JAMA. 2018; 320: 485-498

Analytic Framework

Screening for AF With Electrocardiography



Jonas DE. JAMA. 2018; 320: 485-498

Shoud a National AF Screening Program Be Endorsed ?

NO

- Not until it can be shown that screening and OAC for detected AF, reduces the number of strokes

Swedish Health Authorities 2017
Personal communication from M. Rosenqvist

Should We Promote AF Screening Programmes ?

NO

- We should promote robust scientific outcome studies showing that screening for AF and OAC treatment will prevent strokes