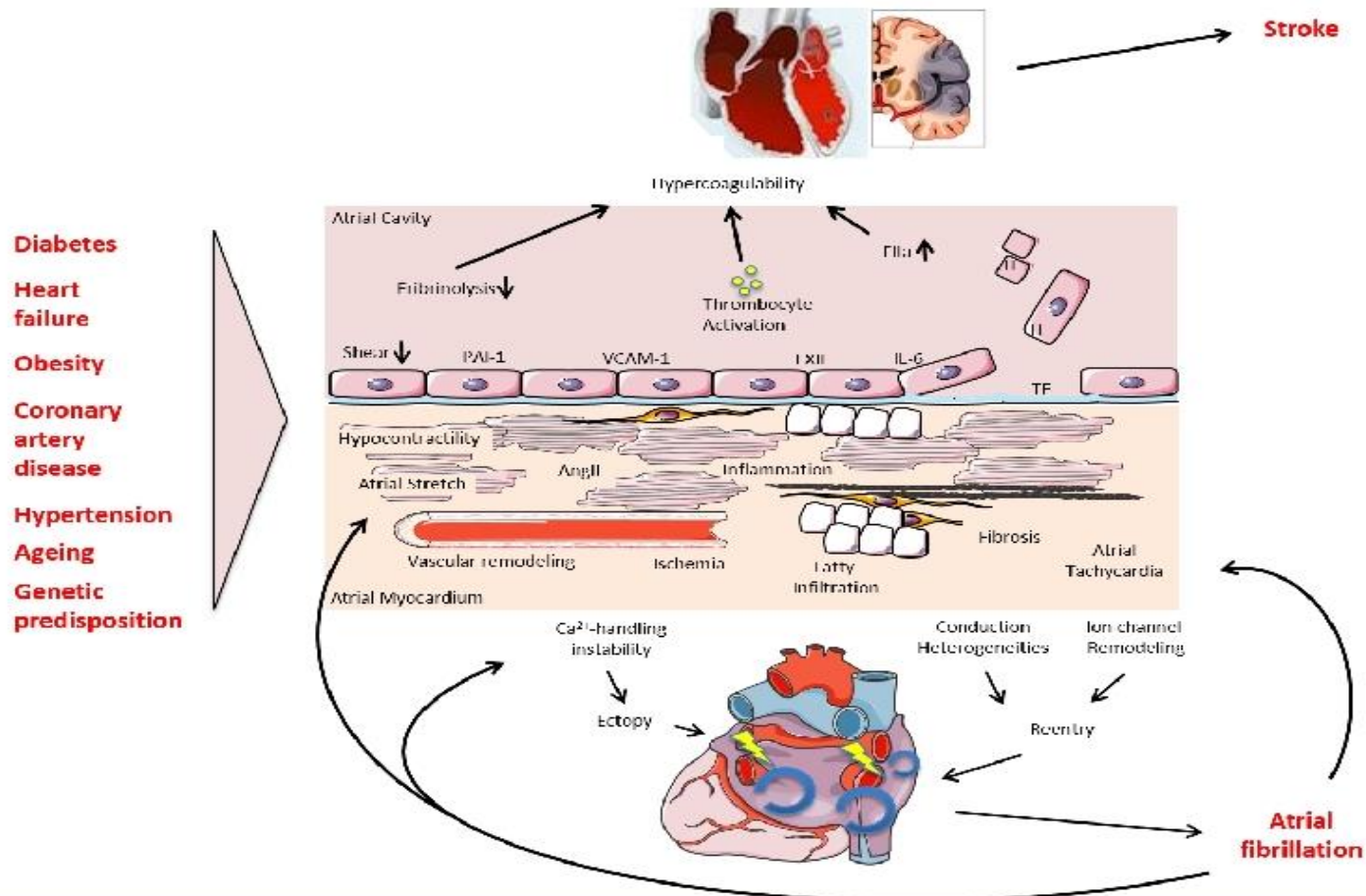


# Atrial Fibrillation

# Mechanisms of atrial fibrillation



AngII = angiotensin II; TF = tissue factor; FXII = factor XII; IL-6 = interleukin 6; PAI-1 = plasminogen activator inhibitor 1; VCAM-1 = vascular cell adhesion molecule 1.

## Screening for atrial fibrillation

Recommendations	Class	Level
Opportunistic screening for AF is recommended by pulse taking or ECG rhythm strip in patients >65 years of age.	<b>I</b>	<b>B</b>
In patients with TIA or ischaemic stroke, screening for AF is recommended by short-term ECG recording followed by continuous ECG monitoring for at least 72 hours.	<b>I</b>	<b>B</b>
It is recommended to interrogate pacemakers and ICDs on a regular basis for atrial high rate episodes (AHRE). Patients with AHRE should undergo further ECG monitoring to document AF before initiating AF therapy.	<b>I</b>	<b>B</b>
In stroke patients, additional ECG monitoring by long-term non-invasive ECG monitors or implanted loop recorders should be considered to document silent atrial fibrillation.	<b>IIa</b>	<b>B</b>
Systematic ECG screening may be considered to detect AF in patients aged >75 years, or those at high stroke risk.	<b>IIb</b>	<b>B</b>

# Atrial Fibrillation Patterns

AF pattern	Definition
First diagnosed AF	AF that has not been diagnosed before, irrespective of the duration of the arrhythmia or the presence and severity of AF-related symptoms.
Paroxysmal AF	<p>Self-terminating, in most cases within 48 hours. Some AF paroxysms may continue for up to 7 days.</p> <p>AF episodes that are cardioverted within 7 days should be considered paroxysmal.</p>
Persistent AF	AF that lasts longer than 7 days, including episodes that are terminated by cardioversion, either with drugs or by direct current cardioversion, after 7 days or more.
Long-standing persistent AF	Continuous AF lasting for $\geq 1$ year when it is decided to adopt a rhythm control strategy.
Permanent AF	AF that is accepted by the patient (and physician). Hence, rhythm control interventions are, by definition, not pursued in patients with permanent AF. Should a rhythm control strategy be adopted the arrhythmia would be re-classified as 'long-standing persistent AF'.

# Diagnostic Work Up

Recommendations	Class	Level
ECG documentation is required to establish the diagnosis of AF.	<b>I</b>	<b>B</b>
A full cardiovascular evaluation, including an accurate history, careful clinical examination, and assessment of concomitant conditions, is recommended in all AF patients.	<b>I</b>	<b>C</b>
Transthoracic echocardiography is recommended in all AF patients to guide management.	<b>I</b>	<b>C</b>
Long-term ECG monitoring should be considered in selected patients to assess the adequacy of rate control in symptomatic patients and to relate symptoms with AF episodes.	<b>IIa</b>	<b>C</b>

# Bleeding and stroke risk

Recommendations	Class	Level
The CHA <sub>2</sub> DS <sub>2</sub> -VASc score is recommended for stroke risk prediction in patients with AF.	<b>I</b>	<b>A</b>
Bleeding risk scores should be considered in AF patients on oral anticoagulation to identify modifiable risk factors for major bleeding.	<b>IIa</b>	<b>B</b>
Biomarkers such as high-sensitivity troponin and natriuretic peptide may be considered to further refine stroke and bleeding risk in AF patients.	<b>IIb</b>	<b>B</b>

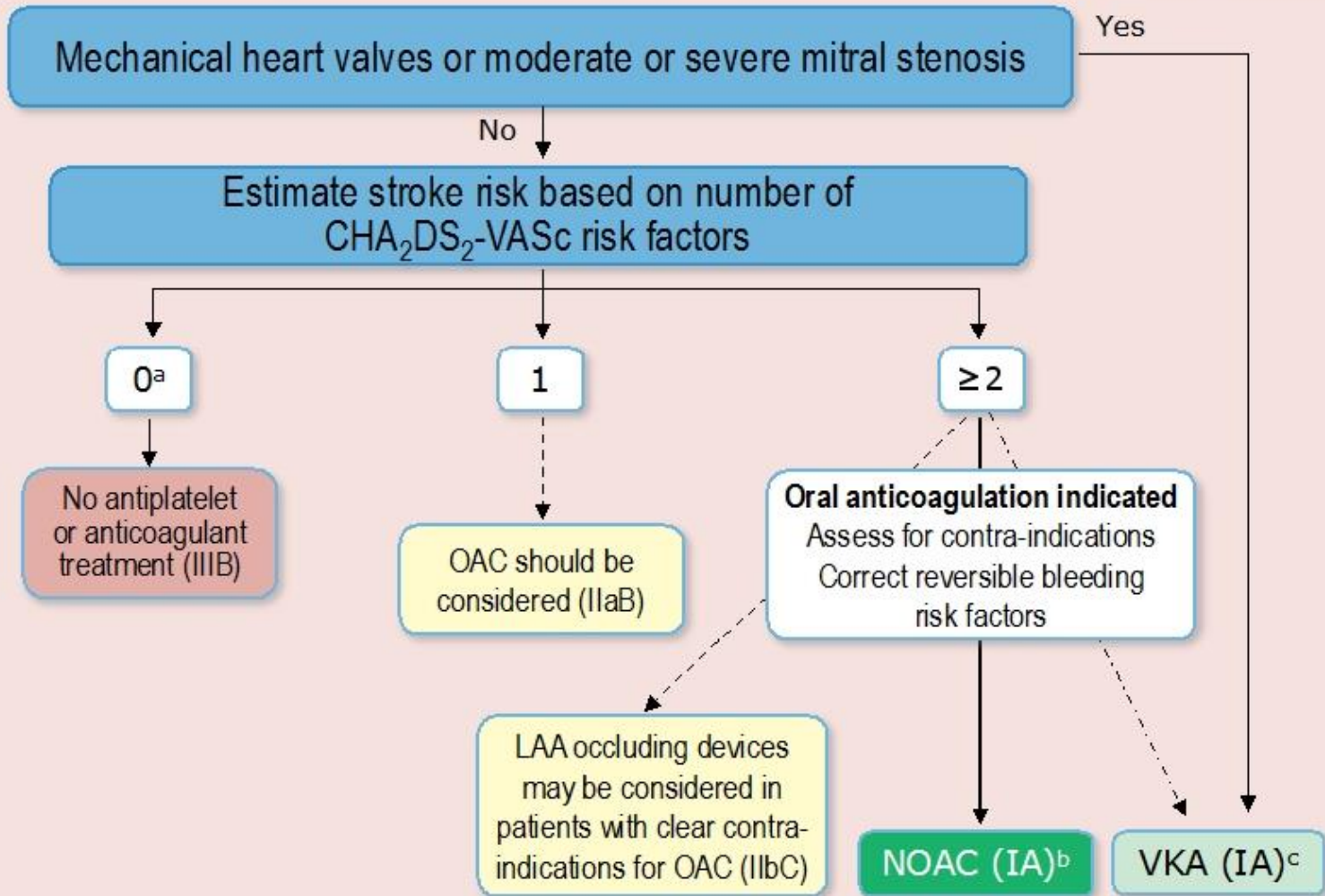
# Risk Score

CHA <sub>2</sub> DS <sub>2</sub> -VASc risk factor	Points
<b>Congestive heart failure</b> Signs/symptoms of heart failure or objective evidence of reduced left-ventricular ejection fraction	1
<b>Hypertension</b> Resting blood pressure > 140/90 mmHg on at least two occasions or current antihypertensive treatment	1
<b>Age 75 years or older</b>	2
<b>Diabetes mellitus</b> Fasting glucose > 125 mg/dL (7 mmol/L) or treatment with oral hypoglycaemic agent and/or insulin	1
<b>Previous stroke, transient ischaemic attack, or thromboembolism</b>	2
<b>Vascular disease</b> Previous myocardial infarction, peripheral artery disease, or aortic plaque	1
<b>Age 65–74 years</b>	1
<b>Sex category (female)</b>	1

# Oral anticoagulant

Recommendations	Class	Level
Oral anticoagulation therapy to prevent thromboembolism is recommended for all male AF patients with a CHA <sub>2</sub> DS <sub>2</sub> -VASc score of 2 or more.	<b>I</b>	<b>A</b>
Oral anticoagulation therapy to prevent thromboembolism is recommended in all female AF patients with a CHA <sub>2</sub> DS <sub>2</sub> -VASc score of 3 or more.	<b>I</b>	<b>A</b>
Oral anticoagulation therapy to prevent thromboembolism should be considered in male AF patients with a CHA <sub>2</sub> DS <sub>2</sub> -VASc score of 1, considering individual characteristics and patient preferences.	<b>IIa</b>	<b>B</b>
Oral anticoagulation therapy to prevent thromboembolism should be considered in female AF patients with a CHA <sub>2</sub> DS <sub>2</sub> -VASc score of 2, considering individual characteristics and patient preferences.	<b>IIa</b>	<b>B</b>
Vitamin K antagonist therapy (INR 2.0–3.0 or higher) is recommended for stroke prevention in AF patients with moderate-to-severe mitral stenosis or mechanical heart valves.	<b>I</b>	<b>B</b>
When oral anticoagulation is initiated in a patient with AF who is eligible for a NOAC (apixaban, dabigatran, edoxaban, or rivaroxaban), a NOAC is recommended in preference to a Vitamin K antagonist.	<b>I</b>	<b>A</b>

# Algorithm for stroke prevention

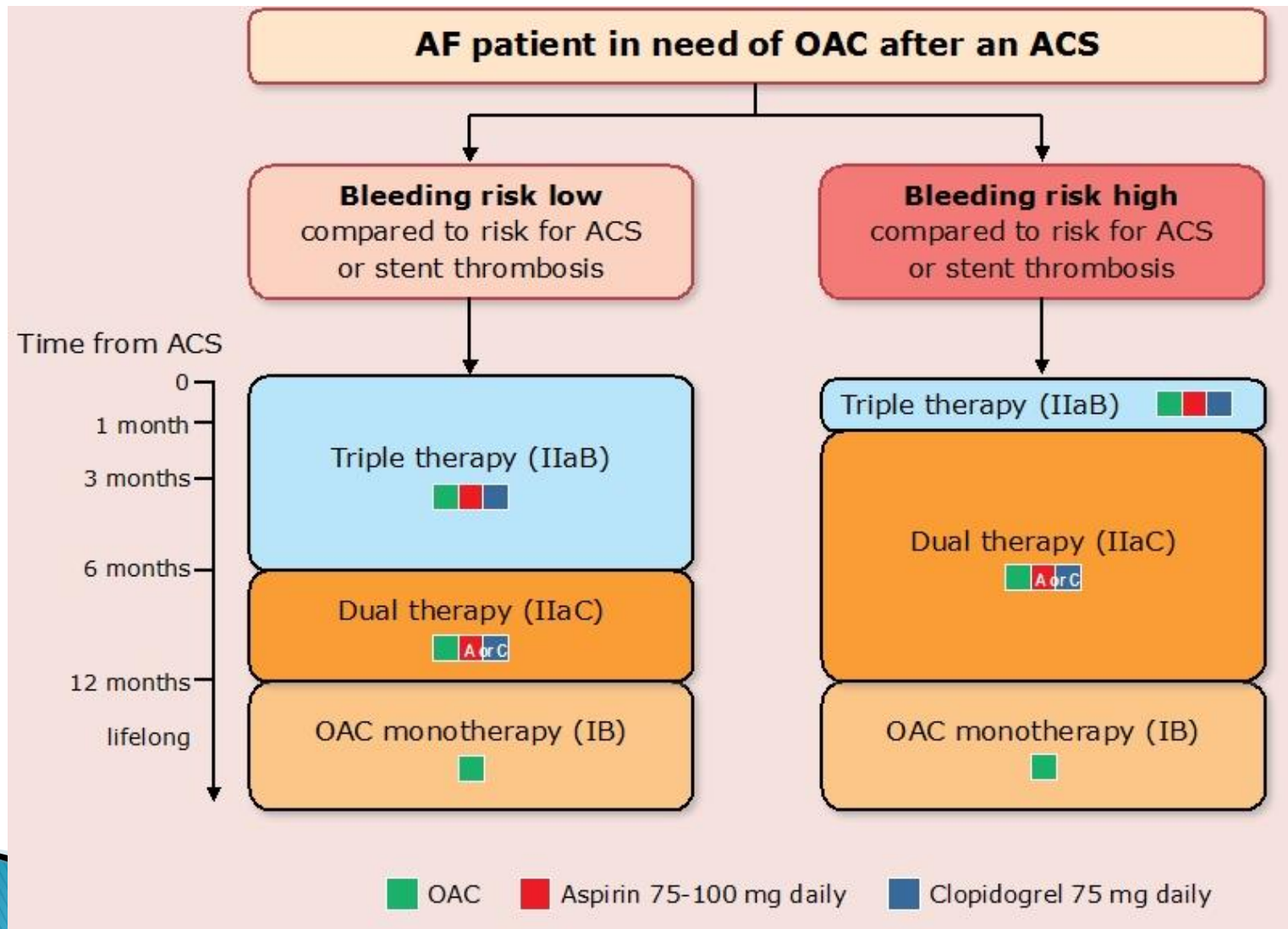


<sup>a</sup> Includes women without other stroke risk factors

<sup>b</sup> IIaB for women with only one additional stroke risk factor

<sup>c</sup> IB for patients with mechanical heart valves or mitral stenosis

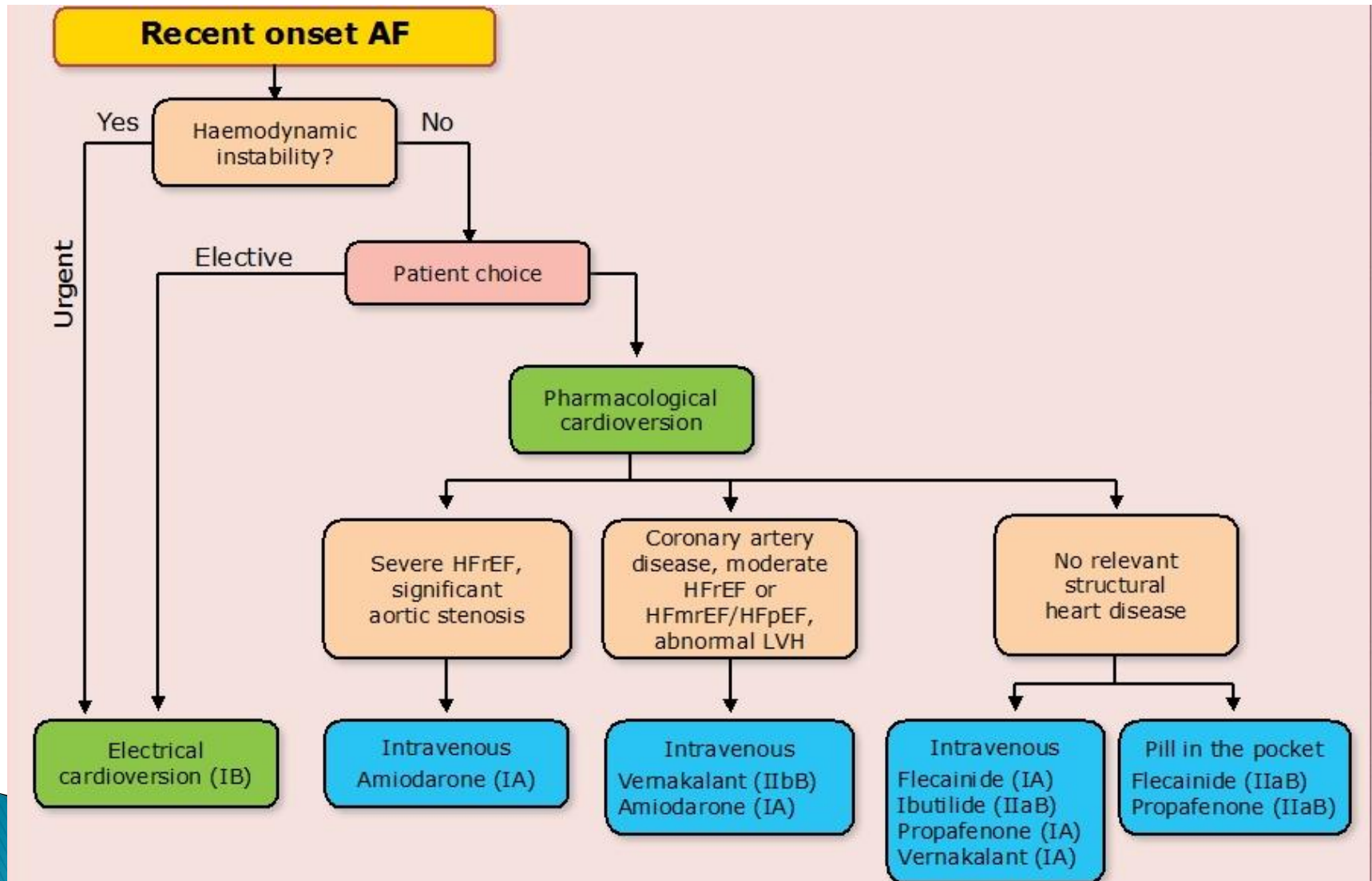
## Combined Dual and triple therapy (antiplatelets)



# Rate control

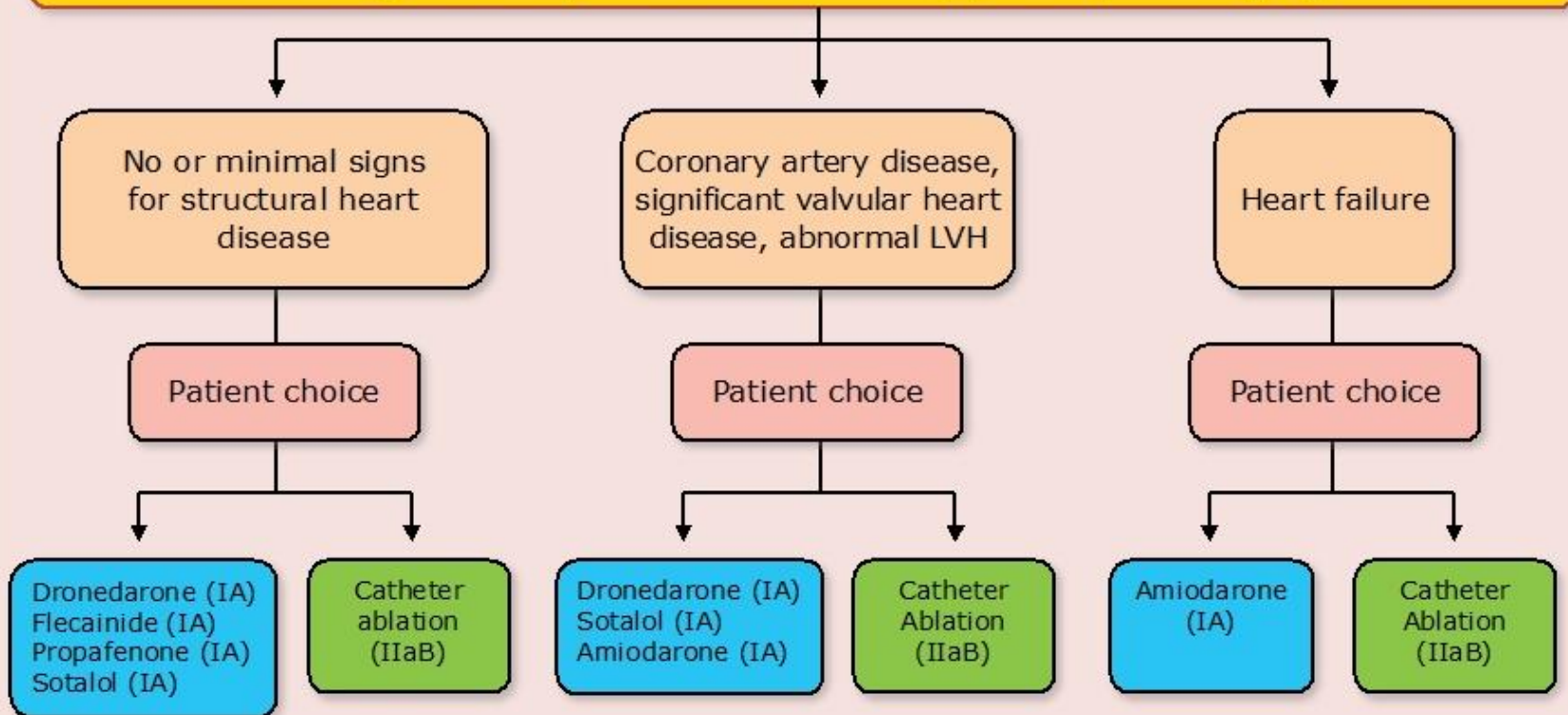
Recommendations	Class	Level
Beta-blockers, digoxin, diltiazem, or verapamil are recommended to control heart rate in AF patients with LVEF $\geq 40\%$ .	<b>I</b>	<b>B</b>
Beta-blockers and/or digoxin are recommended to control heart rate in AF patients with LVEF $< 40\%$ .	<b>I</b>	<b>B</b>
Combination therapy comprising different rate controlling agents should be considered if a single agent does not achieve the necessary heart rate target.	<b>IIa</b>	<b>C</b>
In patients with haemodynamic instability or severely depressed LVEF, amiodarone may be considered for acute control of heart rate.	<b>IIb</b>	<b>B</b>
In patients with permanent AF (i.e. where no attempt to restore sinus rhythm is planned), antiarrhythmic drugs should not routinely be used for rate control.	<b>III (harm)</b>	<b>A</b>
A resting heart rate of $< 110$ bpm (i.e. lenient rate control) should be considered as the initial heart rate target for rate control therapy.	<b>IIa</b>	<b>B</b>
Rhythm rather than rate control strategies should be considered as the preferred management in pre-excited AF and AF during pregnancy.	<b>IIa</b>	<b>C</b>
Atrioventricular node ablation should be considered to control heart rate in patients unresponsive or intolerant to intensive rate and rhythm control therapy, accepting that these patients will become pacemaker dependent.	<b>IIa</b>	<b>B</b>

# Rhythm control

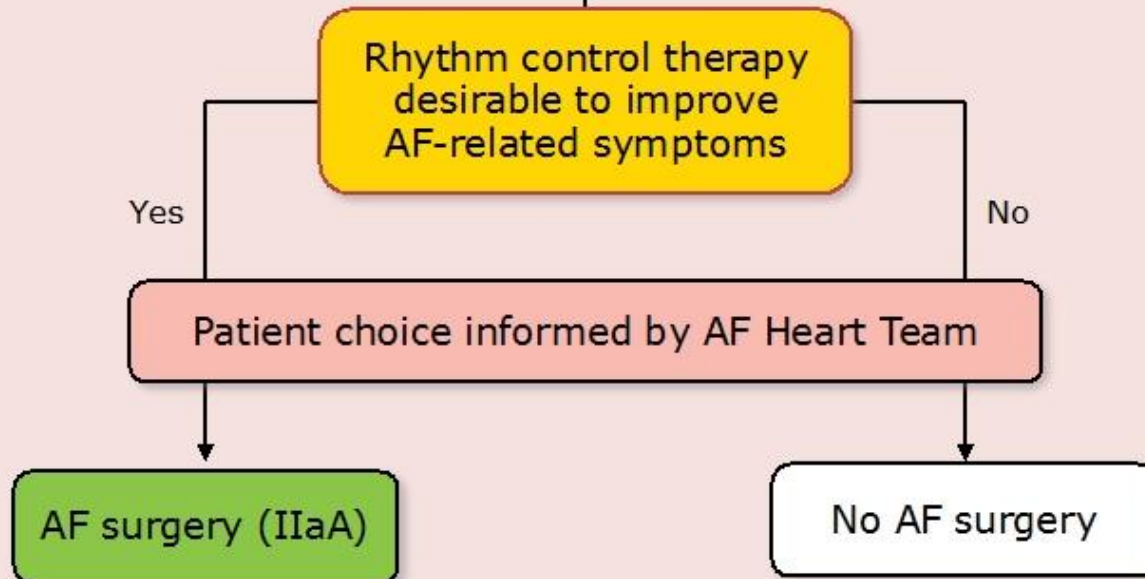


# Rhythm control

## Initiation of long term rhythm control therapy to improve symptoms in AF



**AF patient undergoing open heart surgery (e.g. CABG, valve surgery)**



Consider to add surgical LAA exclusion in selected patients (IIbC)

# Atrial Flutter

Recommendations	Class	Level
For patients with atrial flutter, antithrombotic therapy is recommended according to the same risk profile used for AF.	<b>I</b>	<b>B</b>
Overdrive atrial pacing of atrial flutter should be considered as an alternative to electrical cardioversion, depending on local availability and experience.	<b>IIa</b>	<b>B</b>
Management of typical atrial flutter with ablation of the cavotricuspid isthmus is recommended for patients failing antiarrhythmic drug therapy or as first-line treatment considering patient preference.	<b>I</b>	<b>B</b>
If atrial flutter has been documented before AF ablation, ablation of the cavotricuspid isthmus should be considered as part of the AF ablation procedure.	<b>IIa</b>	<b>C</b>