

A 50 years old male with symptomatic chronic AF scenario

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Incidence and prevalence of atrial fibrillation

- ▶ In 2010, the estimated numbers of men and women with AF worldwide were 20.9 million and 12.6 million, respectively, with higher incidence and prevalence rates in developed countries .
- ▶ With greater prevalence in patients with conditions such as hypertension, heart failure, coronary artery disease (CAD), valvular heart disease, obesity, diabetes mellitus, or chronic kidney disease (CKD).

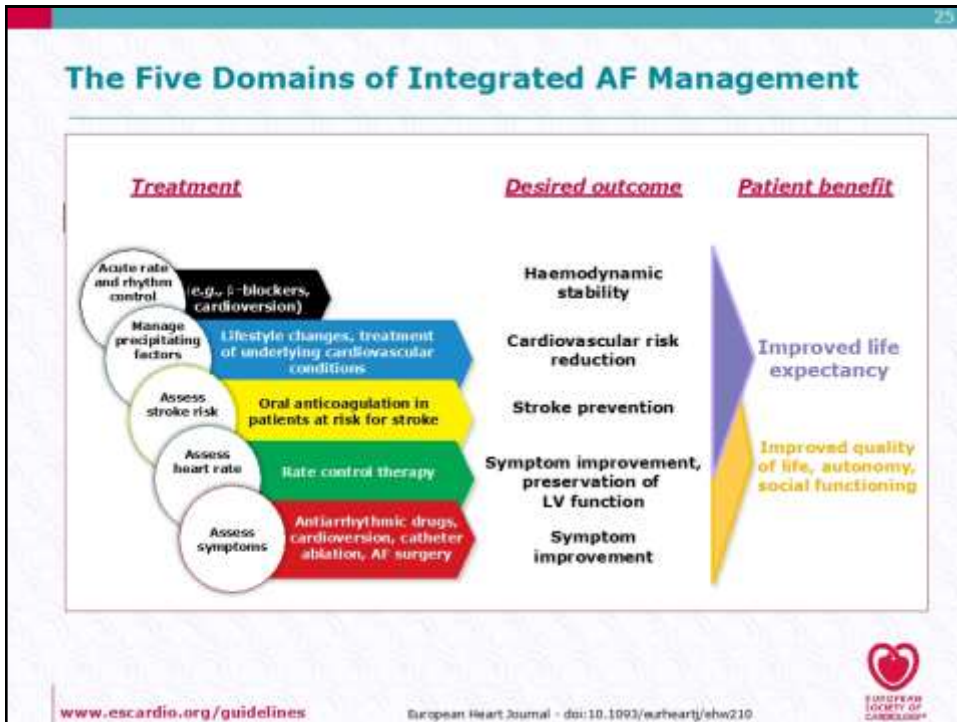
Patterns of atrial fibrillation

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	Self-terminating, in most cases within 48 hours. Some AF paroxysms may continue for up to 7 days. AF episodes that are cardioverted within 7 days should be considered paroxysmal.
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 ≥ 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'.

Modified European Heart Rhythm Association (EHRA) symptom scale

Recommendations	Class	Level
Use of the modified EHRA symptom scale is recommended in clinical practice and research studies to quantify AF-related symptoms.	I	C

Modified EHRA score	Symptoms	Description
1	None	AF does not cause any symptoms.
2a	Mild	Normal daily activity not affected by symptoms related to AF.
2b	Moderate	Normal daily activity not affected by symptoms related to AF, but patient troubled by symptoms.
3	Severe	Normal daily activity affected by symptoms related to AF.
4	Disabling	Normal daily activity discontinued.



Management

- ▶ Initial clinical evaluation & control risk factors
 - ▶ Preventing thromboembolism
 - ▶ Rate control.
- OR
- ▶ Rhythm control

Clinical evaluation

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.	I	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.	I	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.	I	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.	IIa	B
Systematic ECG screening may be considered to detect AF in patients aged >75 years, or those at high stroke risk.	IIb	B

Prevention of thromboembolism


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Prediction of stroke and bleeding risk

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

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Clinical risk factors for stroke, transient ischaemic attack, and systemic embolism

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

Stroke prevention in patients with atrial fibrillation (1)

Recommendations	Class	Level
Oral anticoagulation therapy to prevent thromboembolism is recommended for all male AF patients with a CHA ₂ DS ₂ -VASc score of 2 or more.	I	A
Oral anticoagulation therapy to prevent thromboembolism is recommended in all female AF patients with a CHA ₂ DS ₂ -VASc score of 3 or more.	I	A
Oral anticoagulation therapy to prevent thromboembolism should be considered in male AF patients with a CHA ₂ DS ₂ -VASc score of 1, considering individual characteristics and patient preferences.	IIa	B
Oral anticoagulation therapy to prevent thromboembolism should be considered in female AF patients with a CHA ₂ DS ₂ -VASc score of 2, considering individual characteristics and patient preferences.	IIa	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.	I	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.	I	A

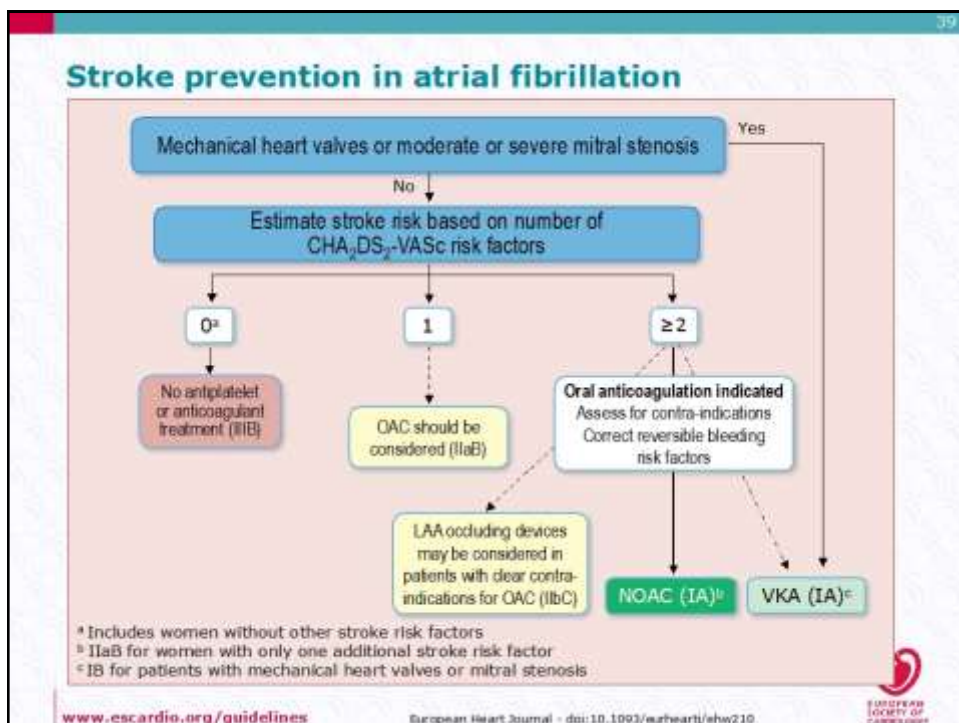
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Stroke prevention in patients with atrial fibrillation (2)

Recommendations	Class	Level
When patients are treated with a vitamin K antagonist, time in therapeutic range (TTR) should be kept as high as possible and closely monitored.	I	A
AF patients already on treatment with a vitamin K antagonist may be considered for NOAC treatment if TTR is not well controlled despite good adherence, or if patient preference without contra-indications to NOAC (e.g. prosthetic valve).	IIb	A
Combinations of oral anticoagulants and platelet inhibitors increase bleeding risk and should be avoided in AF patients without another indication for platelet inhibition.	III (harm)	B
In male or female AF patients without additional stroke risk factors, anticoagulant or antiplatelet therapy is not recommended for stroke prevention.	III (harm)	B
Antiplatelet monotherapy is not recommended for stroke prevention in AF patients, regardless of stroke risk.	III (harm)	A
NOACs (apixaban, dabigatran, edoxaban, and rivaroxaban) are not recommended in patients with mechanical heart valves (Level of evidence B) or moderate-to-severe mitral stenosis (Level of evidence C).	III (harm)	B C

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So our patient should be anticoagulated if . ▶

CHA2DS2–VASc score is 2 or more ▶

Which anticoagulation should we use????? ▶

- ▶ *Warfarin and other VKAs were the first anticoagulants used in AF patients. VKA therapy reduces the risk of stroke by two-thirds and mortality by one-quarter compared with control (aspirin or no therapy).*
- ▶ *VKAs have been used in many patients throughout the world with good outcomes.*
- ▶ *The use of VKAs is limited by the narrow therapeutic interval, necessitating frequent monitoring and dose adjustments, but VKAs, when delivered with adequate time in therapeutic range (TTR), are effective for stroke prevention in AF patients*

Dabigatran	Apixaban	Edoxaban	Rivaroxaban
RELY trial	ARISTOTLE Trial	ENGAGE AF-TIMI 48	ROCKET-AF
Direct thrombin inhibitor	Factor Xa inhibitor	Factor Xa inhibitor	Factor Xa inhibitor
150 mg decrease risk of stroke by 35% compared to warfarin	5 mg twice daily decrease the risk of stroke by 21% compared with warfarin	60 mg once daily significantly reduced stroke or systemic embolism by 21% and significantly reduced major bleeding events by 20% compared with warfarin	Rivaroxaban was non-inferior to warfarin for the prevention of stroke and systemic embolism

Which anticoagulant should I use

- ▶ *Recurrent stroke: Dabigatran 150.*
- ▶ *Recent stent: Rivaroxaban.*
- ▶ *Renal impairment: warfarin, rivaroxaban 15, dabigatran 75, edoxaban 30*
- ▶ *High risk GIT bleeding: apixaban, dabigatran 110*

Rate control

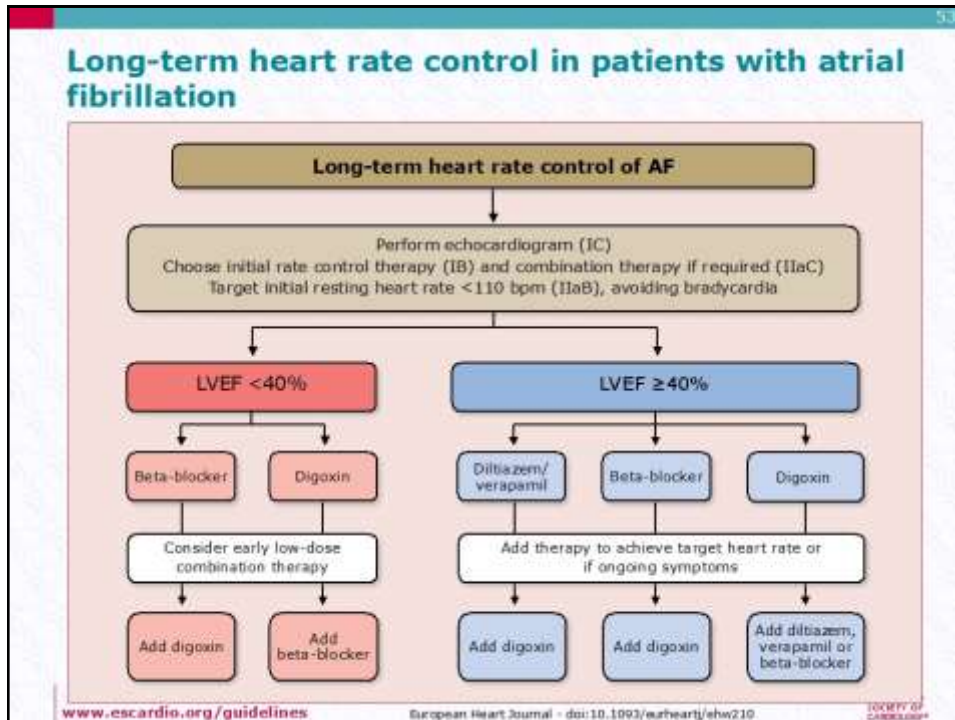
- ▶ *The optimal heart rate target in AF patients is unclear.*
- ▶ *The RACE (Rate Control Efficacy in Permanent Atrial Fibrillation) II study randomized 614 patients with permanent AF to either a target heart rate ,80 b.p.m. at rest and ,110 b.p.m. during moderate exercise,or to a lenient heart rate target of ,110 b.p.m. There was no difference in a composite of clinical events (14.9% in the strict rate control group, 12.9% in the lenient group), NYHA class, or hospitalizations*

Lenient versus strict rate control in patients with atrial fibrillation. N Engl J Med 2010;362:1363-1373

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Heart rate control in atrial fibrillation

Recommendations	Class	Level
Beta-blockers, digoxin, diltiazem, or verapamil are recommended to control heart rate in AF patients with LVEF \geq 40%.	I	B
Beta-blockers and/or digoxin are recommended to control heart rate in AF patients with LVEF <40%.	I	B
Combination therapy comprising different rate controlling agents should be considered if a single agent does not achieve the necessary heart rate target.	IIa	C
In patients with haemodynamic instability or severely depressed LVEF, amiodarone may be considered for acute control of heart rate.	IIb	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.	III (harm)	A
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.	IIa	B
Rhythm rather than rate control strategies should be considered as the preferred management in pre-excited AF and AF during pregnancy.	IIa	C
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.	IIa	B



Rhythm control

- ▶ *Restoring and maintaining sinus rhythm is an integral part of AF management. Catheter ablation or combination therapy is often effective when antiarrhythmic drug fail .*
- ▶ *Although many clinicians believe that maintaining sinus rhythm can improve outcomes in AF patients all trials that have compared rhythm control and rate control to rate control alone (with appropriate anticoagulation) have resulted in neutral outcomes*

The atrial fibrillation ablation pilot study: a European Survey on Methodology and results of catheter ablation for atrial fibrillation conducted by the European Heart Rhythm Association. Eur Heart J 2014;35:1466-1478.

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Rhythm control therapy (1) – Cardioversion of AF

Recommendations	Class	Level
General recommendations		
Rhythm control therapy is indicated for symptom improvement in patients with AF.	I	B
Management of cardiovascular risk factors and avoidance of AF triggers should be pursued in patients on rhythm control therapy to facilitate maintenance of sinus rhythm.	IIa	B
With the exception of AF associated with haemodynamic instability, the choice between electrical and pharmacological cardioversion should be guided by patient and physician preferences.	IIa	C
Cardioversion of AF		
Electrical cardioversion of AF is recommended in patients with acute haemodynamic instability to restore cardiac output.	I	B
Cardioversion of AF (either electrical or pharmacological) is recommended in symptomatic patients with persistent or long-standing persistent AF as part of rhythm control therapy.	I	B
Pre-treatment with amiodarone, flecainide, ibutilide, or propafenone should be considered to enhance success of electrical cardioversion and prevent recurrent AF.	IIa	B

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Rhythm control therapy (3) – Stroke prevention

Recommendations	Class	Level
Stroke prevention in patients designated for cardioversion of AF		
Anticoagulation with heparin or a NOAC should be initiated as soon as possible before every cardioversion of AF or atrial flutter.	IIa	B
For cardioversion of AF/atrial flutter, effective anticoagulation is recommended for a minimum of 3 weeks before cardioversion.	I	B
Transoesophageal echocardiography (TOE) is recommended to exclude cardiac thrombus as an alternative to preprocedural anticoagulation when early cardioversion is planned.	I	B
Early cardioversion can be performed without TOE in patients with a definite duration of AF <48 hours.	IIa	B
In patients at risk for stroke, anticoagulant therapy should be continued long-term after cardioversion according to the long-term anticoagulation recommendations, irrespective of the method of cardioversion or the apparent maintenance of sinus rhythm. In patients without stroke risk factors, anticoagulation is recommended for 4 weeks after cardioversion.	I	B
In patients where thrombus is identified on TOE, effective anticoagulation is recommended for at least 3 weeks.	I	C
A repeat TOE to ensure thrombus resolution should be considered before cardioversion.	IIa	C

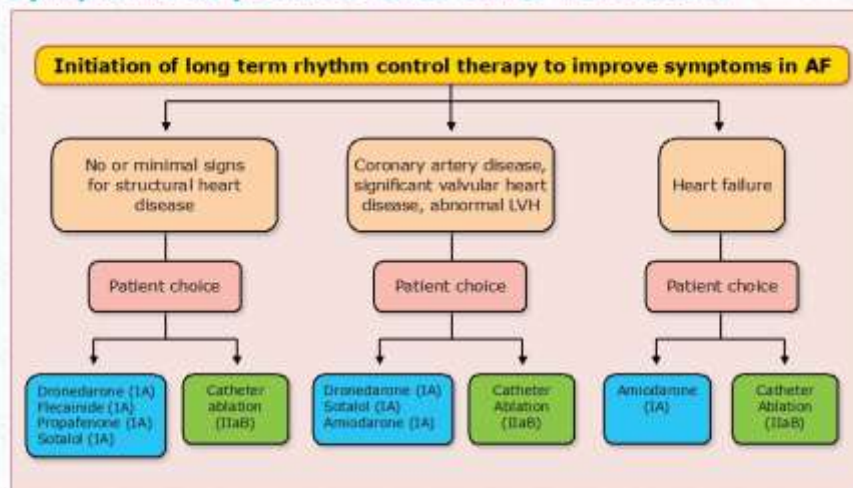
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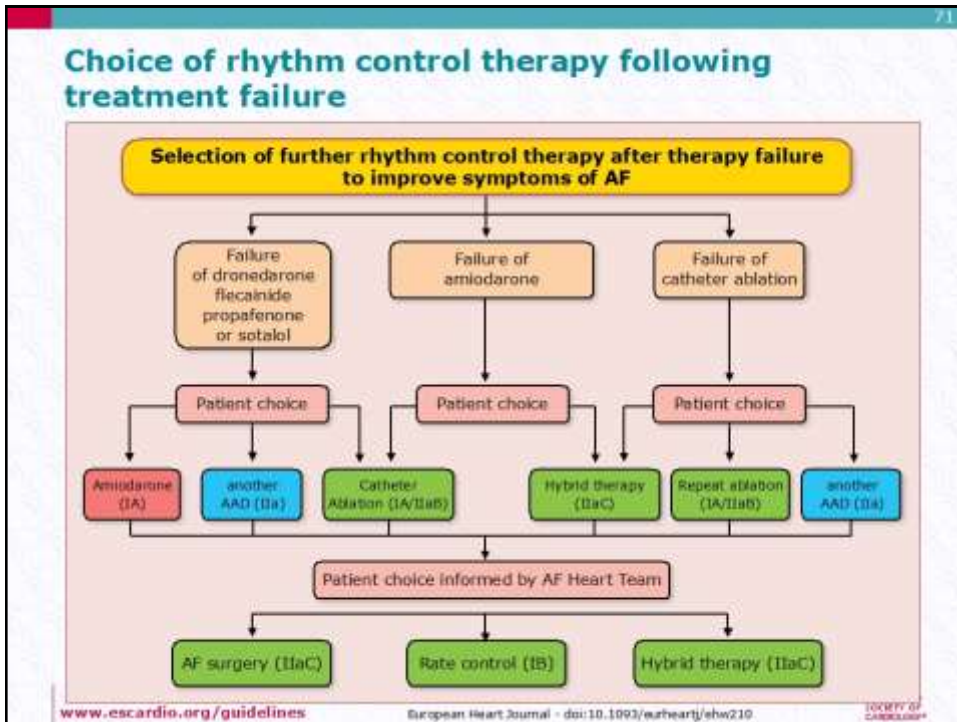
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Rhythm control therapy (4) – Antiarrhythmic drugs (AAD)

Recommendations	Class	Level
AAD for the long-term maintenance of sinus rhythm/prevention of recurrent AF		
The choice of AAD needs to be carefully evaluated, taking into account the presence of comorbidities, cardiovascular risk and potential for serious proarrhythmia, extracardiac toxic effects, patient preferences, and symptom burden.	I	A
Dronedronone, flecainide, propafenone, or sotalol are recommended for prevention of recurrent symptomatic AF in patients with normal left ventricular function and without pathological left ventricular hypertrophy.	I	A
Dronedronone is recommended for prevention of recurrent symptomatic AF in patients with stable coronary artery disease, and without heart failure.	I	A
Amiodarone is recommended for prevention of recurrent symptomatic AF in patients with heart failure.	I	B
Amiodarone is more effective in preventing AF recurrences than other AAD, but extracardiac toxic effects are common and increase with time. For this reason, other AAD should be considered first.	IIa	C

Initiation of long term rhythm control therapy in symptomatic patients with atrial fibrillation



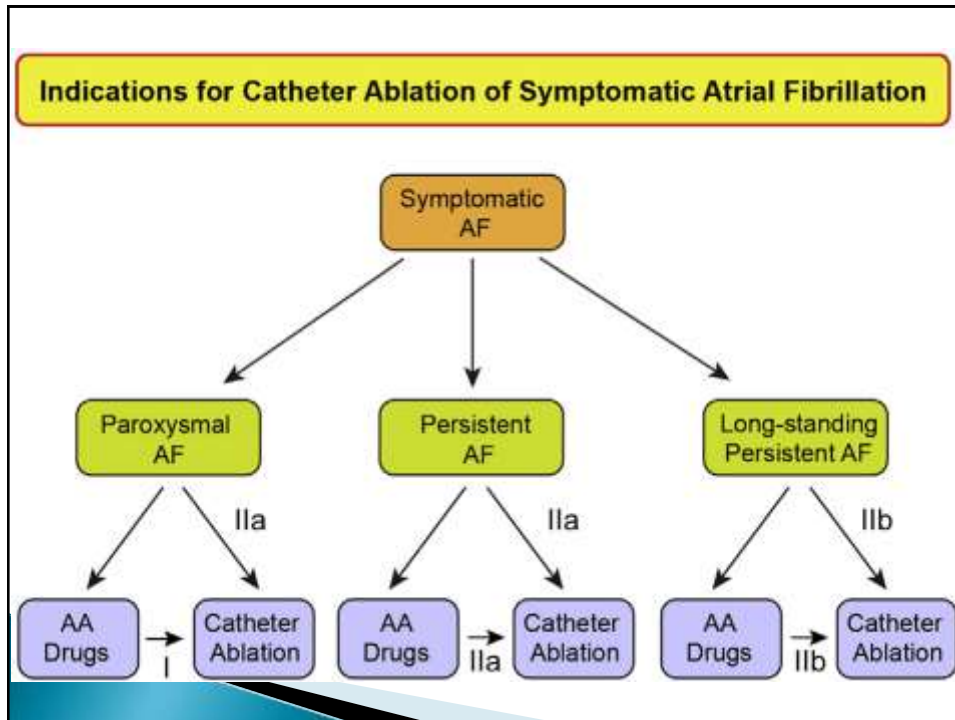


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**2017 HRS/EHRA
/ECAS/APHRS/SOLAECE
expert consensus statement on
catheter and surgical ablation of
atrial fibrillation: executive
summary**

Hugh Calkins, Gerhard Hindricks, [...], and
Teiichi Yamane



Summary of the management

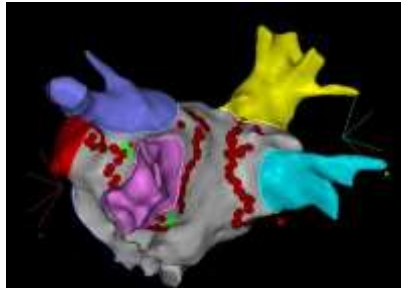
- ▶ ECG for diagnosis.
- ▶ Anticoagulation if CHA2DS2-VASc score 2 or more.
- ▶ Rate control by different rate control drugs.

If still symptomatic:

- ▶ restoration of sinus rhythm by electrical cardioversion after exclusion of LA thrombus BY TOE.
- ▶ Add AAD for maintenance sinus rhythm.

If still symptomatic

AF ablation



Thank you