Latest guidelines on the management of Atrial Fibrillation and SVTs

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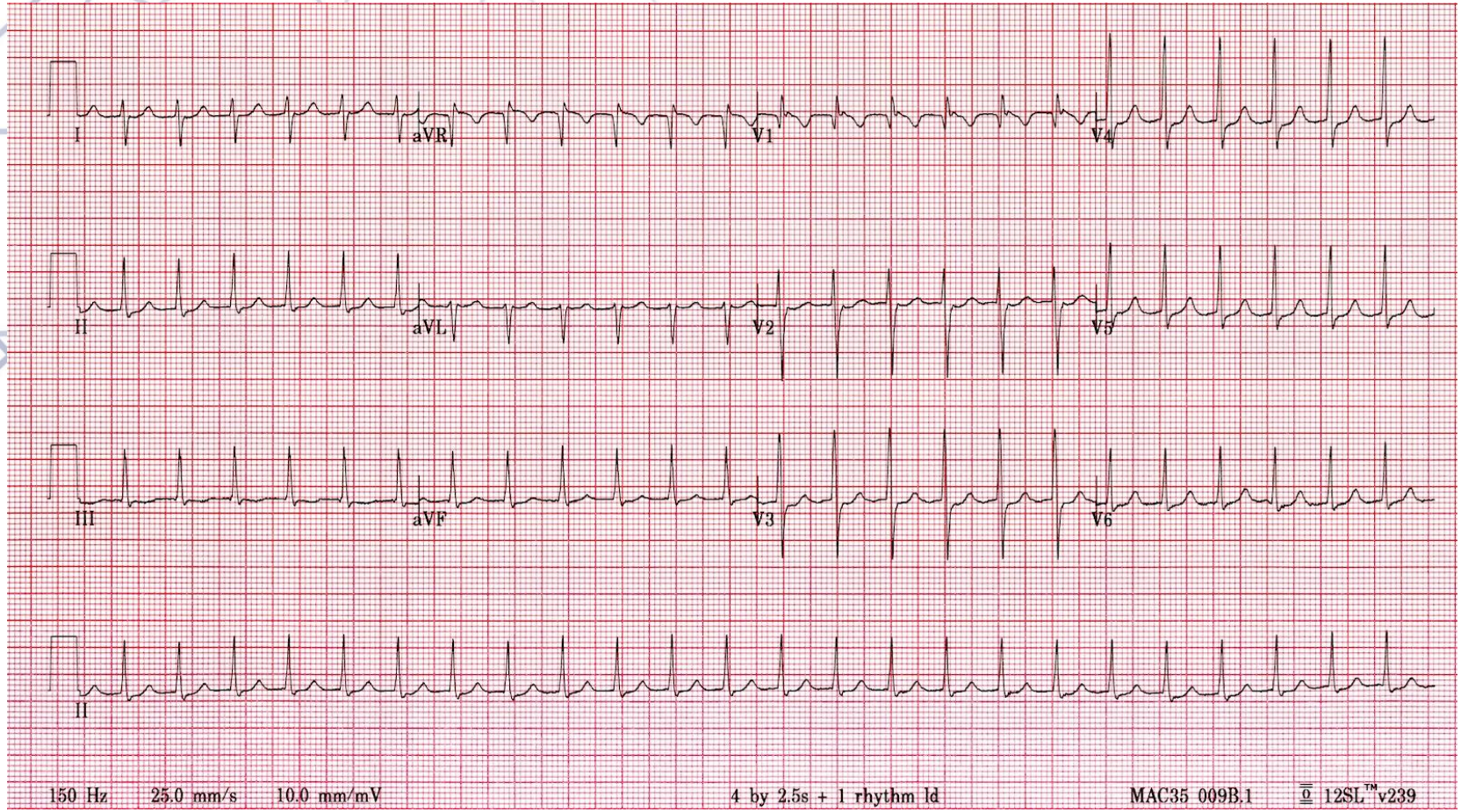
Case vignette 1

- You see a 24 year old woman in clinic who has had intermittent palpitations for a few years. She initially thought they were panic attacks, but they have occurred more frequently in the last few weeks
- She is usually fit and well and has no other medical problems

- On examination, she looks a little sweaty and breathless. BP measures 90/55mmHg and heart rate is rapid at 140bpm. Cardiovascular and respiratory examinations are unremarkable.

- You perform an ECG in your clinic which shows a narrow complex tachycardia.

Case 1- ECG



How would you manage this patient?
What do the guidelines say?

Diagnosis- SVT

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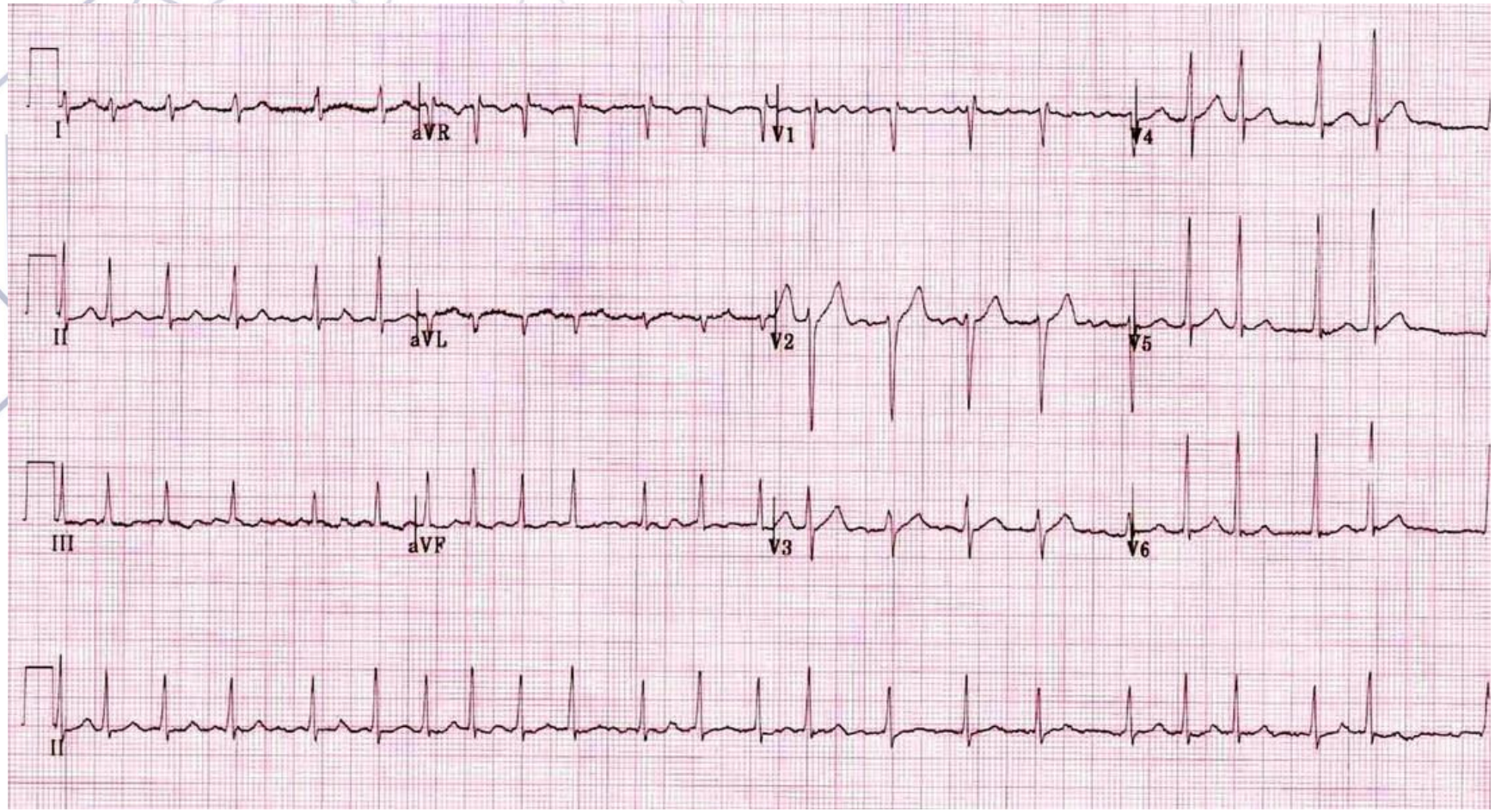
Case vignette 2

- **You see a 72 year old man in clinic for a routine medical check up. He is relatively asymptomatic but feels a little tired sometimes.**
- **He has a history of hypertension and diabetes**
- **Current medication- amlodipine, metformin**

- **On examination, he looks comfortable. BP measures 145/90mmHg and heart rate is 90bpm irregular. You can hear a systolic murmur on auscultation; lungs are clear.**

- **You perform an ECG in your clinic which shows atrial fibrillation.**

Case 2- ECG



How would you manage this patient?
What do the guidelines say?

Diagnosis- AF

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Table 1. Applying Class of Recommendation and Level of Evidence

CLASS (STRENGTH) OF RECOMMENDATION

CLASS I (STRONG) — Benefit >>> Risk

Suggested phrases for writing recommendations:
- Is recommended
- Is indicated/useful/effective/beneficial
- Should be performed/administered/other
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is recommended/indicated in preference to treatment B
  - Treatment A should be chosen over treatment B

CLASS IIa (MODERATE) — Benefit >> Risk

Suggested phrases for writing recommendations:
- Is reasonable
- Can be useful/effective/beneficial
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is probably recommended/indicated in preference to treatment B
  - It is reasonable to choose treatment A over treatment B

CLASS IIb (WEAK) — Benefit ≥ Risk

Suggested phrases for writing recommendations:
- May/might be reasonable
- May/might be considered
- Usefulness/effectiveness is unknown/unclear/uncertain or not well established

CLASS III: No Benefit (MODERATE) — Benefit = Risk
(Generally, LOE A or B use only)

Suggested phrases for writing recommendations:
- Is not recommended
- Is not indicated/useful/effective/beneficial
- Should not be performed/administered/other

CLASS III: Harm (STRONG) — Risk > Benefit

Suggested phrases for writing recommendations:
- Potentially harmful
- Causes harm
- Associated with excess morbidity/mortality
- Should not be performed/administered/other

LEVEL (QUALITY) OF EVIDENCE‡

LEVEL A
- High-quality evidence‡ from more than 1 RCTs
- Meta-analyses of high-quality RCTs
- One or more RCTs corroborated by high-quality registry studies

LEVEL B-R (Randomized)
- Moderate-quality evidence‡ from 1 or more RCTs
- Meta-analyses of moderate-quality RCTs

LEVEL B-NR (Nonrandomized)
- Moderate-quality evidence‡ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies
- Meta-analyses of such studies

LEVEL C-LD (Limited Data)
- Randomized or nonrandomized observational or registry studies with limitations of design or execution
- Meta-analyses of such studies
- Physiological or mechanistic studies in human subjects

LEVEL C-EO (Expert Opinion)

Consensus of expert opinion based on clinical experience

COR and LOE are determined independently (any COR may be paired with any LOE).

A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCTs are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

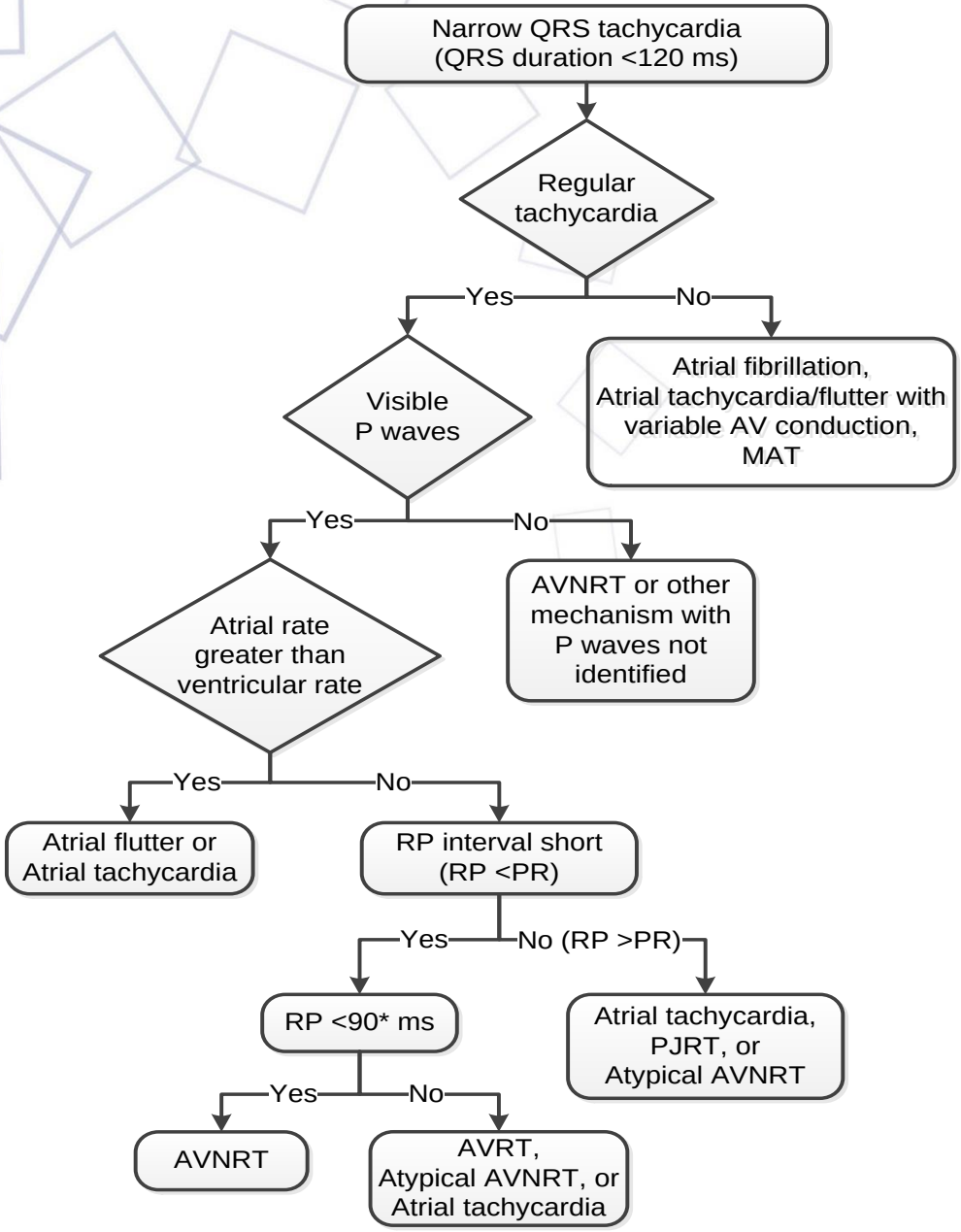
* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).

† For comparative-effectiveness recommendations (COR I and IIa; LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

‡ The method of assessing quality is evolving, including the application of standardized, widely used, and preferably validated evidence grading tools; and for systematic reviews, the incorporation of an Evidence Review Committee.

COR indicates Class of Recommendation; EO, expert opinion; LD, limited data; LOE, Level of Evidence; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial.

Differential Diagnosis for Adult Narrow QRS Tachycardia

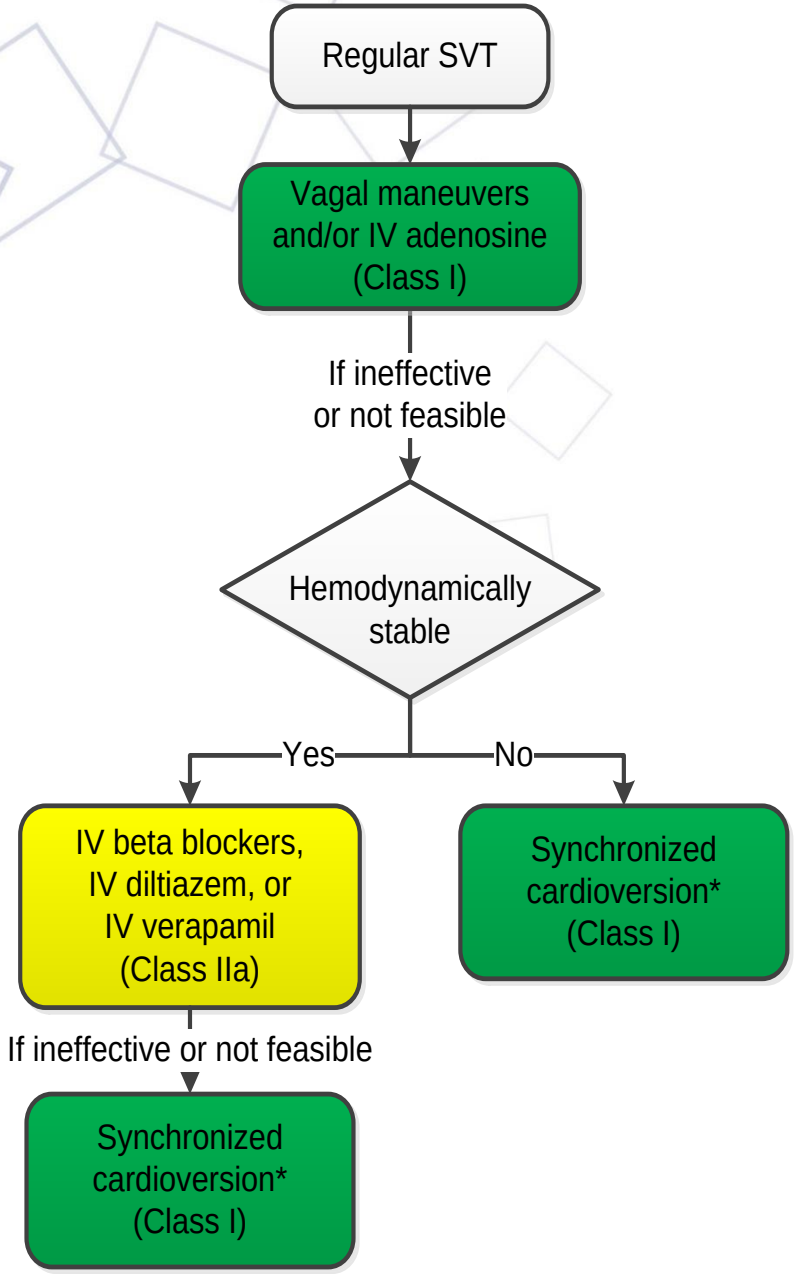


Patients with junctional tachycardia may mimic the pattern of slow-fast AVNRT and may show AV dissociation and/or marked irregularity in the junctional rate.

***RP refers to the interval from the onset of surface QRS to the onset of visible P wave (note that the 90-ms interval is defined from the surface ECG, as opposed to the 70-ms ventriculoatrial interval that is used for intracardiac diagnosis).**

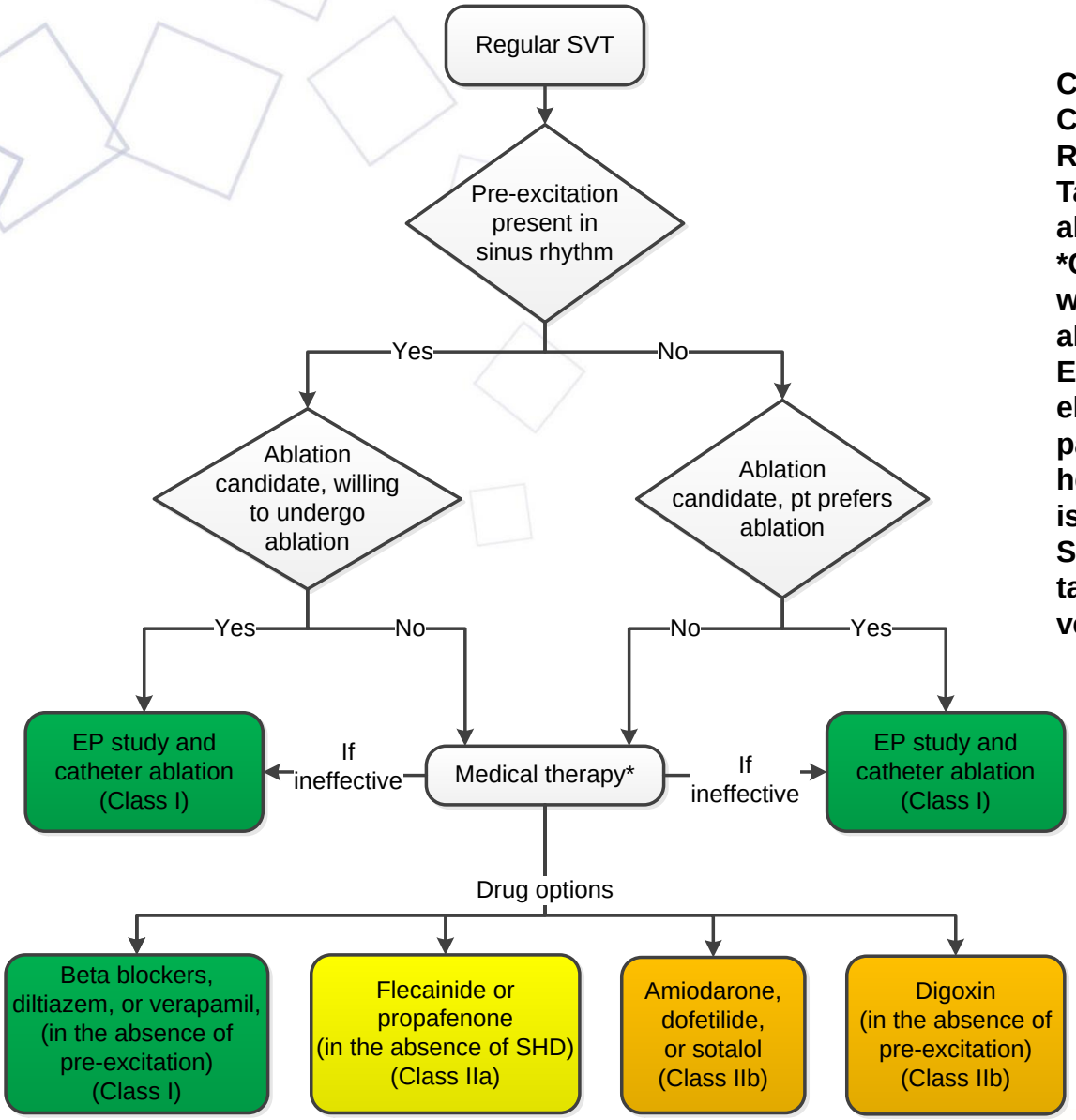
AV indicates atrioventricular; AVNRT, atrioventricular nodal reentrant tachycardia; AVRT, atrioventricular reentrant tachycardia; ECG, electrocardiogram; MAT, multifocal atrial tachycardia; and PJRT, permanent form of junctional reentrant tachycardia.

Acute Treatment of Regular SVT of Unknown Mechanism



Colors correspond to Class of Recommendation in Table 1; drugs listed alphabetically.
***For rhythms that break or recur spontaneously, synchronized cardioversion is not appropriate.**
IV indicates intravenous; and SVT, supraventricular tachycardia.

Ongoing Management of SVT of Unknown Mechanism



Colors correspond to Class of Recommendation in Table 1; drugs listed alphabetically.
***Clinical follow-up without treatment is also an option.**
EP indicates electrophysiological; pt, patient; SHD, structural heart disease (including ischemic heart disease); SVT, supraventricular tachycardia; and VT, ventricular tachycardia.

Case vignette 1

- Diagnosed with SVT in clinic
- Short-term management:
  - Try carotid sinus masage
  - Send to ER (could try oral beta-blocker if very uncomfortable)
  - iv adenosine to restore SR (likely AVNRT)
  - If BP drops or patient is compromised, consider DCCV

- Subsequent management:
  - Echo (assess for structural heart disease)
  - Treatment options-
    - EP study and catheter ablation, or
    - trial of regular antiarrhythmic medication (beta-blocker or verapamil)

Atrial fibrillation- what do the guidelines say?

1. What is the best strategy to treat the irregular rhythm?
The decision is based on the past medical history, symptoms, co-morbidities, age, cardiac factors (e.g. LV function, size of atrial), duration of AF

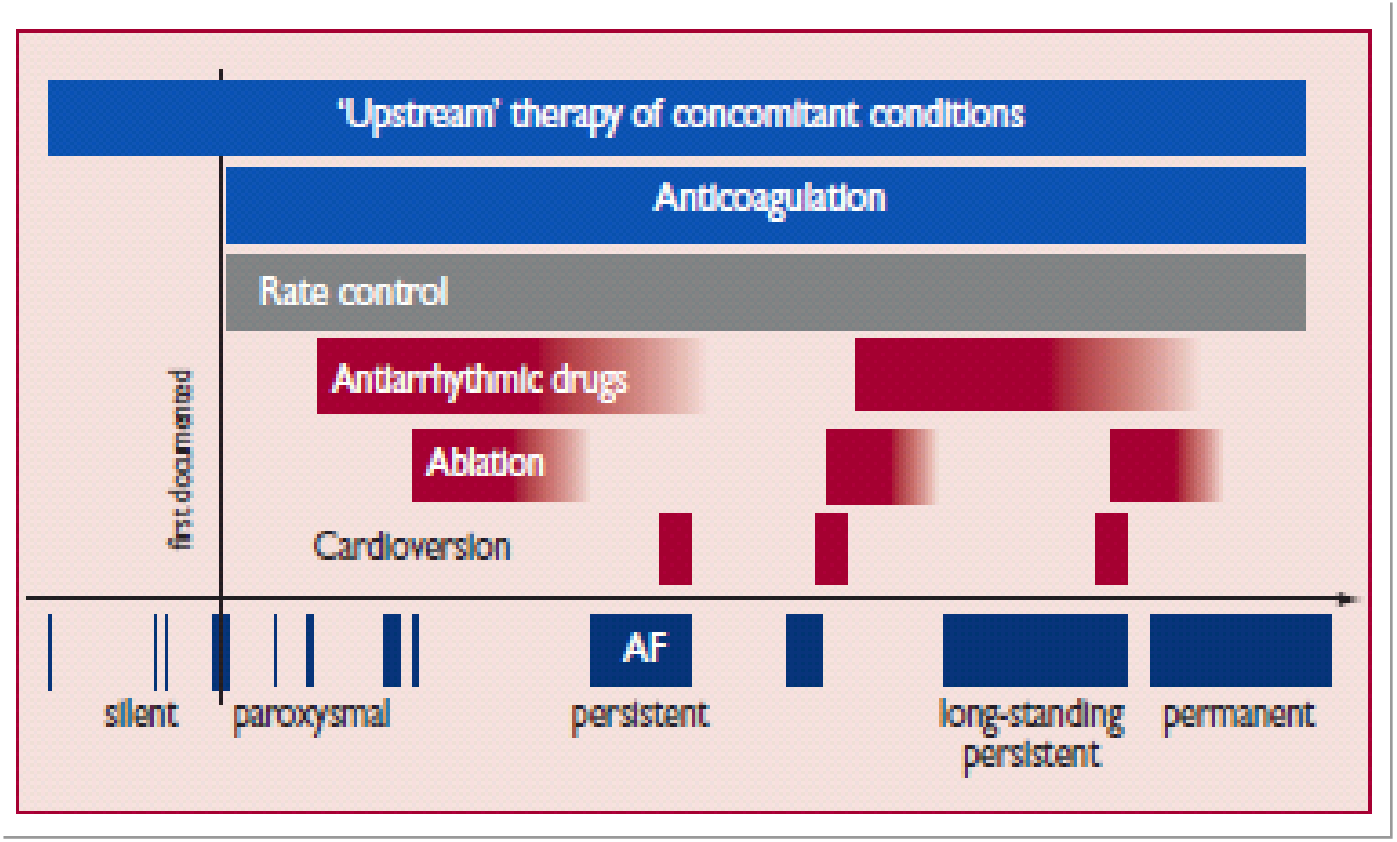
2. Does the patient need anticoagulant therapy?
Are there additional lifestyle modifications important for stroke prevention?
What is the CHA_2DS_2–VASc score?

Congestive heart failure
Hypertension
Age (75 or greater)
Diabetes
Stroke (prior episode)
Vascular disease (prior heart attack, peripheral artery disease or aortic plaque)
Age 65-74
Sex (female)

3. How to lower risk of stroke? If the risk is deemed high, options are:

a) Antithrombotic medication (such as warfarin or NOAC)
b) or *maybe* aspirin (no longer recommended in European guidelines)

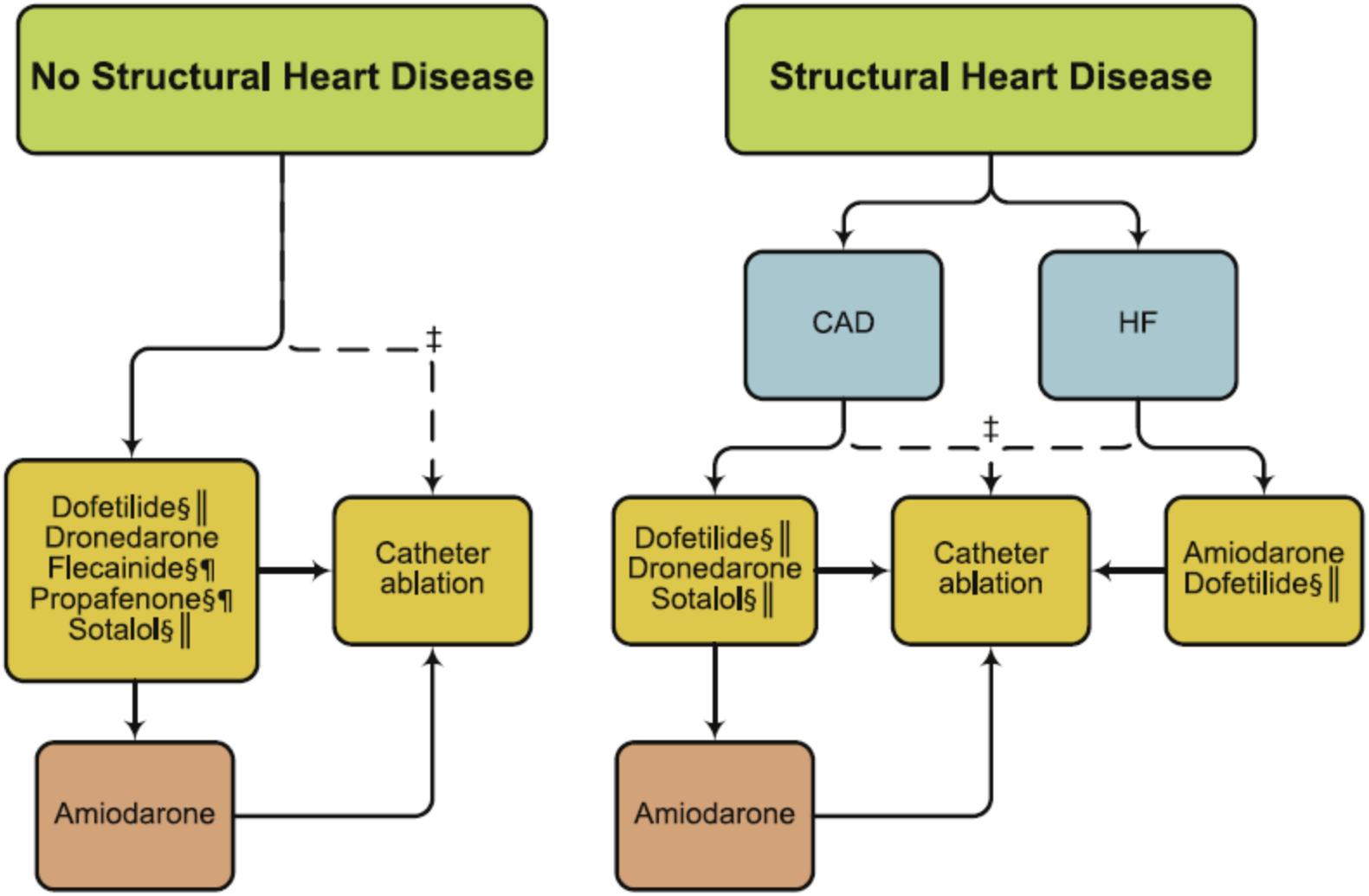
Natural history of AF



It's easier to treat AF in the early stages than when advanced.

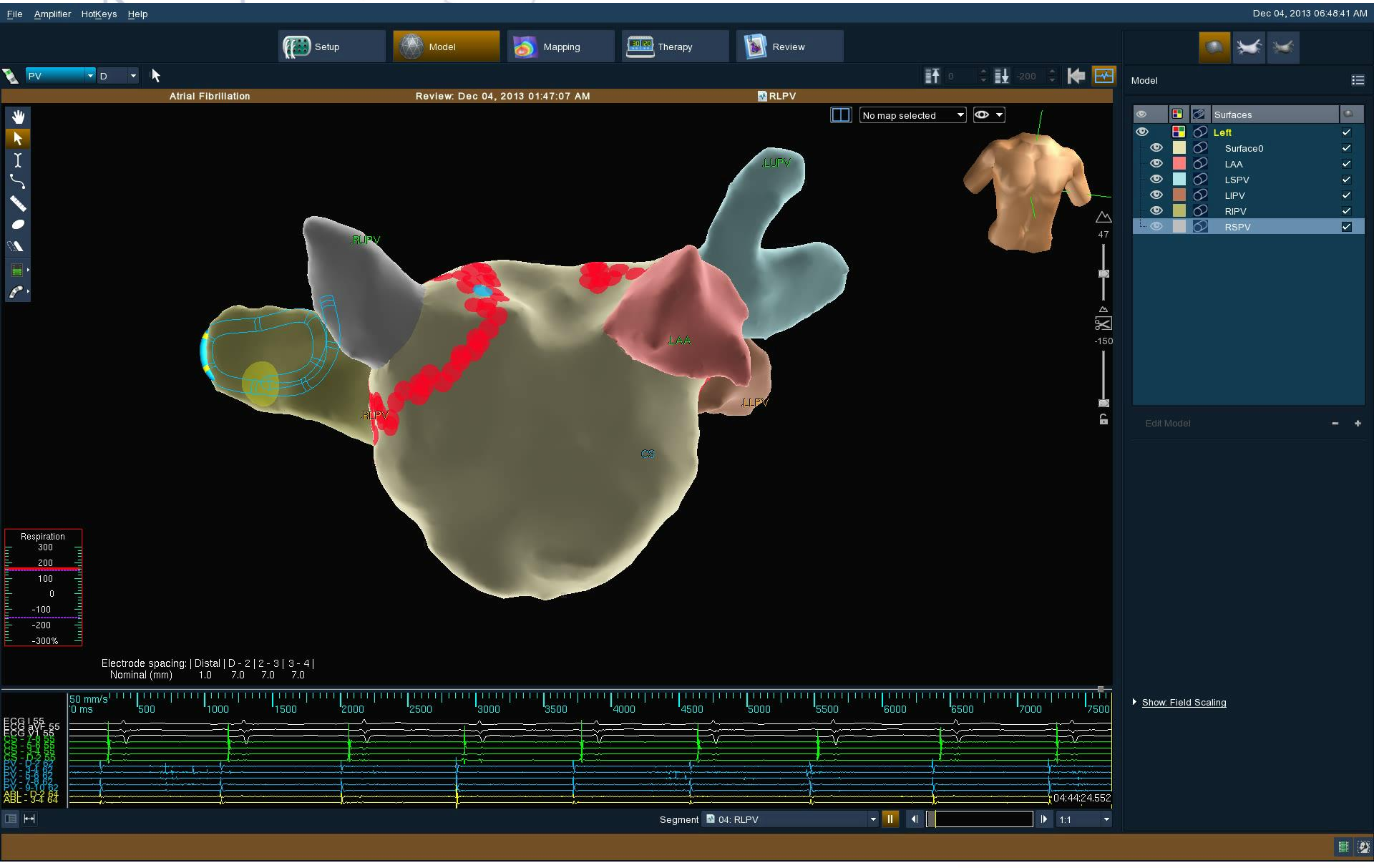
But the risk of stroke is *not* related to type of AF.

Rhythm control strategies for AF



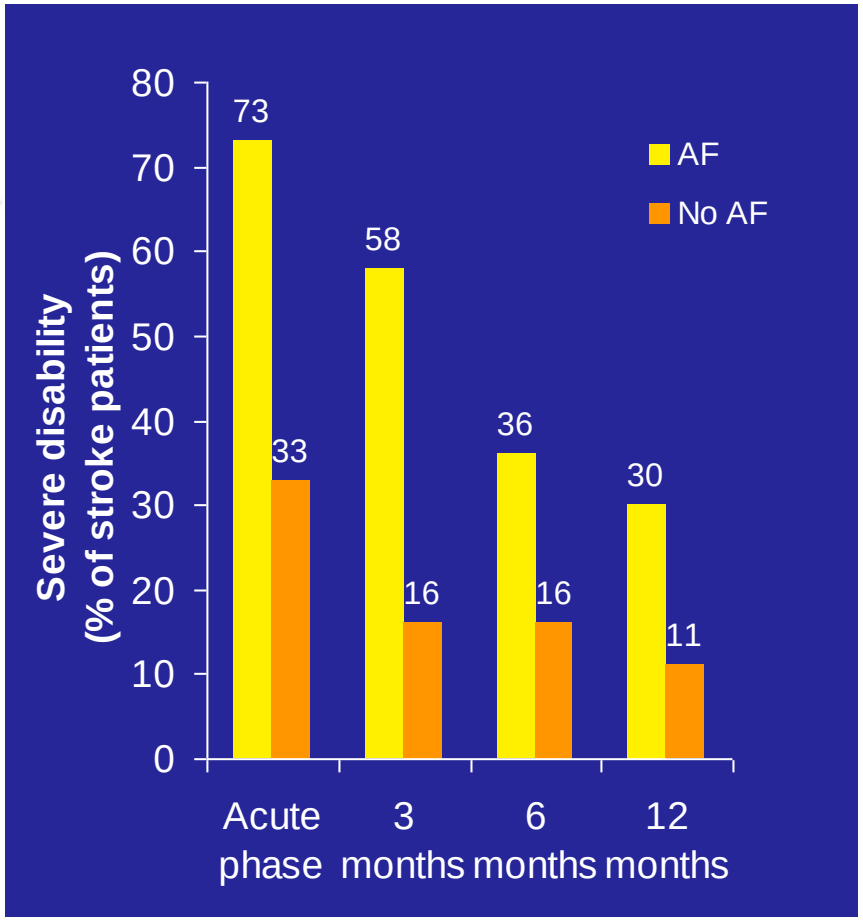
Electrophysiological study (EPS) and catheter ablation

- Minimally invasive ("key-hole" surgery) for AF and other cardiac arrhythmias
- Performed in cardiac cath lab with cardiac electrophysiologist, trained staff and equipment
- Good success rates for early AF



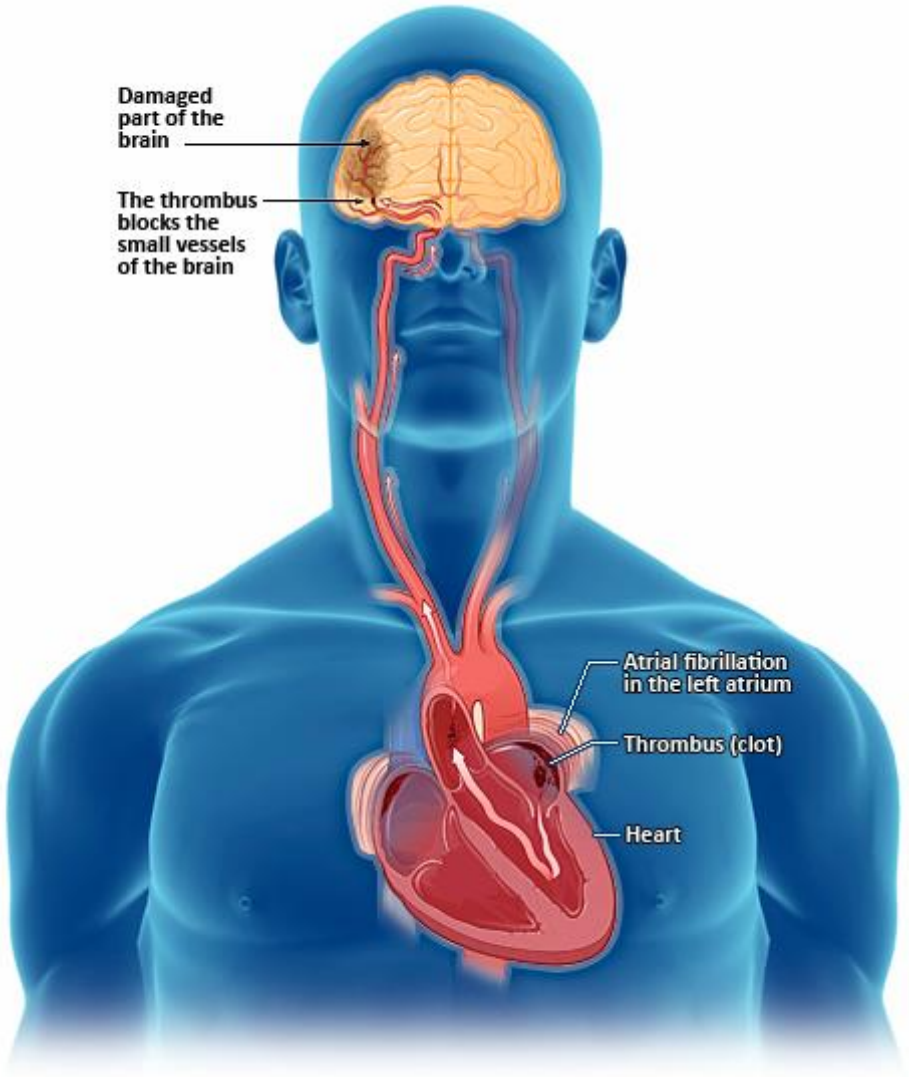
AF and stroke

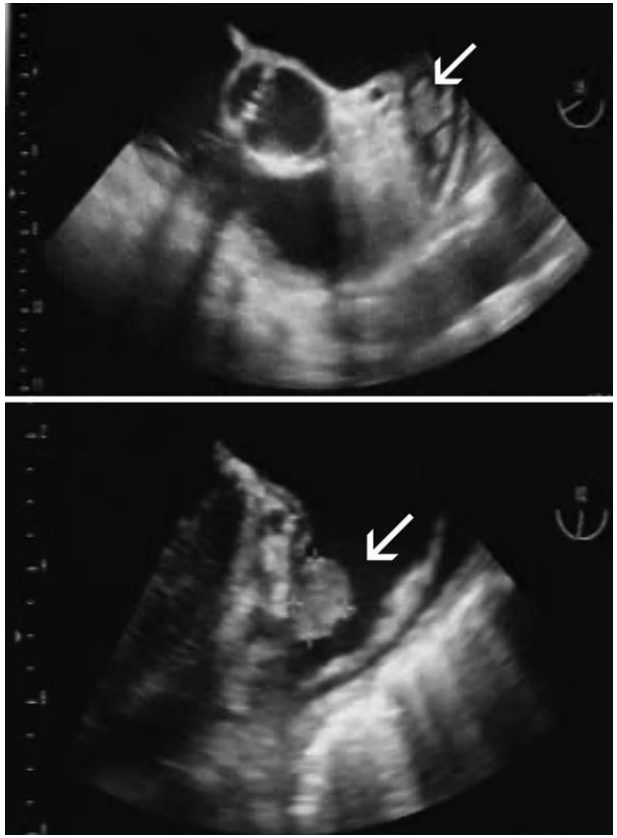
- **A major independent risk factor for stroke ~ 15 % of all strokes.**
  - **7% in patients aged 50-59**
  - **> 36% in patients >80 yrs**
- **Disability is greater after an AF related stroke than after non-AF stroke[1]**
- **Mortality, including early (30-day) death, is higher with AF-related stroke than non-AF stroke (OR for AF vs No AF = 1.84)**



1. Go *et al*, 2001; 2. Wolf *et al*, 1991; 3. Wolf *et al*, 1987; 4. Singer *et al*, 2008; 5. Lin *et al*, 1996

How does AF lead to a stroke?





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Risk of stroke with age and other risk factors

	Annual Stroke Rate %	
AGE Years	No other Risk Factors	One or More Additional Risk Factors
< 65	1.0	4.9
65-75	4.3	5.7
> 75	3.5	8.1

Stroke risk factors: hypertension, diabetes, prior stroke or TIA
Arch Intern Med 1994;154:1449–1457

Novel oral anticoagulants for SPAF

Table 2 **Non-VKA oral anticoagulant drugs, approved for prevention of systemic embolism or stroke in patients with non-valvular AF**

	Dabigatran	Apixaban	Edoxaban	Rivaroxaban
Action	Direct thrombin inhibitor	Activated factor Xa inhibitor	Activated factor Xa inhibitor	Activated factor Xa inhibitor
Dose	150 mg BID 110 mg BID[a,b] (75 mg BID)[b]	5 mg BID 2.5 mg BID[a]	60 mg OD[c] 30 mg OD[a]	20 mg OD 15 mg OD[a]
Phase III clinical trial	RE-LY[25]	ARISTOTLE[26] AVERROES[27]	ENGAGE-AF[28]	ROCKET-AF[29]

BID, twice a day; OD, once daily.

[a]See further tables and text for discussion on dose reduction considerations.

[b]110 mg BID not approved by FDA. 75 mg BID approved in USA only, if CrCl 15–30 mL/min or if CrCl 30–49 mL/min and other 'orange' factor as in *Table 6* (e.g. verapamil).

[c]FDA provided a boxed warning that 'edoxaban should not be used in patients with CrCL > 95 mL/min'. EMA advised that 'edoxaban should only be used in patients with high creatinine clearance after a careful evaluation of the individual thrombo-embolic and bleeding risk'.

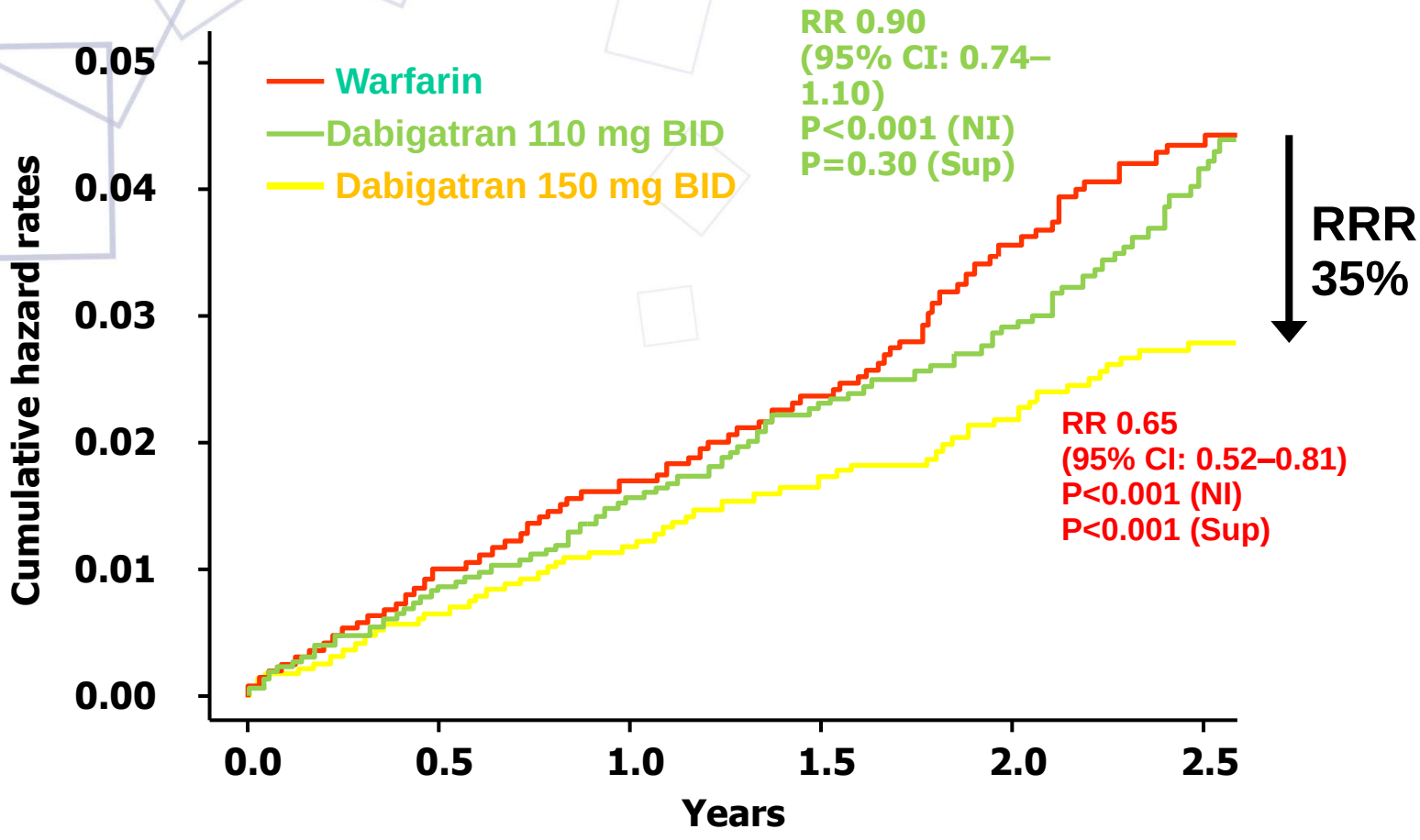
From the ESC 2015 guidelines

Major randomized trials of NOACs

	ROCKET AF[1]	RE-LY[2]	ARISTOTLE[3]	AVERROES[4]	ENGAGE AF-TIMI 48[5]
No. of patients	14,264	18,113	18,206	5,599	20,500
Statistical objective	Non-inferiority	Non-inferiority	Non-inferiority	**Superiority**	Non-inferiority
No. study arms	2	**3**	2	2	**3**
Study drug	Double-blind rivaroxaban	Two doses of double-blind dabigatran	Double-blind apixaban	Double-blind apixaban	Two doses of double-blind edoxaban
Control	Double-blind warfarin (INR 2–3)	**Open-label** warfarin (INR 2–3)	Double-blind warfarin (INR 2–3)	Double-blind **ASA**	Double-blind warfarin (INR 2–3)
AF type of pts included	Non-valvular	Non-valvular	**All except mechanical valves**	Non-valvular	Non-valvular

1. Patel MR *et al,* 2011; 2. Connolly SJ *et al*, 2009; 3. Lopes RD *et al*, 2010; 4. Connolly SJ *et al*, 2011;
5. Ruff CT *et al*, 2010.

RE-LY®: time to first stroke or systemic embolism



BID = twice daily; NI = non-inferiority; RR = relative risk; RRR = relative risk reduction; Sup = superiority

Connolly SJ et al. N Engl J Med 2010;363:1875–6

$CHADS_2$ and CHA_2DS_2-VASc scores

Risk factors	Points assigned	
	$CHADS_2$	CHA_2DS_2-VASc
Age (years)		
65–74		+1
≥75		+2
>75	+1	
Congestive heart failure	+1	+1
Hypertension	+1	+1
Diabetes mellitus	+1	+1
Stroke/TIA	+2	+2
Vascular disease*		+1
Female gender		+1
	Cumulative score: 0–6	Cumulative score: 0–9

MI, peripheral artery disease or aortic plaque

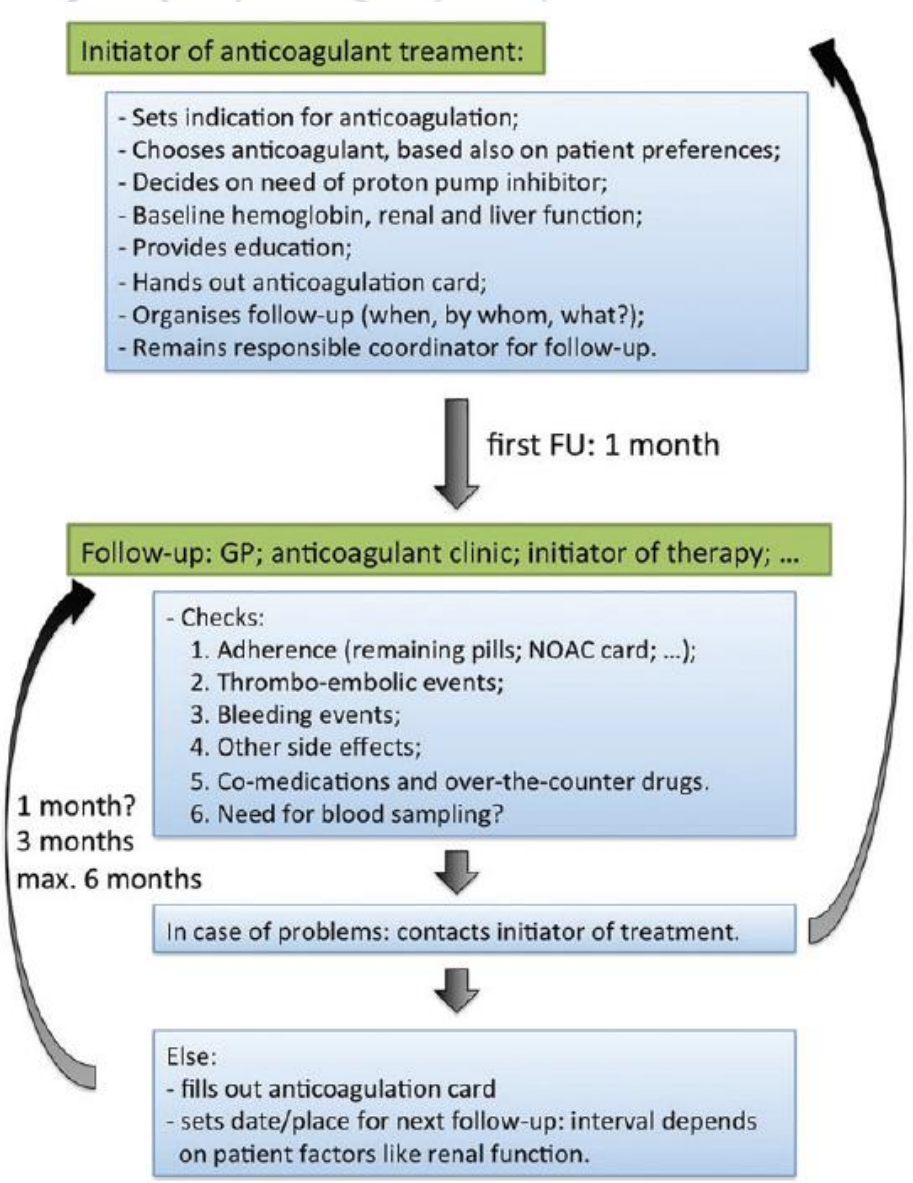
Lip GY *et al*, 2010

ESC 2010 Guidelines: the role of CHA_2DS_2-VASc

Risk category	CHA_2DS_2-VASc score	Recommended antithrombotic therapy
1 ‘major’ risk factor or ≥2 ‘clinically relevant non-major’ risk factors	≥2	OAC
1 ‘clinically relevant non-major’ risk factor	1	Either OAC or ASA 75–325 mg daily Preferred: OAC rather than ASA
No risk factors	0	Either ASA 75–325 mg daily or no antithrombotic therapy Preferred: no antithrombotic therapy rather than ASA

Camm AJ *et al*, 2010

Initiation and structured FU of patients on NOACs



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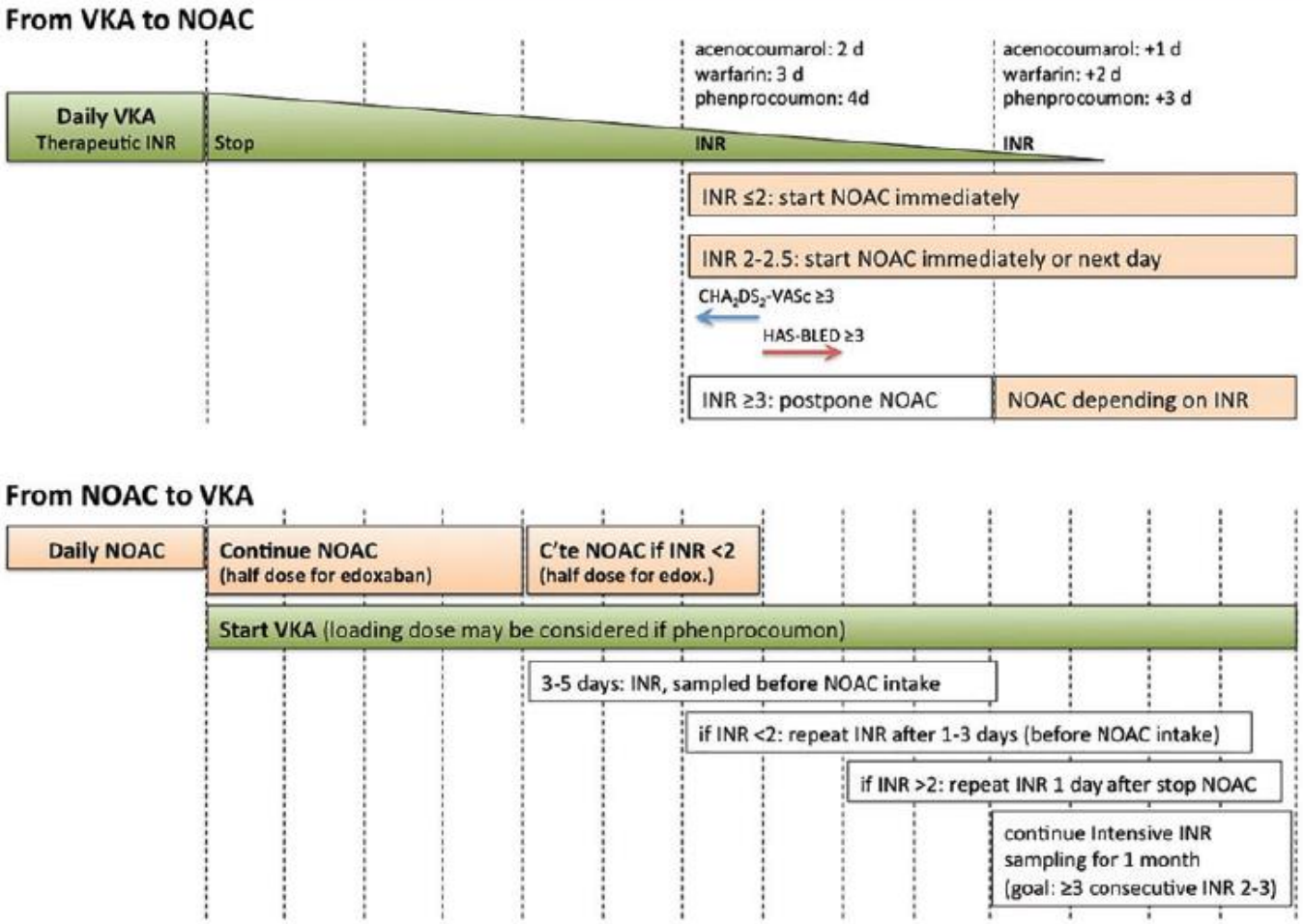
Switching between VKAs and non-VKAs and vice versa



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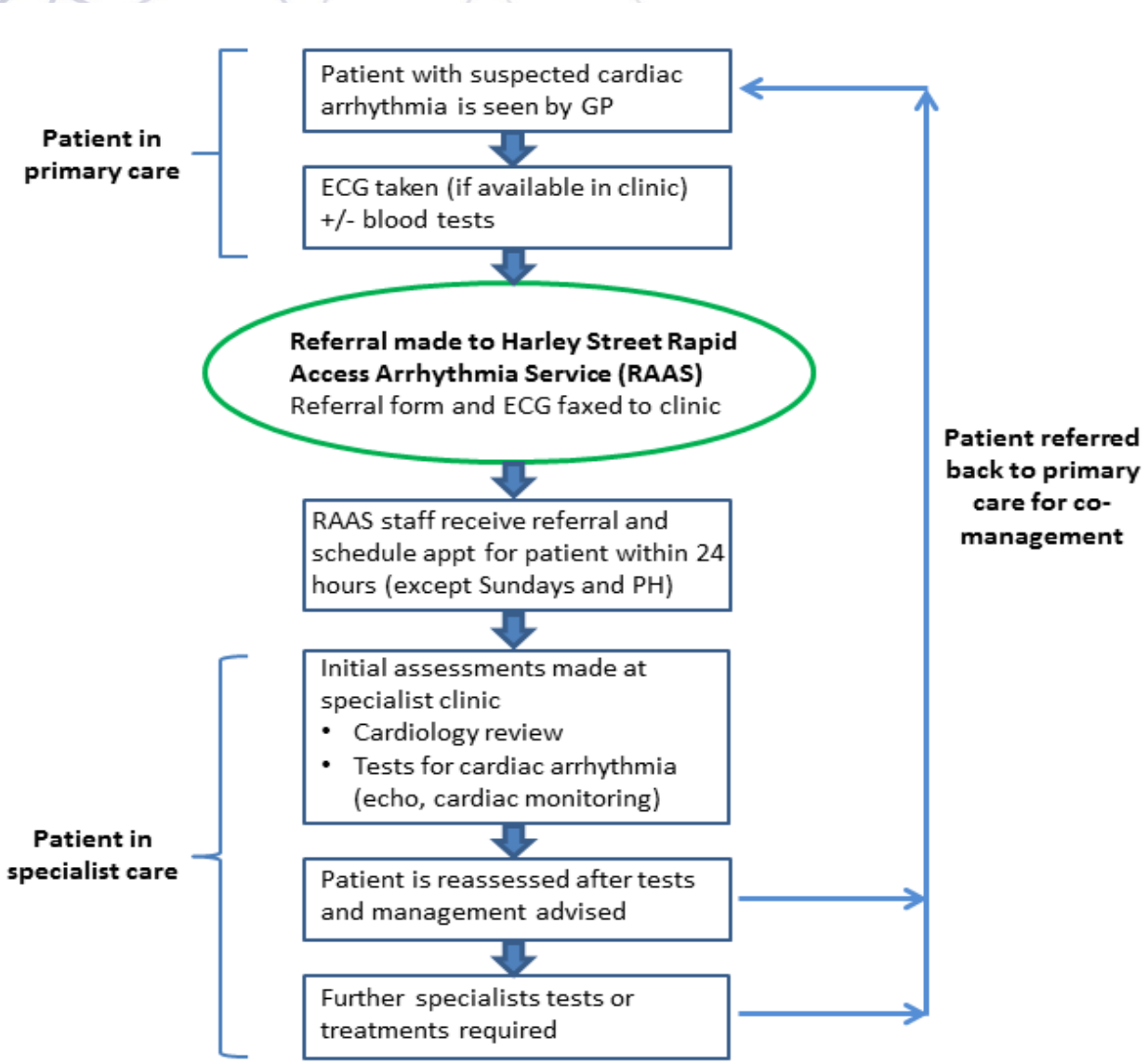
Case vignette 2

- Newly diagnosed AF patient; relatively asymptomatic
- High risk of stroke (CHA_2DS_2-VASc score 3)

- Short-term management:
  - Decide on need for OAC (warfarin or NOAC)
  - Baseline tests- echo, bloods (Hb, renal function, thyroid function)
  - 24 hour Holter monitor- determine type of AF

- Management of AF:
  - Rate or rhythm control
  - If in persistent AF, dilated atria and asymptomatic, opt for rate control (beta-blocker first line)
  - Consider DC cardioversion and AAD if pursuing a rhythm control strategy
  - If symptomatic, paroxysmal AF, atria not too dilated, could consider catheter ablation

Rapid access arrhythmia service



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