Stroke Prevention & Atrial Fibrillation

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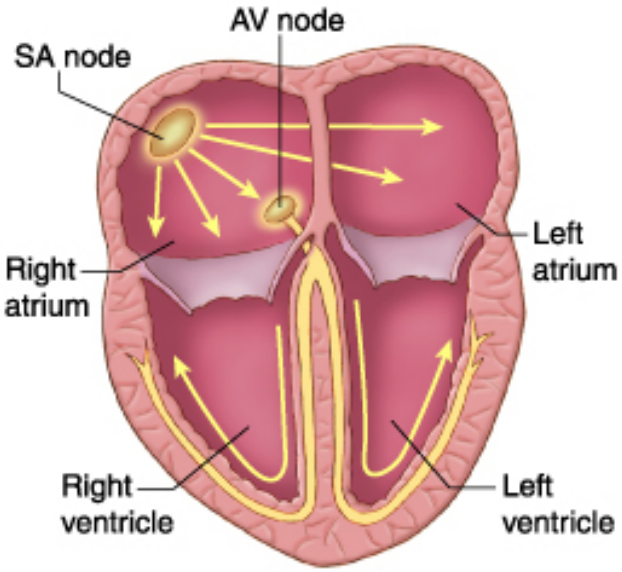
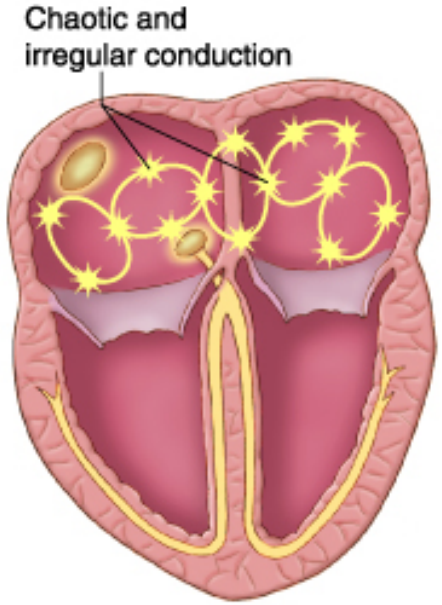
Learning Outcomes

- What is Atrial Fibrillation?
- Why is Atrial Fibrillation important?
- What causes Atrial Fibrillation?
- Stroke Prevention & Atrial Fibrillation



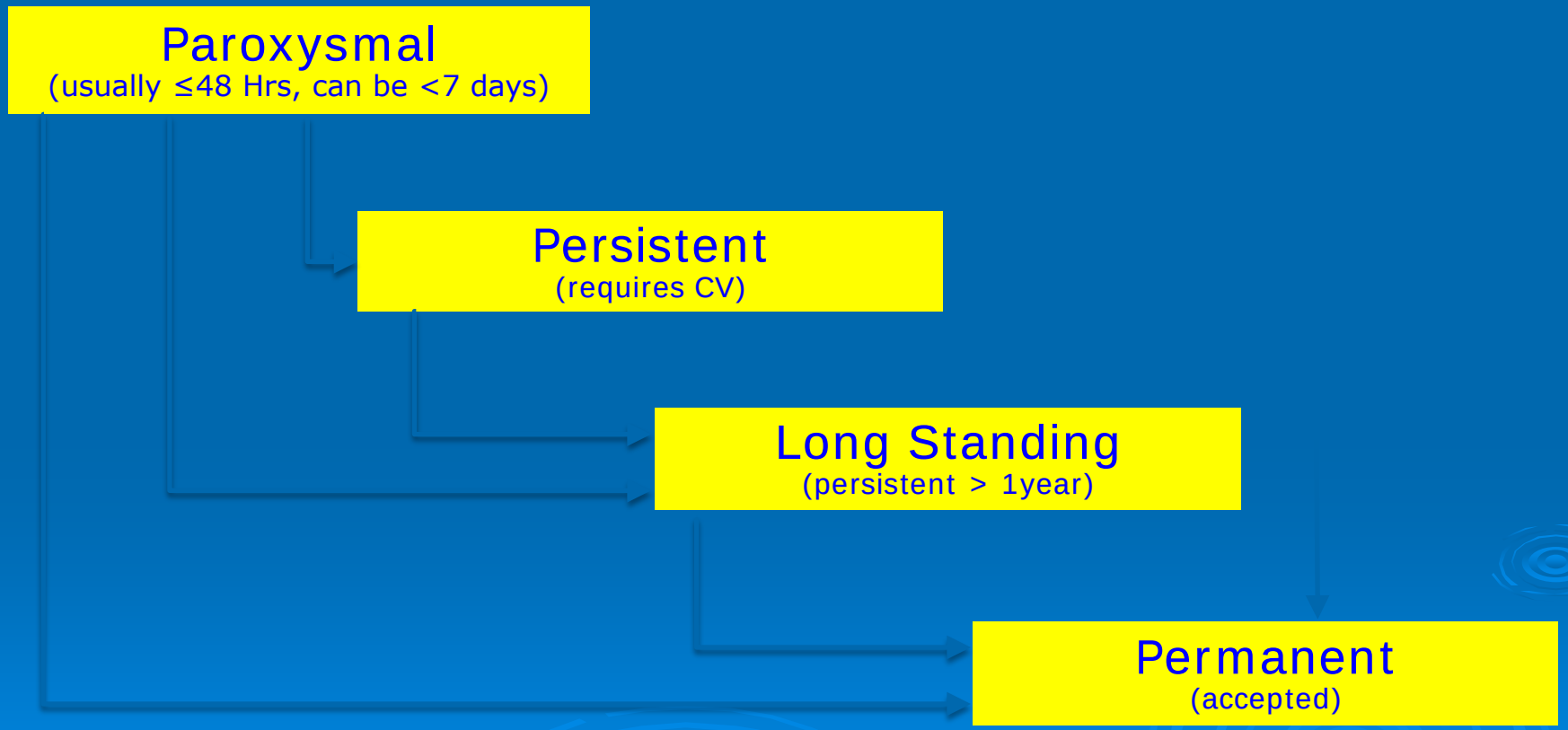
Normal condition



Atrial fibrillation

Classification of AF subtypes

First diagnosed episode of atrial fibrillation



11. www.escardio.org/guidlines. European Heart Journal (2010) 31, 2369-2429.

Why is AF important?

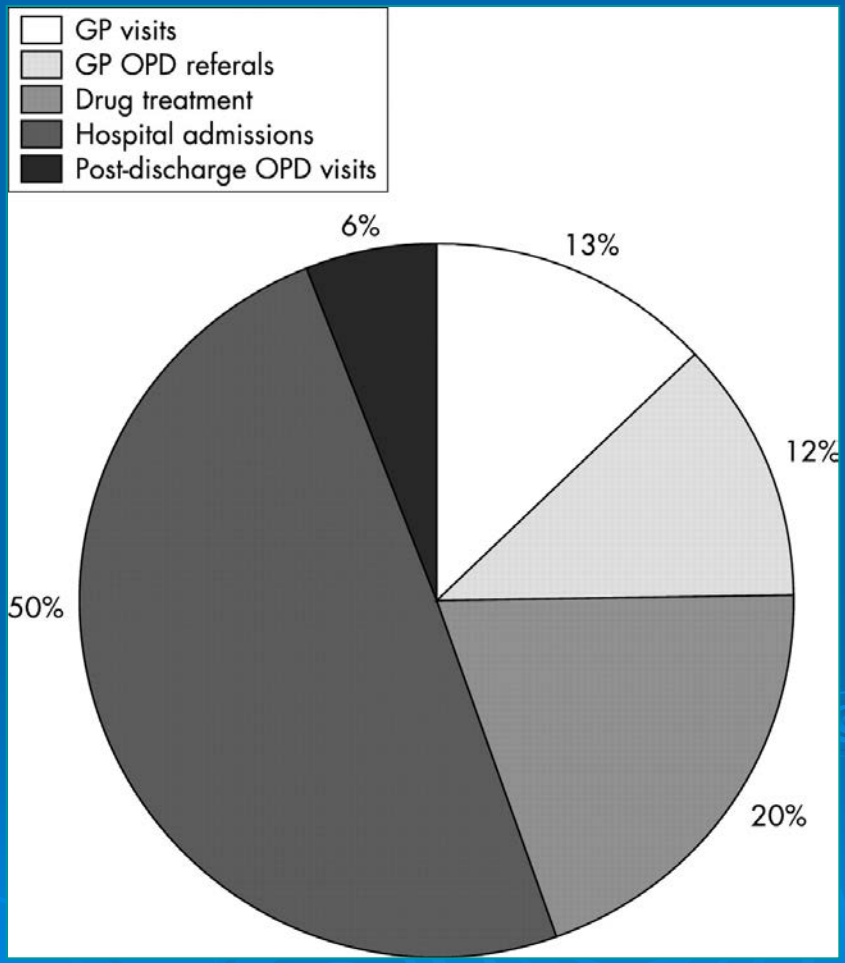
- Independent risk factor for mortality
- 3-fold increase in congestive heart failure
- 5-fold increase in stroke risk
- 80-89y AF accounts for 24% of strokes
- AF present in 15-20% of those with acute stroke
- Associated with impaired cognitive function and dementia

Pepper (2012)

Cost of AF

- 1-2.5% of total NHS budget

(Stewart et al, Heart 2004)



Prevalence of AF in UK

- Most common of serious cardiac rhythm disturbances
- Prevalence doubles with each decade
  - 0.5% 50-59 years
  - 9% 80-89 years
- 1 in 4 people aged >40 years will develop AF

Common causes of AF

- Chronic
  - Hypertension
  - Ischaemic heart disease
  - Mitral valve disease
  - Heart failure
  - Atrial hypertrophy

- Acute
  - Alcohol
  - Acute infection
  - Thyrotoxicosis
  - Pulmonary embolus
  - Electrolyte imbalance

Symptoms

If sustained AF:

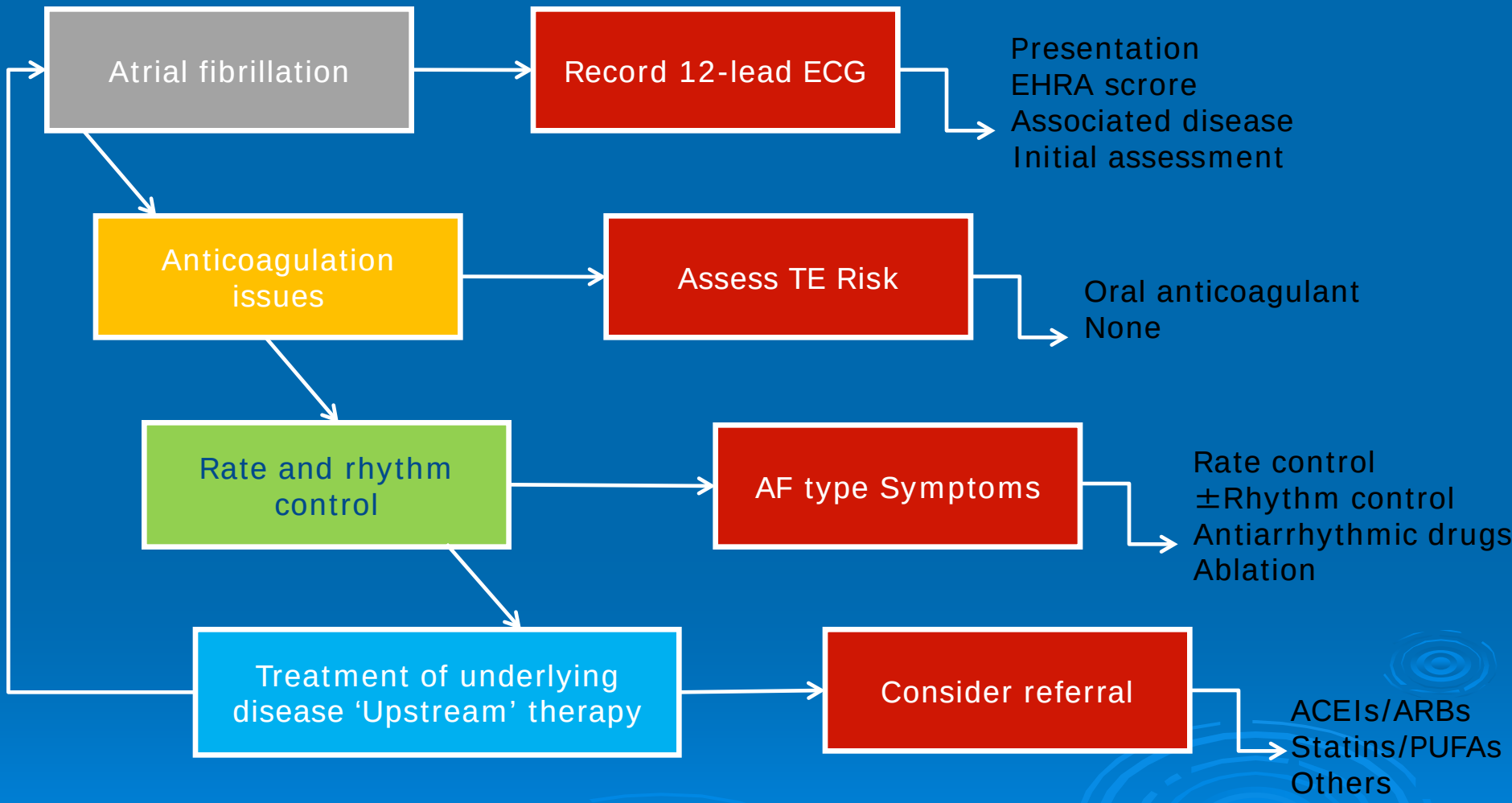
- Palpitations
- Chest pain
- Dyspnoea
- Dizziness/syncope
- Reduced exercise tolerance (often significant)
- Panic attacks/Agoraphobia/depression

If Paroxysmal:

- As above, but may be more severe (less well tolerated)
- Often preceded by exertion, ‘thump’ in the chest, fatigue, alcohol, coffee and other stimulants

Weert, H. Diagnosing atrial fibrillation in general practice. *BMJ.* 2007. 335:355-356.

Management cascade for patients with AF



ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; PUFA = polyunsaturated fatty acid; TE = thromboembolism

ESC Guidelines for the management of atrial fibrillation 2010. Accessed September 2010

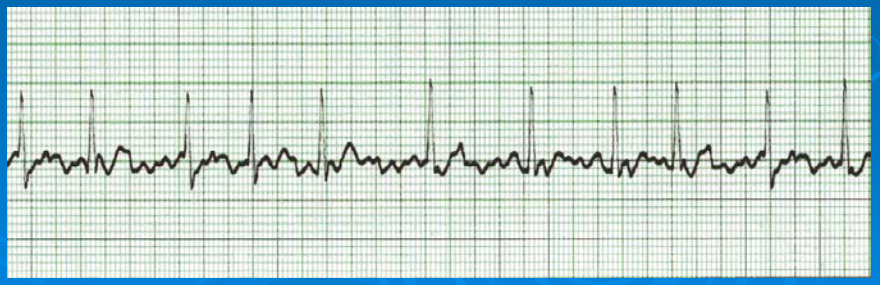
Diagnosis

MANUAL pulse checking will give a strong clue

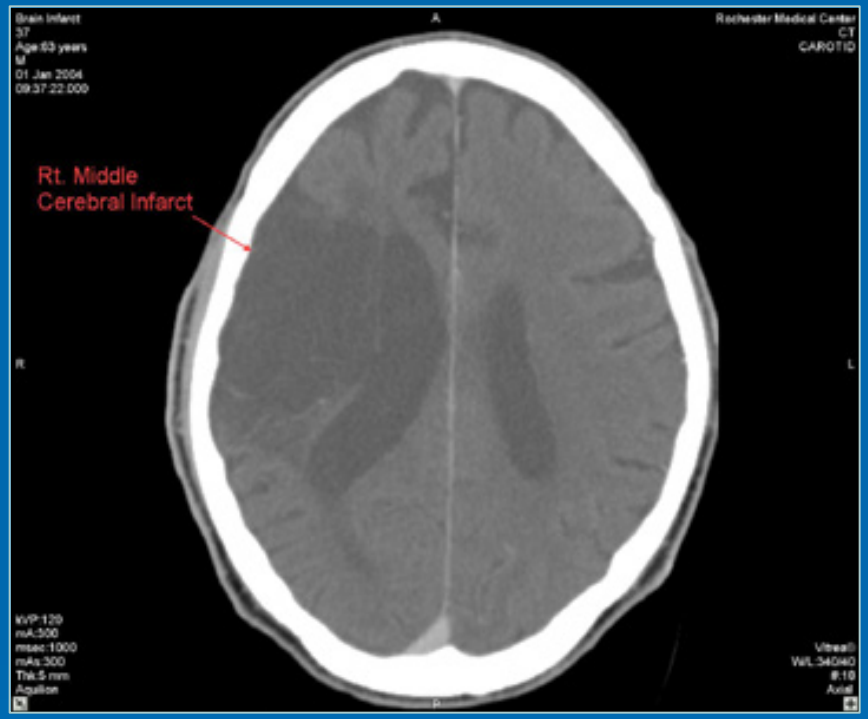
- ‘Irregular irregularity’ – any rate
- Variable strength of individual pulses
- Often omitted since introduction of automated BP machines, etc.

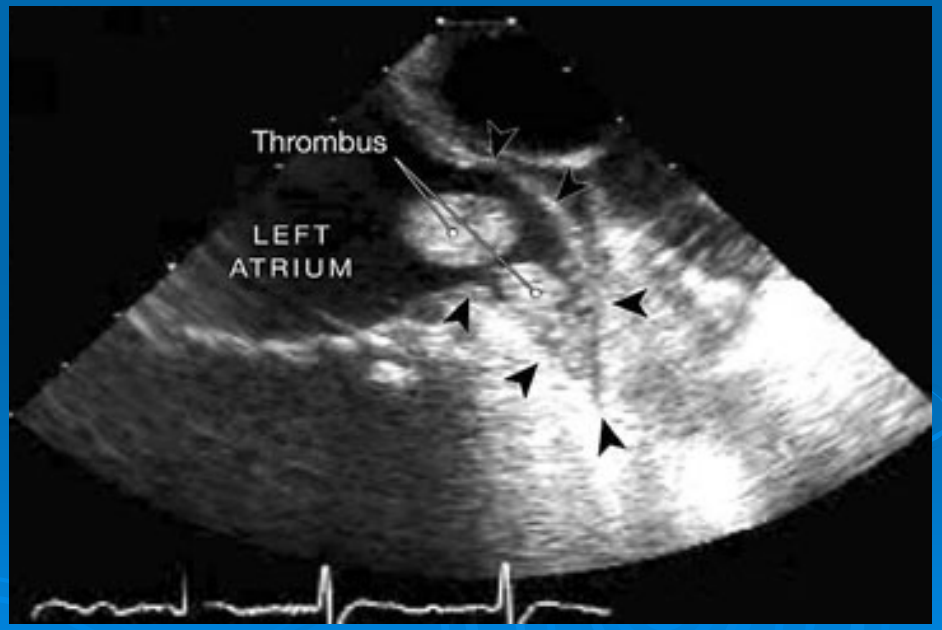
12 Lead ECG

- NICE – an ECG should be performed in all patients, whether symptomatic or not, in whom AF is suspected because an irregular pulse has been detected



Anticoagulation/Stoke Prevention





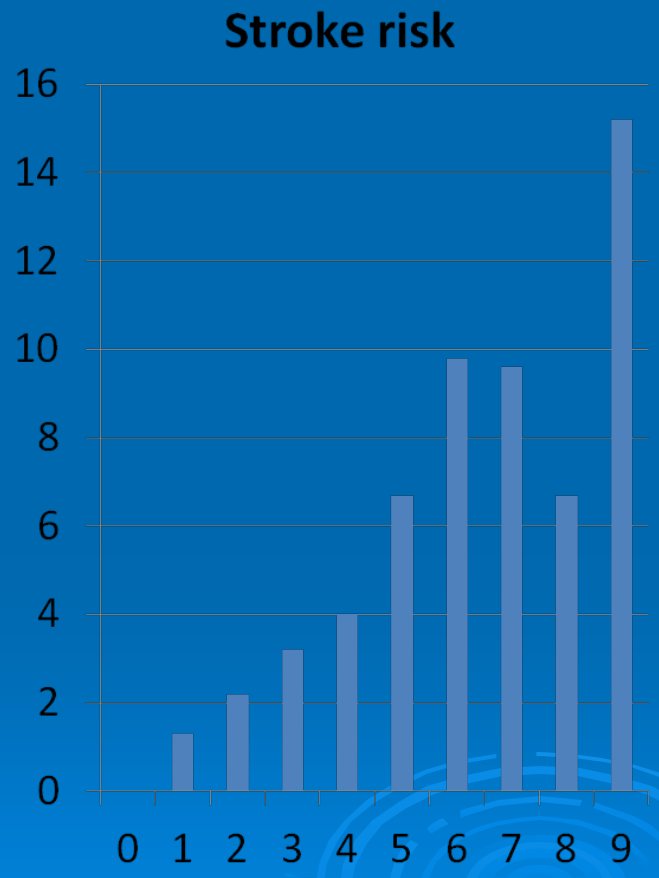
AF increases the risk of stroke

- AF is associated with a pro-thrombotic state
  - ~5 fold increase in stroke risk[1]
- Risk of stroke is the same in AF patients regardless of whether they have paroxysmal or sustained AF[2,3]
- Cardioembolic stroke has a 30-day mortality of 25%[4]
- AF-related stroke has a 1-year mortality of ~50%[5]

1. Wolf PA, et al. *Stroke* 1991;22:983-988; 2. Rosamond W et al. *Circulation.* 2008;117:e25–146; 3.Hart RG, et al. *J Am Coll Cardiol* 2000;35:183-187; 4. Lin H-J, et al. *Stroke* 1996; 27:1760-1764; 5. Marini C, et al. *Stroke* 2005;36:1115-1119.

CHA_2DS_2-VASc

(b) Risk factor-based approach expressed as a point based scoring system, with the acronym CHA_2DS_2-VASc (Note: maximum score is 9 since age may contribute 0, 1, or 2 points)	
Risk factor	**Score**
Congestive heart failure/LV dysfunction	1
Hypertension	1
Age ≥75	2
Diabetes mellitus	1
Stroke/TIA/thrombo-embolism	2
Vascular disease[a]	1
Age 65–74	1
Sex category (i.e. female sex)	1
Maximum score	**9**



What is this patient's risk of stroke?

- 67 year old female
- Paroxysmal AF
- Hypothyroid on thyroxine 100micrograms od.
- ECHO: mild left ventricular hypertrophy
- Rx:
  - Flecainide 50mg bd
  - Verapamil 40mg tds
- *Stroke risk?*

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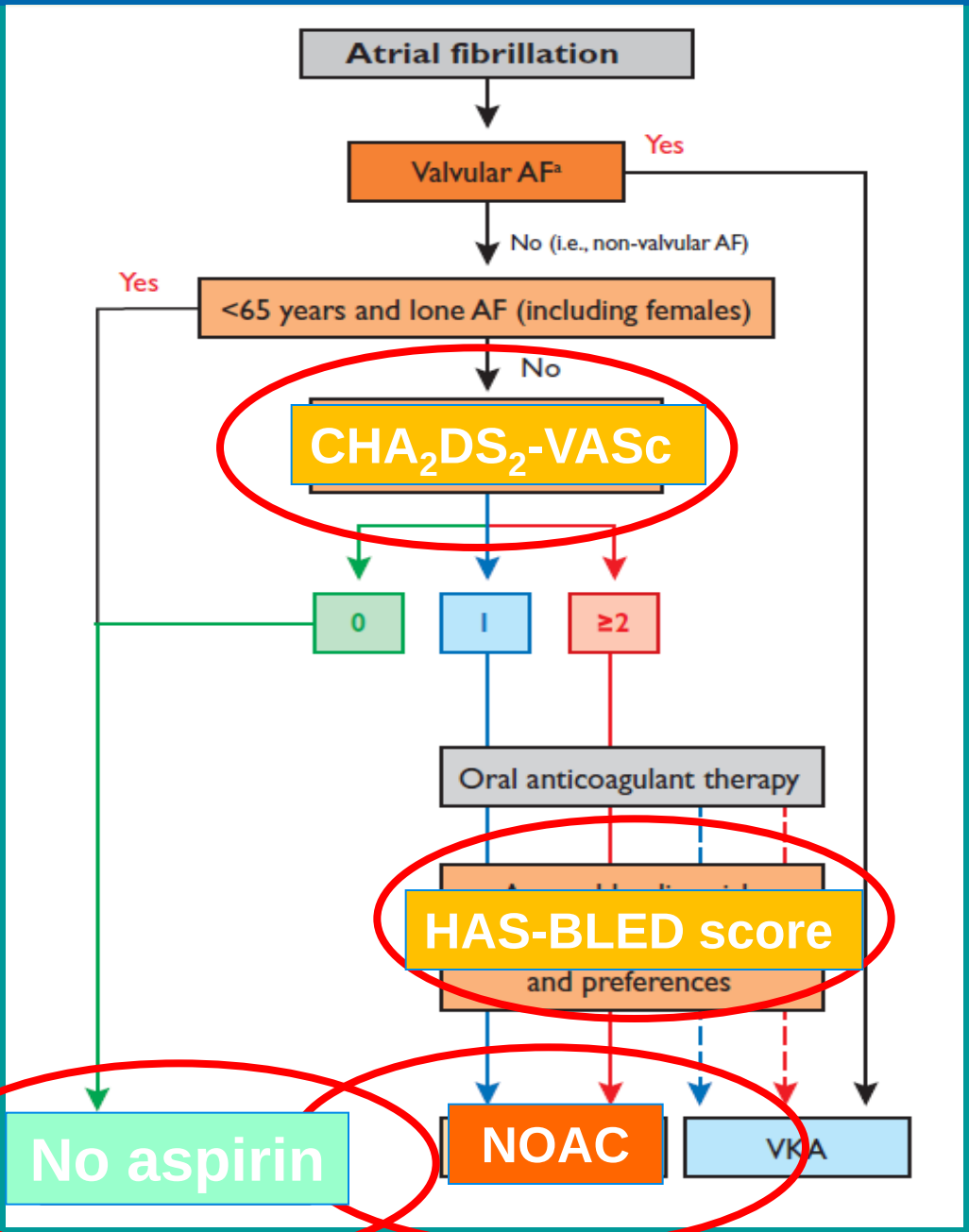
- CHA_2DS_2-Vasc = 2 (age, female) = OAC (2.2)



ESC Guidelines 2012

HAS-BLED bleeding risk score

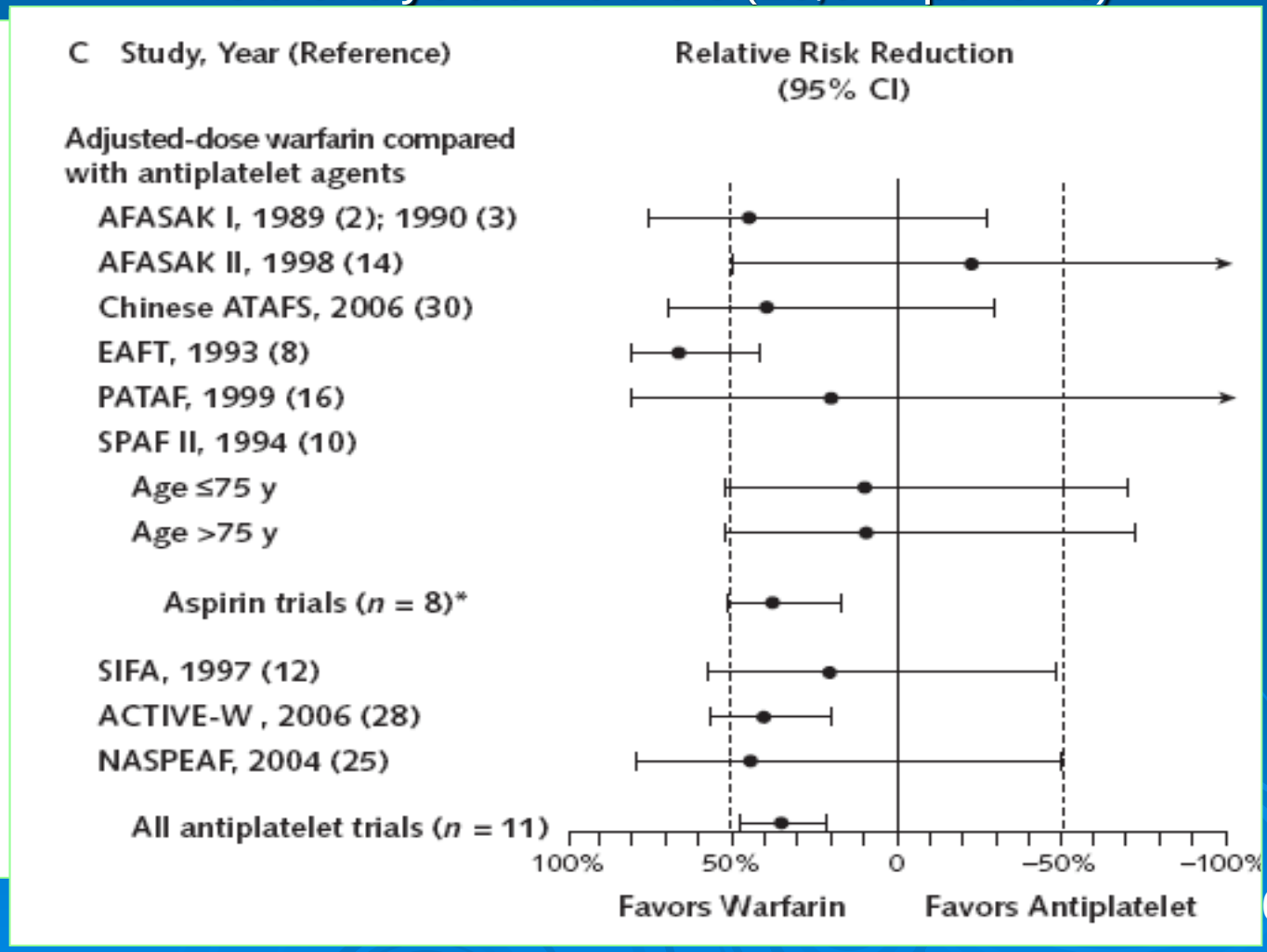
Letter	Clinical characteristic[a]	Points awarded
H	Hypertension	1
A	Abnormal renal and liver function (1 point each)	1 or 2
S	Stroke	1
B	Bleeding	1
L	Labile INRs	1
E	Elderly (e.g. age >65 years)	1
D	Drugs or alcohol (1 point each)	1 or 2
		Maximum 9 points

High risk = >3

ESC AF Guidelines 2010

Anti-thrombotic therapy in AF

- Meta-analysis of 29 trials (28,044 patients)



Warfarin reduced stroke by 60%; aspirin by 20%

Warfarin is safe in the elderly

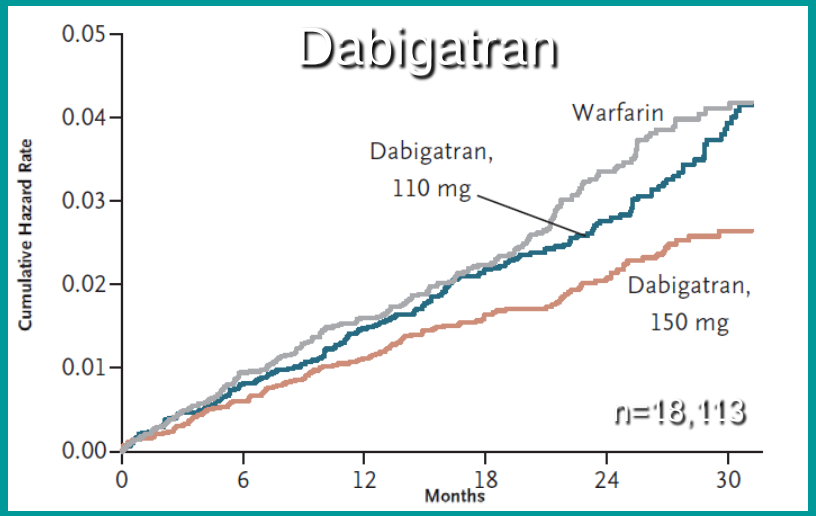
- Elderly patients (>75) under-represented in early trials, precieved to do badly on warfarin with reduction in ischaemic stroke offset by increased bleeding.

- BAFTA trial included elderly patients with AF (>75) randomised to warfarin or aspirin and showed warfarin to be clearly superior to aspirin with no significant difference in bleeding including intracranial bleeds.(Mant et al 2007 Lancet 370:493-503)

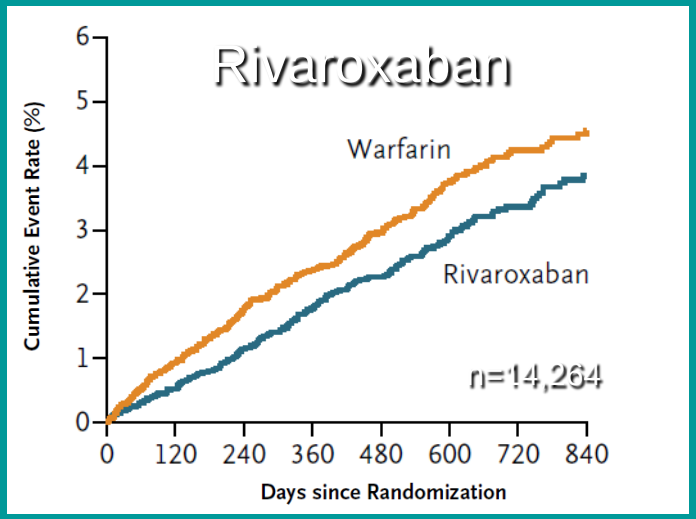
- Findings supported by the small WASPO trial which showed significantly more adverse events in elderly patients treated with aspirin compared to warfarin.(Rash et al 2007 Age Ageing 36:151-6)

- Van Walveren et al (2009)- risk of stroke starts to rise from the age of 65, and as the patients get older, the absolute benefit of warfarin is increased while the benefit of aspirin declined rapidly. (Stroke ; 40:1410-6).

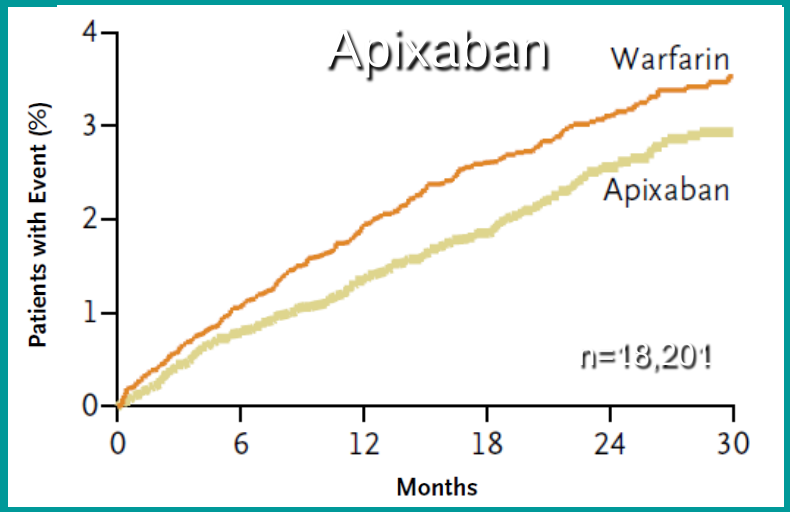
Novel Oral Anti-Coagulants



RE-LY, *NEJM* 2009



ROCKET AF, *NEJM* 2011



ARISTOTLE, *NEJM* 2011

Summary

- AF is common
- AF causes stroke

- Treatment priorities:
  - Exclusion of concomitant pathology
  - Assess and treat for stroke risk
  - Achieve symptom control

Any Questions?