



Pediatric & Congenital
Electrophysiology Society



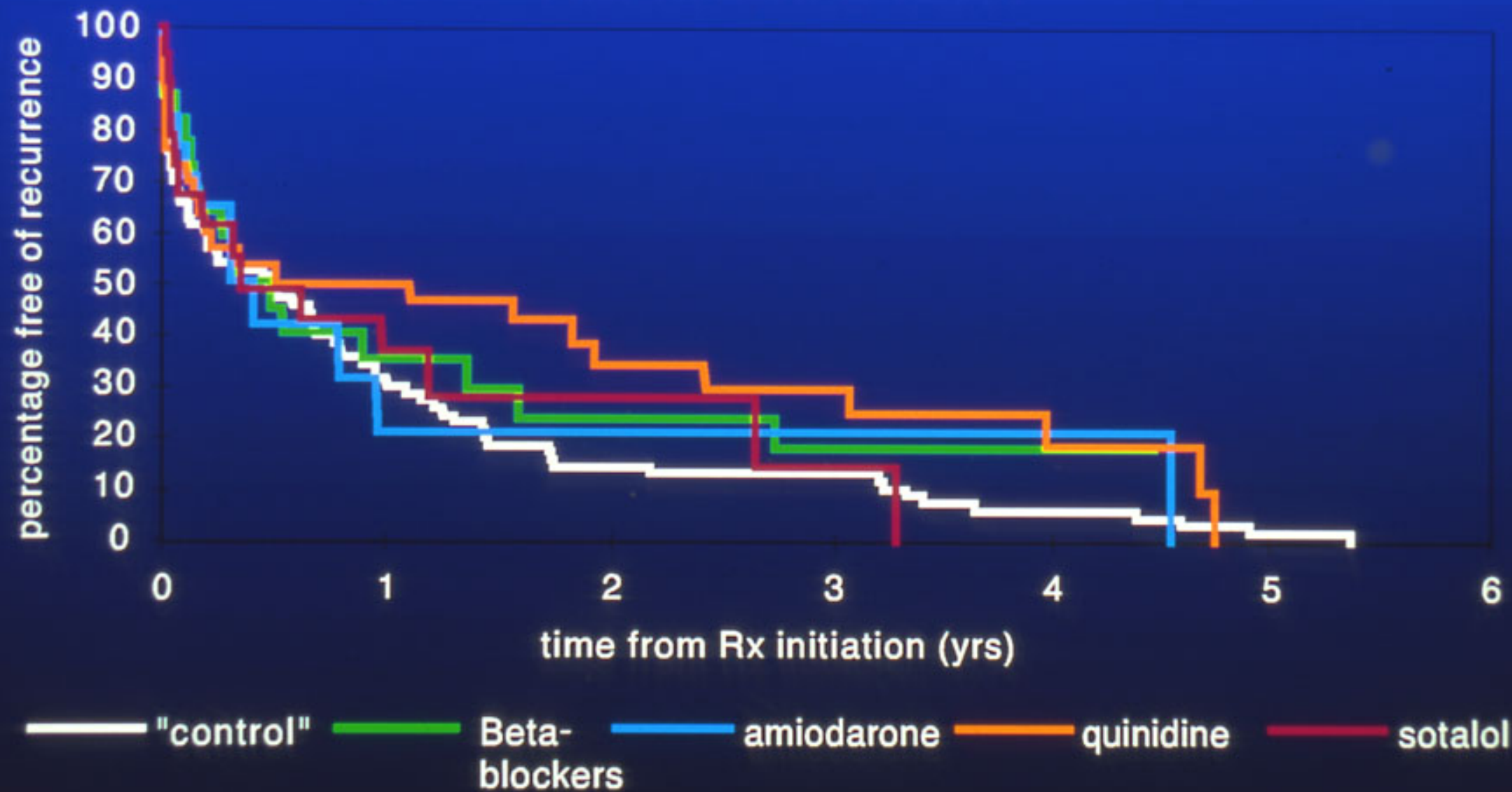
Pediatric and Congenital Rhythm Congress VII

4 - 7 February 2017 / Grand Hotel Palace - Thessaloniki, GREECE

Atrial Tachycardia and Fibrillation in ACHD patients Antiarrhythmic drugs for IART and Atrial fibrillation

Alice MALTRET

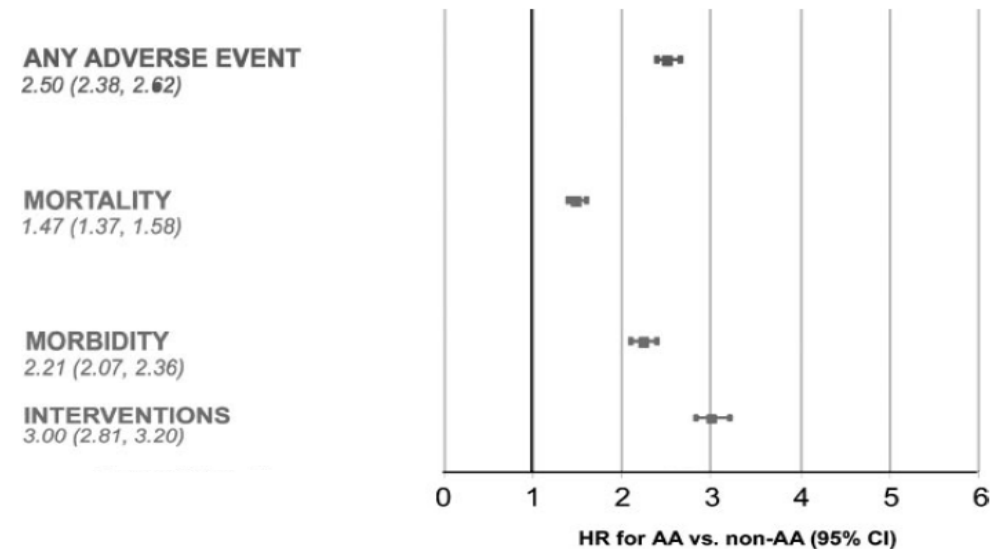
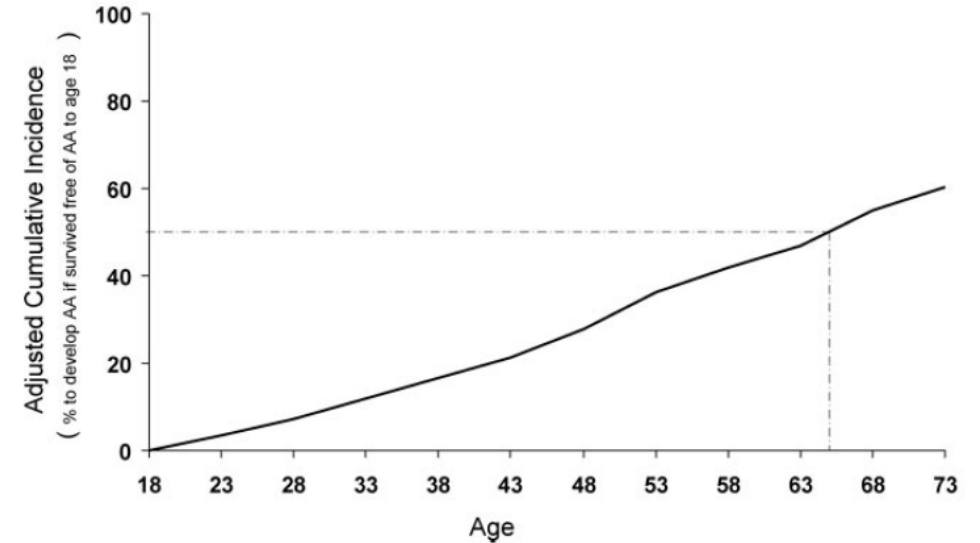
Recurrence IART



Burden of atrial arrhythmia in ACHD patients

- More than 50% of atrial arrhythmia by the age of 65 years
 - 50% increase in mortality
 - X2 Morbidity (stroke, heart failure)
 - X3 Cardiac reintervention

Atrial Arrhythmia is a watershed in the medical history of the patient

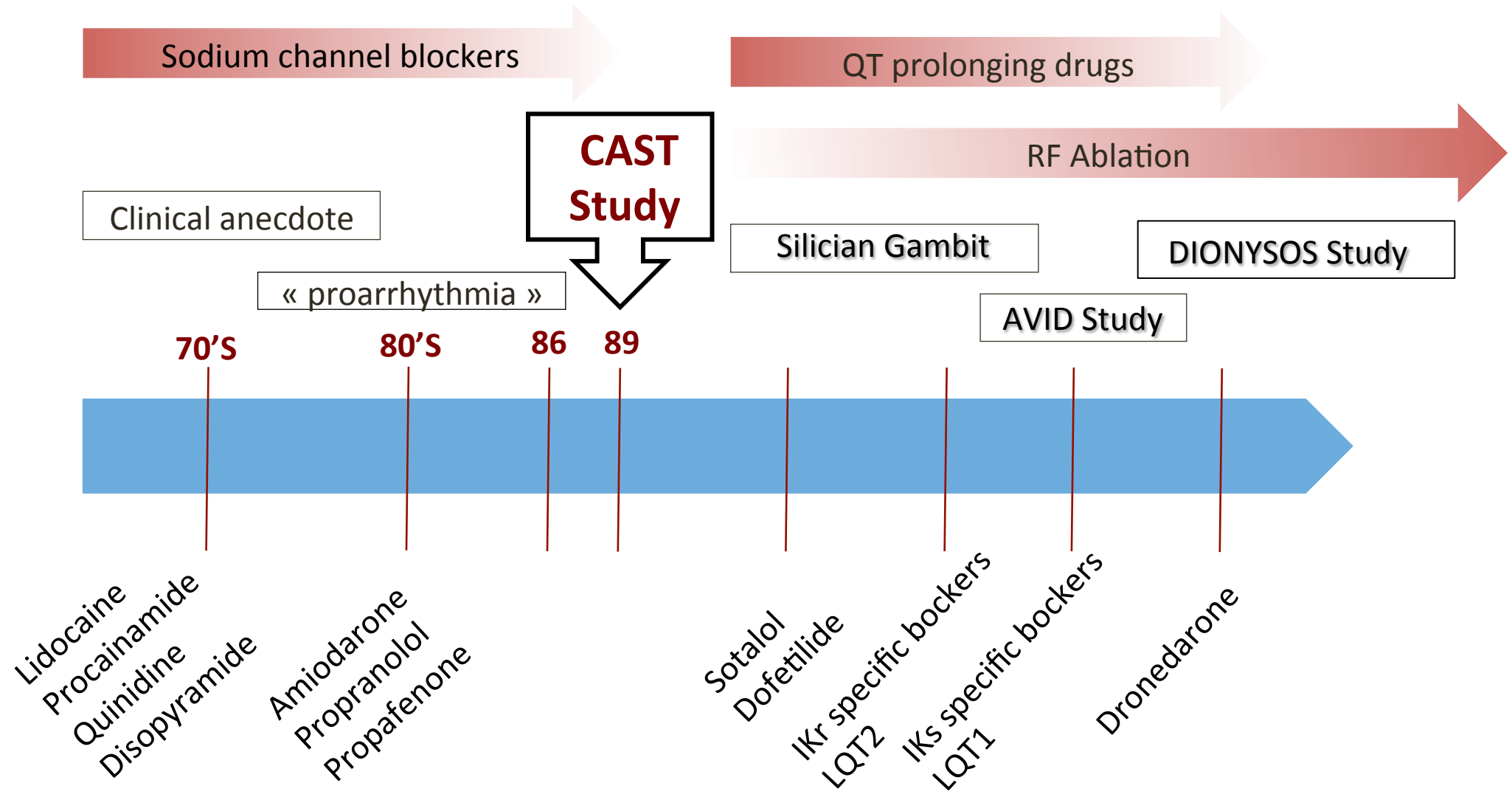


What are the means ?

Antiarrhythmic Drugs: Past, Present, and Future

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New Antiarrhythmic Drugs Currently in Clinical Trials

Drug	Indication	Mechanism of Action
Amio-aqueous	As for IV amiodarone	As for IV amiodarone
Azimilide	Maintenance of sinus rhythm in AF	Block of multiple K ⁺ currents
Dronedarone	Maintenance of sinus rhythm in AF	Block of multiple K ⁺ currents
DTI-0009	Rate control in AF	Adenosine receptor blocker
Piboserod	Maintenance of sinus rhythm in AF	Block of atrial serotonin in 5HT ₄ receptors
RSD1235	Maintenance of sinus rhythm in AF	Atrial selective action potential prolongation
Tecadenoson (CVT-510)	Rate control in AF	Adenosine receptor blocker
Tedisamil	Maintenance of sinus rhythm in AF	Block of multiple K ⁺ currents

What are the goals ?

Acute management

- Cardioversion
- **Systematic TTE for moderate to complex CHD**
- Acute Success rate:
 - 88 to 96%
- Recurrence:
 - 40 to 55%

Congenital heart diagnosis	Patients, no. (%)	
	Initial DCCV failed	Recurrent arrhythmia after successful DCCV
Fontan (<i>n</i> = 16)	0	10 (62%)
Secundum ASD repair (<i>n</i> = 8)	0	6 (75%)
L-TGA (<i>n</i> = 8) ^a	2 (25%)	1 (12%)
Tetralogy of Fallot repair (<i>n</i> = 7)	0	6 (86%)
Systemic outflow obstruction repair (<i>n</i> = 5)	1 (20)	2 (40%)
Sinus venosus ASD repair (<i>n</i> = 4)	0	3 (75%)
D-TGA s/p trial switch (<i>n</i> = 4) ^b	0	1 (25%)
Eisenmenger syndrome (<i>n</i> = 4)	0	2 (50%)
Ebstein's anomaly (<i>n</i> = 2)	1 (50%)	0
VSD repair (<i>n</i> = 2)	1 (50%)	0
Ostium primum ASD repair (<i>n</i> = 1)	0	1 (100%)
Anomalous systemic vein repair (<i>n</i> = 1)	0	0
Pulmonary atresia/VSD s/p repair (<i>n</i> = 1)	0	1 (100%)
All CHD Patients (<i>n</i> = 63)	5 (8%)	33 (52%)

Khairy et al, HR 2014

Ammash et al, Int J Cardiol 2010

Long term management

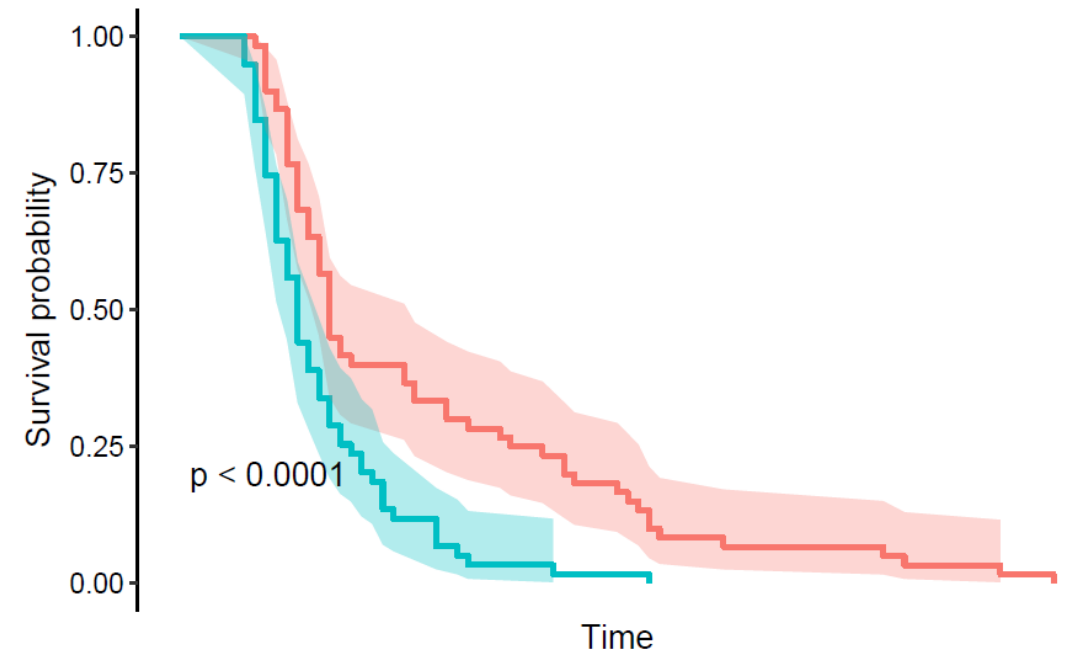
- Rate control...**is it enough ?**
 - B-blockers
 - Calcium channel antagonist
- Prevention of recurrence
 - Limited choice of anti arrhythmic drugs
 - Systemic ventricular dysfunction/hypertrophy
 - Ventricular scarring
 - Class III

β -Blocker	Bisoprolol 2.5 mg twice a day, may be increased to 5 mg twice a day Metoprolol 47.5 mg twice a day, may be increased to 95 mg twice a day	Ila
Calcium antagonist	Verapamil Diltiazem	Ila
Sotalol		Ilb
Amiodarone	600 mg for 6 weeks, 400 mg for 4 weeks, 200 mg long-term	Ila

From Wasmer et al, Heart 2016

Prevention of thromboembolic complications

- Prevalence of thromboembolic complication
 - X 10 to 100 higher in adult with CHD
- Simple CHD without valve replacement or significant valvular disease
 - Vitamine K antagonist (or NOAC) according to CHA2-DS2-VASc score
- Moderate to severe CHD
 - Vitamine K antagoniste irrespective of CHA2-DS2-VASc score



Courtesy of Dr Fanny Bajolle

Khairy et al, HR 2014

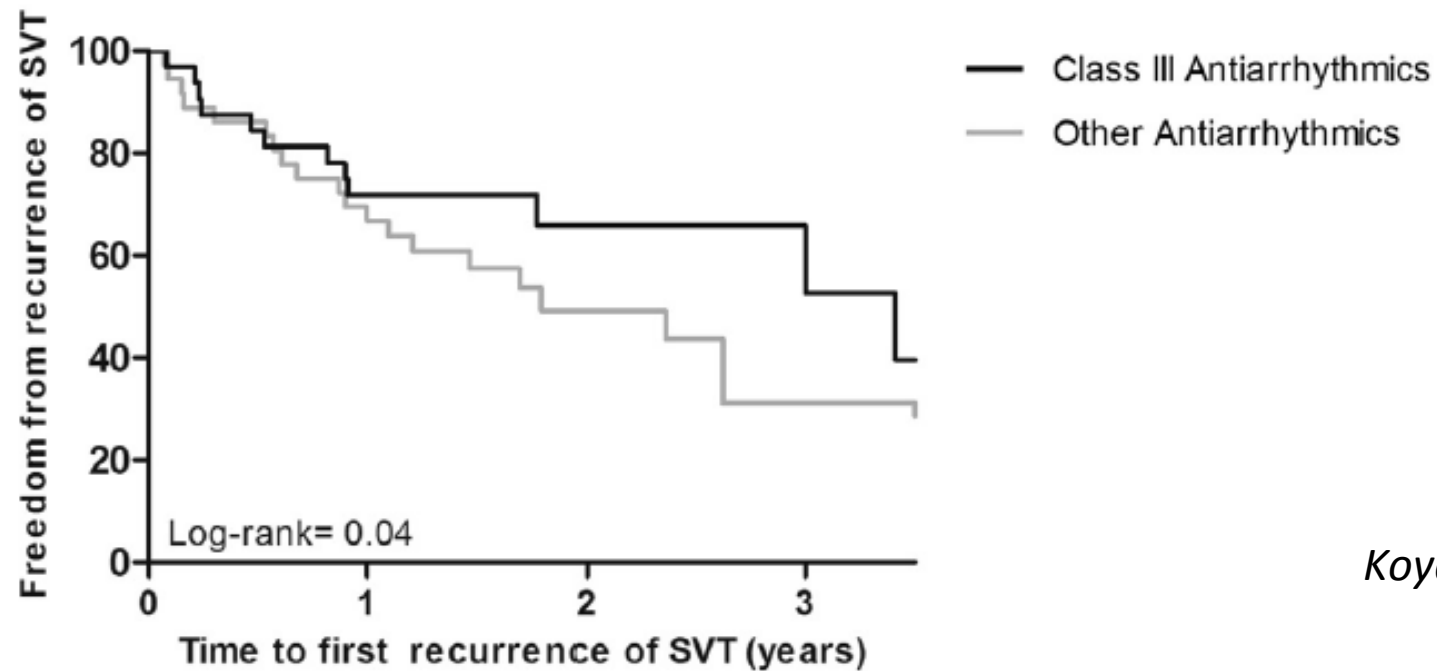
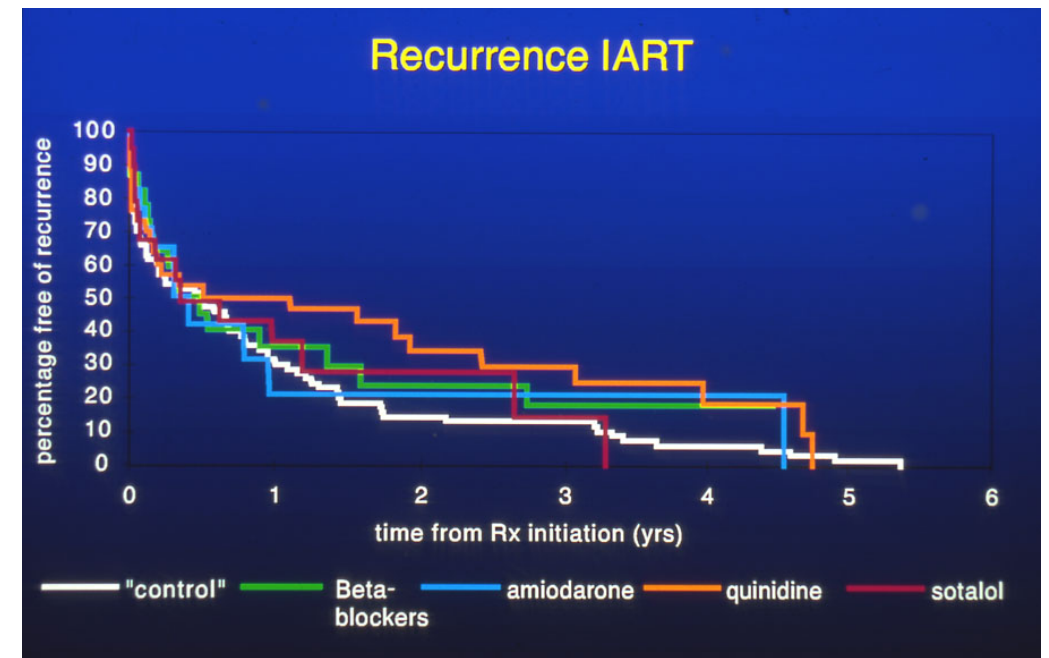
Hoffman et al, Heart 2010

Pujol et al, Am J Cardiol 2016

What are the results ?

Efficacy of Drugs

- Only 45% free from recurrence
- FU: 2.5y +/- 1.4



Koyak et al, AJC 2013

Dofetilide for Atrial Arrhythmias in Congenital Heart Disease: A Multicenter Study

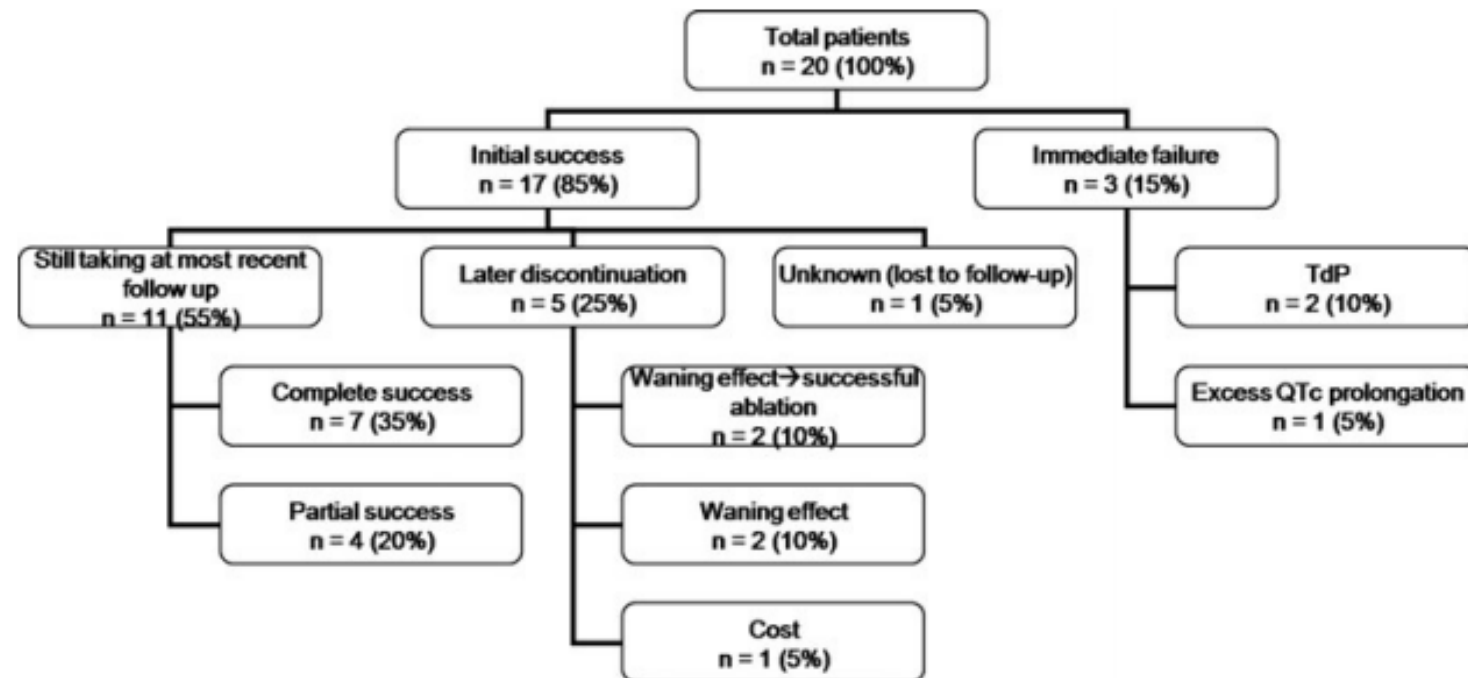
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Anti Arrhythmic drug complication

- Adverse side effect of medication: 22%
- Thyroid dysfunction
 - 1 to 24% in patient with acquired heart disease
 - Up to 36% in adult with CHD

Side effects of antiarrhythmic drugs in 20 patients

Side Effect	Class I (n = 9)	Class II (n = 25)	Class III (n = 32)	Class IV (n = 7)
Hyper or hypothyroidism	—	—	4	—
Dizziness	1	1	2	—
Bradycardia	—	—	2	—
Fatigue	—	—	1	—
High-grade AV block	—	—	1	—
QT prolongation	—	—	1	—
Unknown (i.e., drugs not tolerated)	—	2	3	1

AV = atrioventricular.

Koyak et al, AJC 2013

