8th Annual Emirates Cardiac Society Conference

ACC Middle East Conference 2017

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Medical management of AF: drugs for rate and rhythm control

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ESC GUIDELINES

2016 ESC Guidelines for the management of atrial fibrillation developed in collaboration with EACTS

The Task Force for the management of atrial fibrillation of the European Society of Cardiology (ESC)

Developed with the special contributio
Rhythm Association (EHRA) of the ES

CLINICAL PRACTICE GUIDELINE

2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation: Executive Summary

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Heart Rhythm Society

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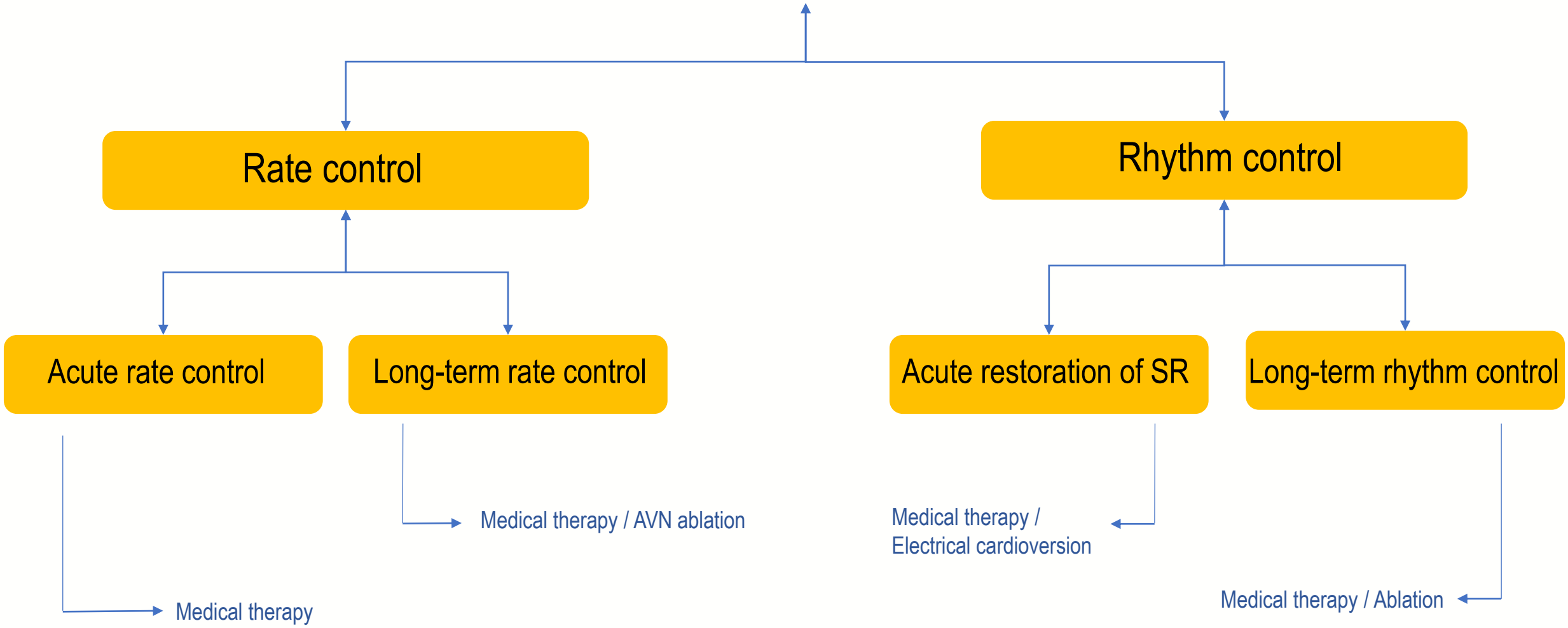
Management of AF



Rate control therapy in atrial fibrillation

Therapy	Acute IV rate control	Long-term oral rate control
Beta-blockers		
Bisoprolol	N/A	1.25 – 20 mg OD
Carvedilol	N/A	3.125 – 50 mg bid
Metoprolol	2.5 – 10 mg IV bolus	100 – 200 mg total dose
Nebivolol	N/A	2.5 – 10 mg OD
Esmolol	0.5 mg/Kg IV bolus over 1 min then 0.05-0.25 mg/kg/min	N/A

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Rate control therapy in atrial fibrillation

Therapy	Acute IV rate control	Long-term oral rate control
Calcium-channel blockers		
Diltiazem	15 – 25 mg IV bolus	60 mg tid daily up to 360 mg total daily dose (120 – 360 mg once daily modified release)
Verapamil	2.5 – 10 mg IV bolus	40 – 120 mg tid daily (120 – 480 mg once daily modified release)

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Rate control therapy in atrial fibrillation

Therapy	Acute IV rate control	Long-term oral rate control
Cardiac glycosides		
Digoxin	0.5 mg IV bolus (0.75 – 1.5 mg over 24 hrs in divided doses)	0.0625 – 0.25 mg daily dose
Digitoxin	0.4 – 0.6 mg IV bolus	0.05 – 0.3 mg daily dose

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Rate control therapy in atrial fibrillation

Therapy	Acute IV rate control	Long-term oral rate control
Specific indications		
Amiodarone	300 mg IV diluted in 250 mg 5% dextrose over 30-60 minutes (preferably via central venous cannula)	200 mg daily

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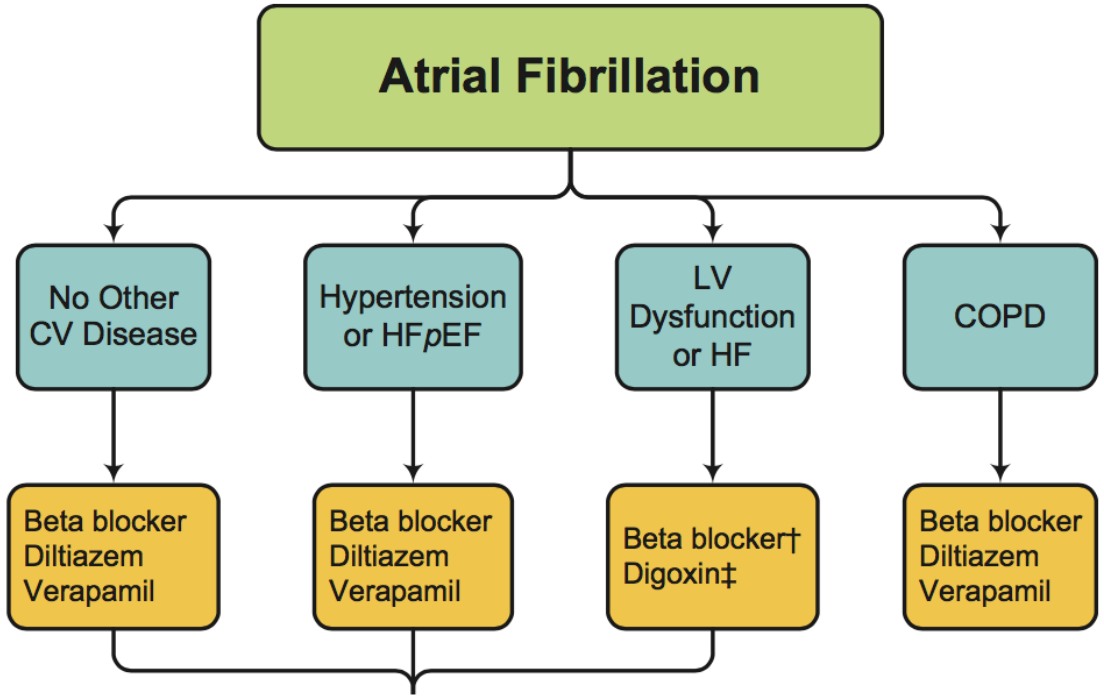
Rate control therapy in atrial fibrillation



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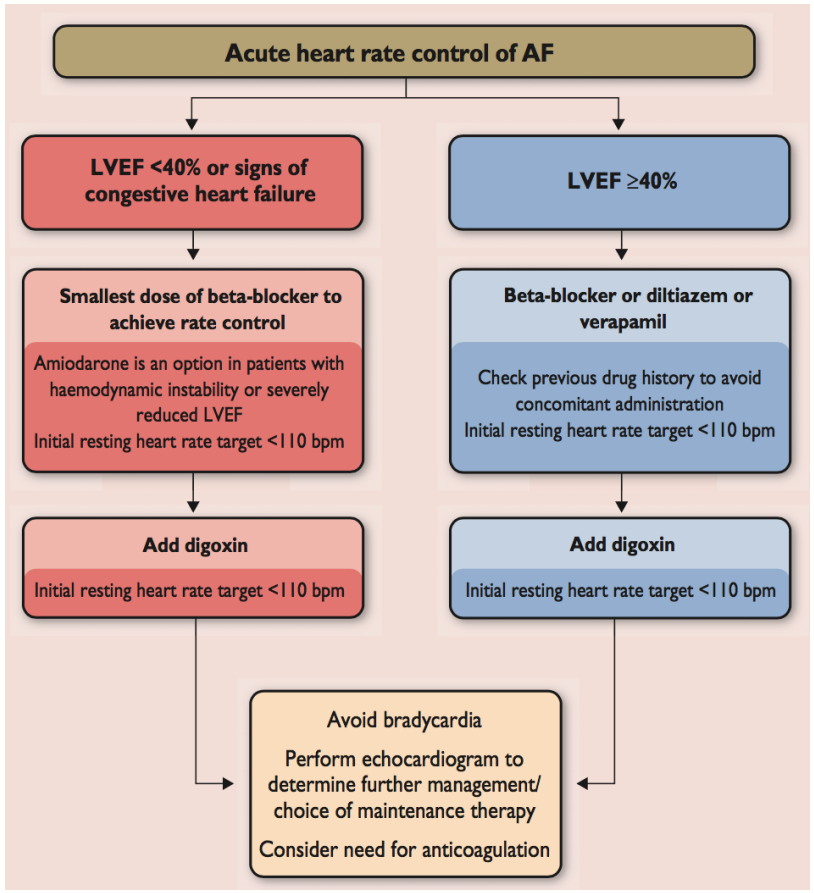
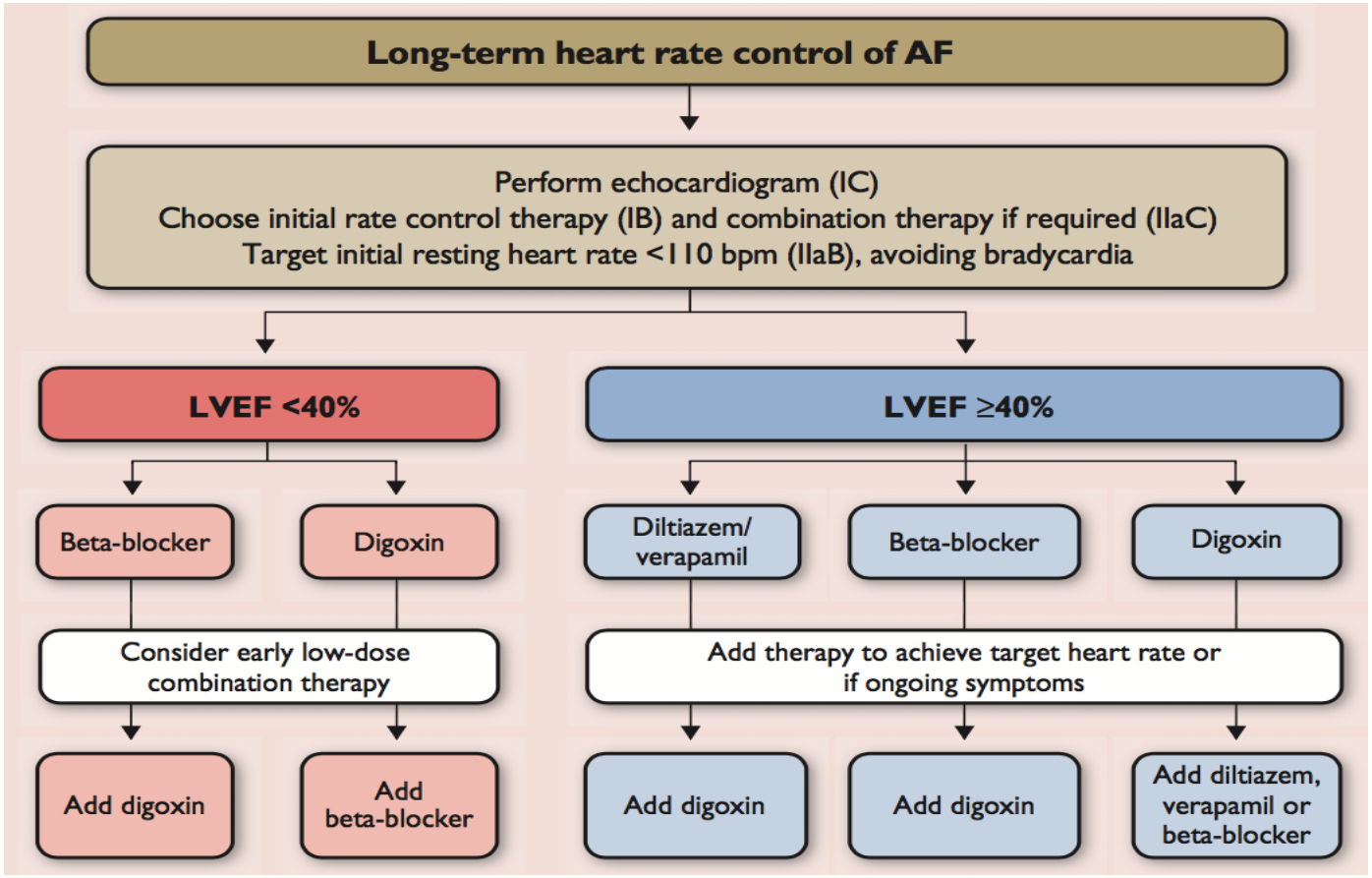
Rate control therapy in atrial fibrillation





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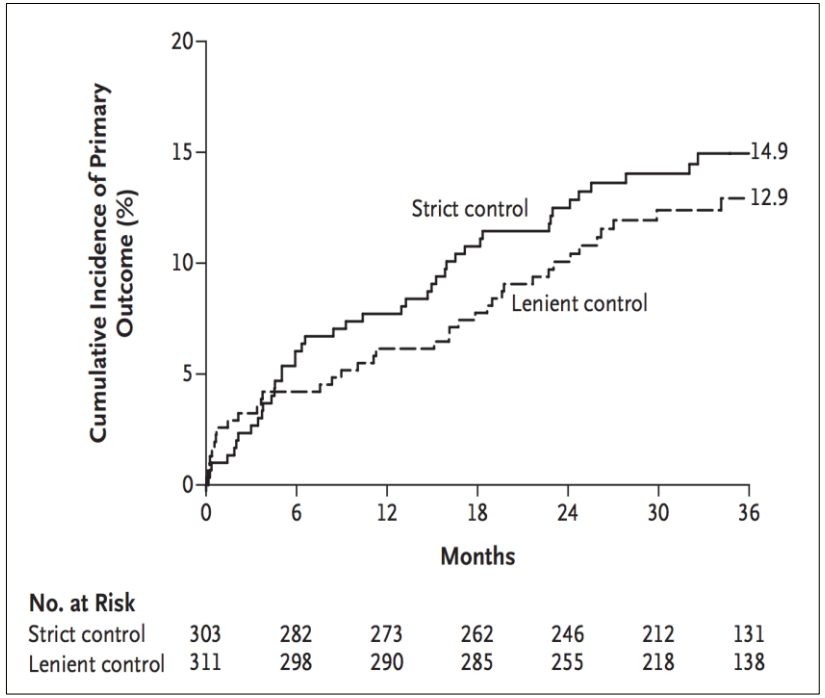
Heart Rate Targets in Atrial Fibrillation

The RACE (Rate Control Efficacy in Permanent Atrial Fibrillation) II study

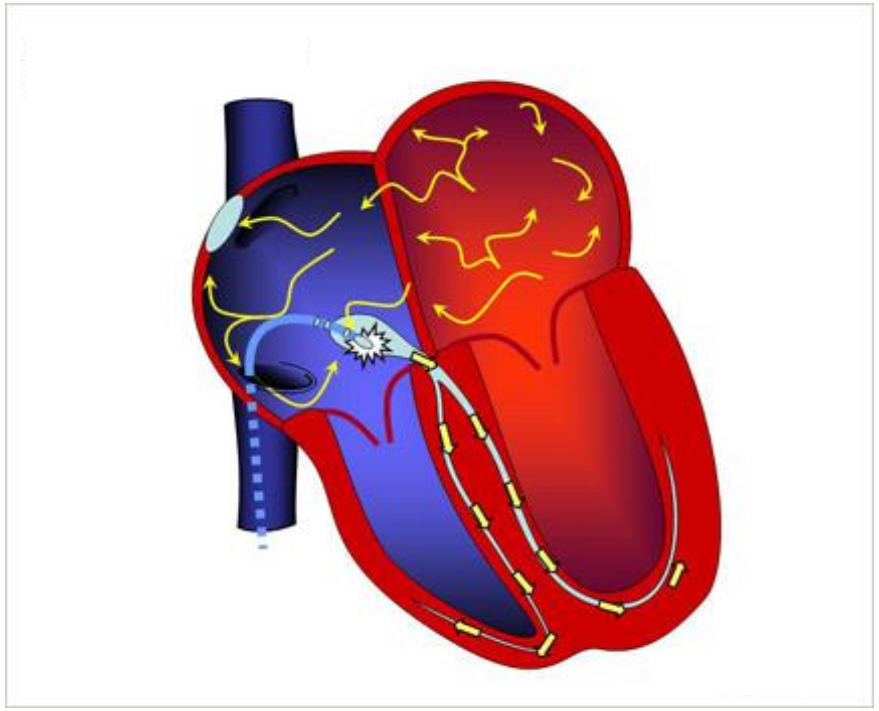


Outcome	Lenient Rate Control (N=311)	Strict Rate Control (N=303)	Hazard Ratio (90% CI)
	no. of patients (%)		
Composite primary outcome	38 (12.9)	43 (14.9)	0.84 (0.58–1.21)
Individual components			
Death from cardiovascular cause	9 (2.9)	11 (3.9)	0.79 (0.38–1.65)
From cardiac arrhythmia	3 (1.0)	4 (1.4)	
From cardiac cause other than arrhythmia	1 (0.3)	2 (0.8)	
From noncardiac vascular cause	5 (1.7)	5 (1.9)	
Heart failure	11 (3.8)	11 (4.1)	0.97 (0.48–1.96)
Stroke	4 (1.6)	11 (3.9)	0.35 (0.13–0.92)
Ischemic	3 (1.3)	8 (2.9)	
Hemorrhagic	1 (0.3)	4 (1.5)	
Systemic embolism	1 (0.3)	0	
Bleeding	15 (5.3)	13 (4.5)	1.12 (0.60–2.08)
Intracranial	0	3 (1.0)	
Extracranial	15 (5.3)	10 (3.5)	
Syncope	3 (1.0)	3 (1.0)	
Life-threatening adverse effect of rate-control drugs	3 (1.1)	2 (0.7)	
Sustained ventricular tachycardia or ventricular fibrillation	0	1 (0.3)	
Cardioverter–defibrillator implantation	0	1 (0.3)	
Pacemaker implantation	2 (0.8)	4 (1.4)	

Van Gelder IC et al. *N Engl J Med* 2010;362:1363–1373.

Atrioventricular node ablation and pacing

- Simple procedure
- Low complication rate
- Low long-term mortality risk
- The choice between RV pacing, BiV pacing ± ICD



Best candidates: elderly, refractory symptoms & heart rate despite medical therapy

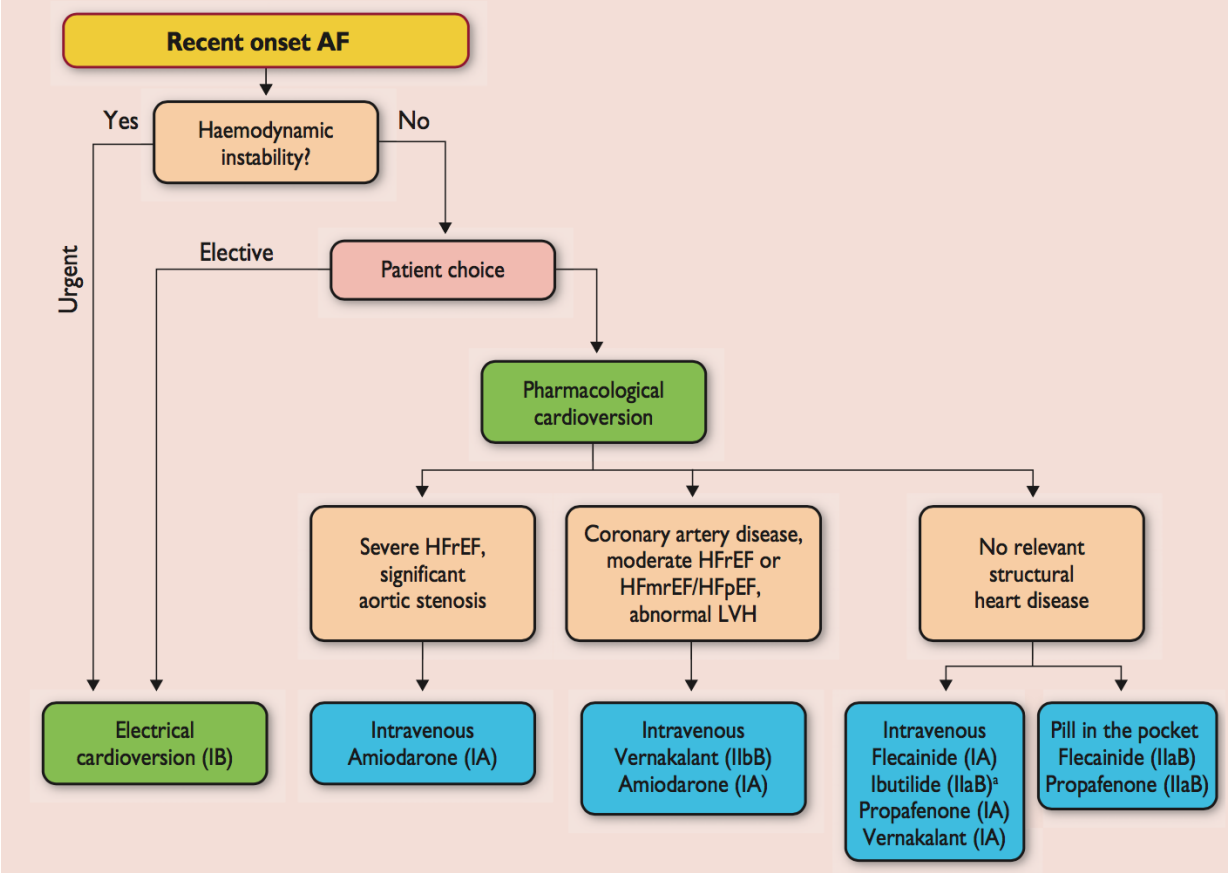
Rhythm control therapy in atrial fibrillation

Antiarrhythmic drugs for pharmacological cardioversion

Drug	Route	1st dose	F/U dose
Flecainide	Oral IV	200 – 300 mg 1.5-2 mg/kg over 10 min	N/A
Amiodarone	IV	5 – 7 mg/kg over 1 – 2 hrs	50 mg/hr to a max of 1.0 g over 24 hrs
Propafenone	Oral IV	450 – 600 mg 1.5-2 mg/kg over 10 min	N/A
Ibutilide	IV	1 mg over 10 min	1 mg over 10 min
Vernakalant	IV	3 mg/kg over 10 min	2 mg/kg over 10 min

Rhythm control therapy in atrial fibrillation

Antiarrhythmic drugs for pharmacological cardioversion



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Rhythm control therapy in atrial fibrillation

Oral antiarrhythmic drugs used for maintaining sinus rhythm after cardioversion

Drug	Dose	Warning signs warranting discontinuation	AV nodal slowing
Amiodarone	600 mg in divided doses for 4 wks, 400 mg for 4 wks, then 200 mg od	QT prolongation >500 ms	10 – 12 bpm in AF
Dronedarone	400 mg bid	QT prolongation >500 ms	10 – 12 bpm in AF
Flecainide	100-150 mg bid	QRS duration increases >25% above baseline	None
Propafenone	150-300 mg tid	QRS duration increases >25% above baseline	Slight
d,l Sotalol	80-160 mg bid	QT prolongation >500 ms. QT prolongation by 60ms upon therapy initiation	Similar to high dose BB

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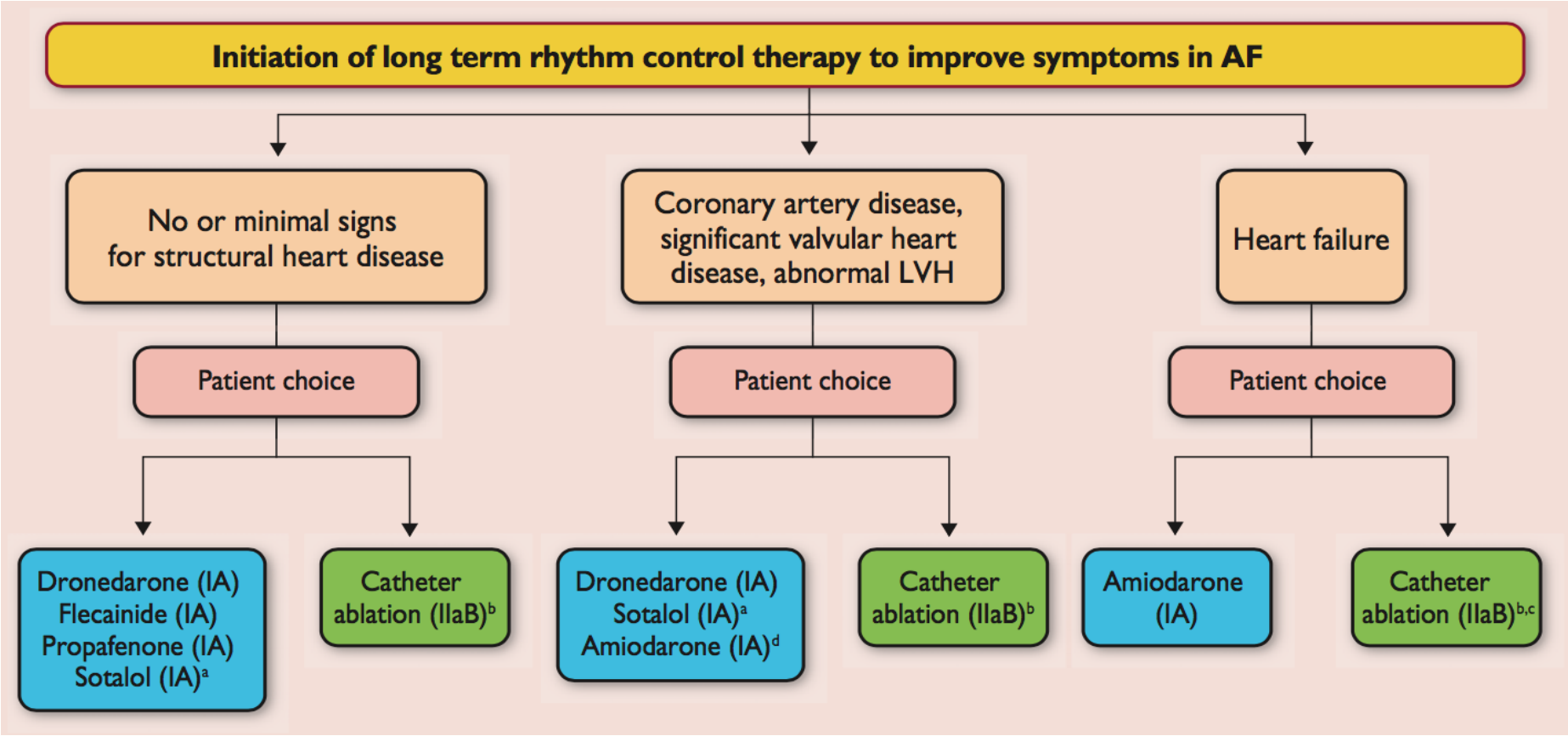
Rhythm control therapy in atrial fibrillation

Oral antiarrhythmic drugs used for maintaining sinus rhythm after cardioversion



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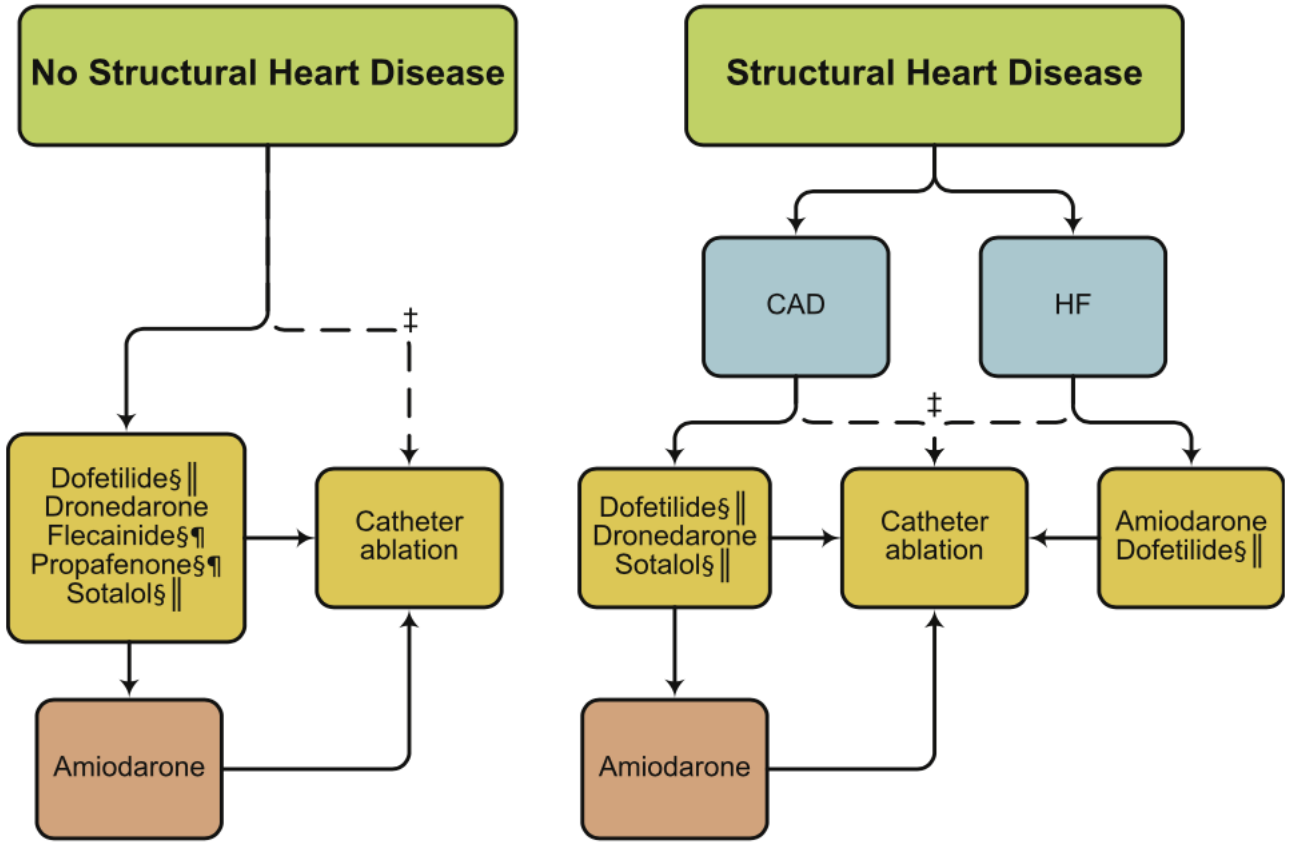
Rhythm control therapy in atrial fibrillation

Oral antiarrhythmic drugs used for maintaining sinus rhythm after cardioversion



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Rhythm control therapy in atrial fibrillation

New antiarrhythmic drugs

Inhibitors of ultrarapid K current (I_{Kur})

Ranolazine

Ivabradine

Rhythm control therapy in atrial fibrillation

Antiarrhythmic effects of non-antiarrhythmic drugs

- ACE Inhibitors
- ARB
- Neprilysin Inhibitors
- Statin
- Aldosterone Antagonists
- PUFA

Thank you

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Summary of recommendations for rate control

Recommendations	COR	LOE
Control of ventricular rate using BB or nondihydropyridine CCB for paroxysmal, persistent or permanent AF	I	B
IV BB or nondihydropyridine CCB is recommended to slow the VHR in the acute setting in patients without pre-excitation. In hemodynamically unstable patients electrical cardioversion is indicated	I	B
For AF, assess heart rate control during exertion, adjusting pharmacological treatment as necessary	I	C
AV nodal ablation should not be performed without prior attempts to achieve rate control with medications	III	C
Nondihydropyridine calcium channel antagonists should not be used in decompensated HF	III	C
With pre-excitation and AF, digoxin, nondihydropyridine calcium channel antagonists, or amiodarone should not be administered	III	B
Dronedarone should not be used to control ventricular rate with permanent AF	III	B

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