

Pacing Maneuvers for Prevention of Atrial Arrhythmias

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Hazard of Diagnosis of IART

0.1
0.08
0.06
0.04
0.02
0

0 2 4 6 8 10 12 14 16 18

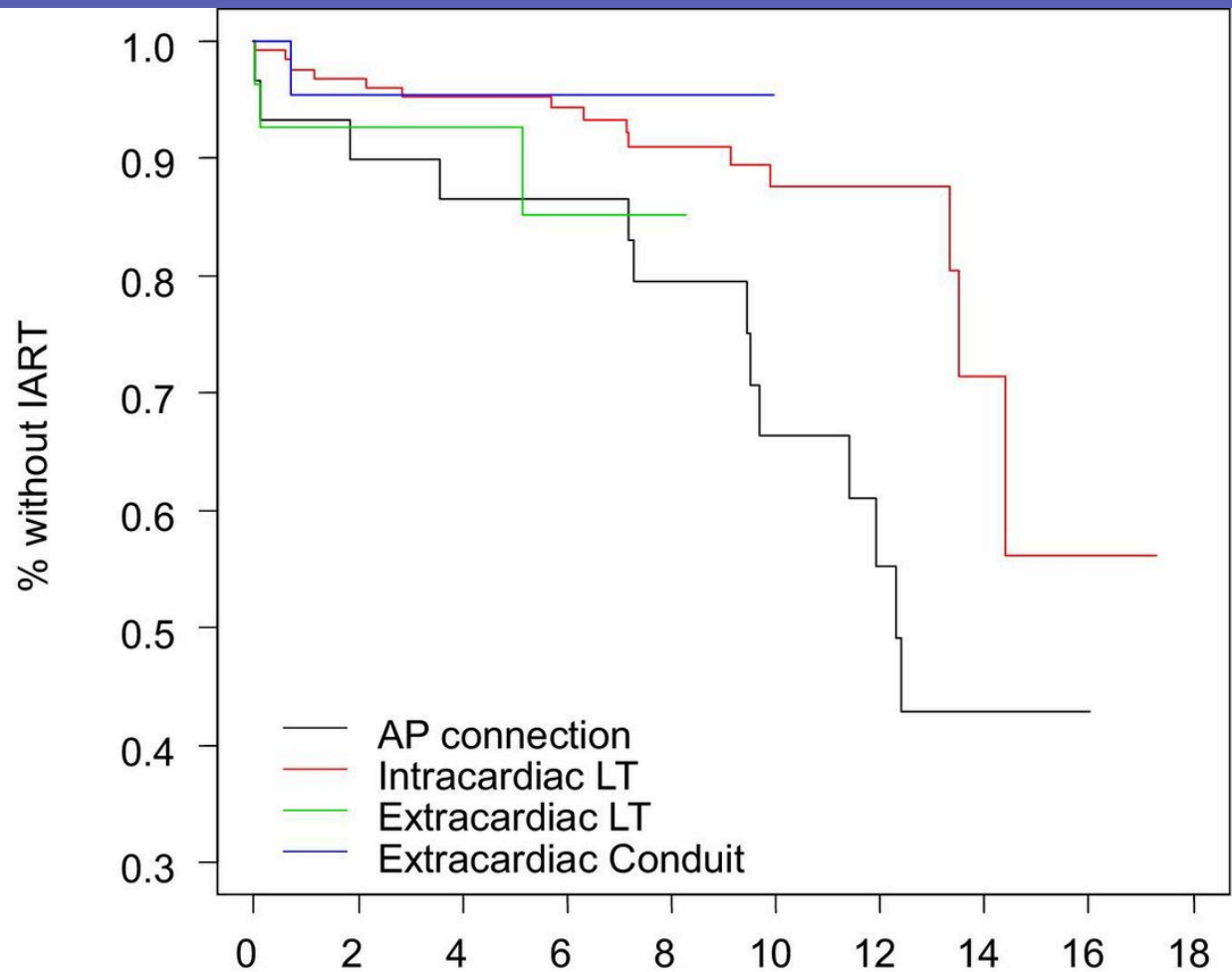
Years since Fontan

No. at risk

519 502 463 370 259 162 90 30 4 0

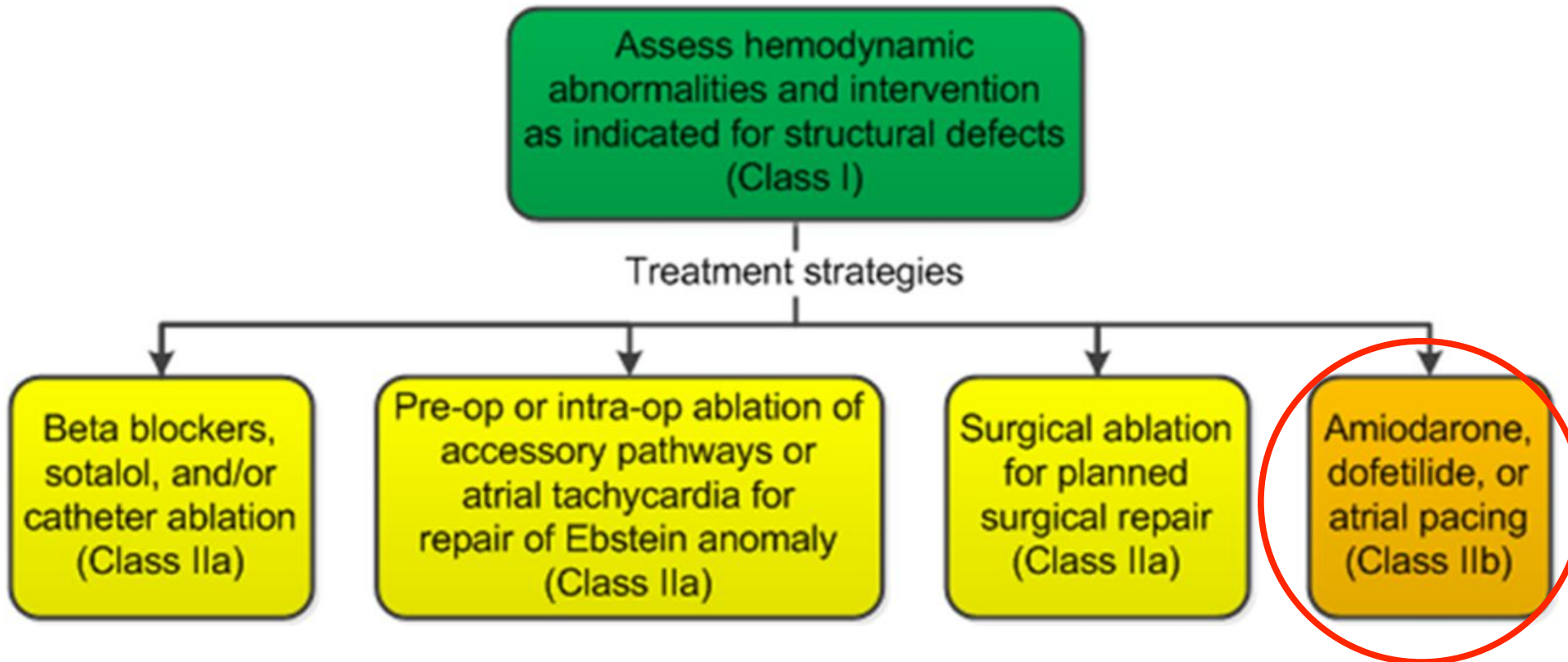
Elizabeth A. Stephenson et al. JACC 2010;56:890-896





	Years since Fontan									
No. at risk	0	2	4	6	8	10	12	14	16	18
AP connection	67	64	63	61	55	47	29	13	1	0
Intracardiac LT	279	274	261	223	164	98	48	15	3	0
Extracardiac LT	55	51	38	16	2	0	0	0	0	0
Extracardiac Conduit	63	62	56	37	13	0	0	0	0	0

Ongoing management of SVT in ACHD patients.



Bradycardia and Arrhythmia Vulnerability

- Evaluated sinus node dysfunction in CHD pts (mean age 9 yrs) with and without AFL
- Pts with AFL had:
 - Lower average heart rate
 - Reach lower maximum heart rates during exercise
 - Lower chronotropic index
- Suggested that chronotropic incompetence is related to late post-operative AFL
- Bradycardia-mediated remodeling enhances the vulnerability for AFL

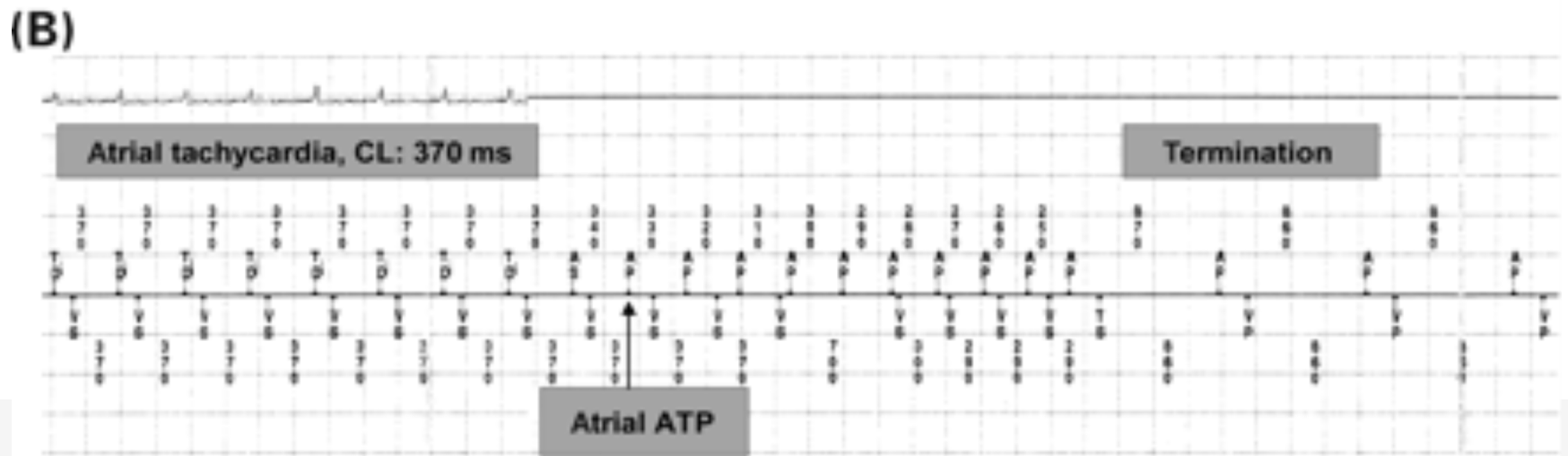
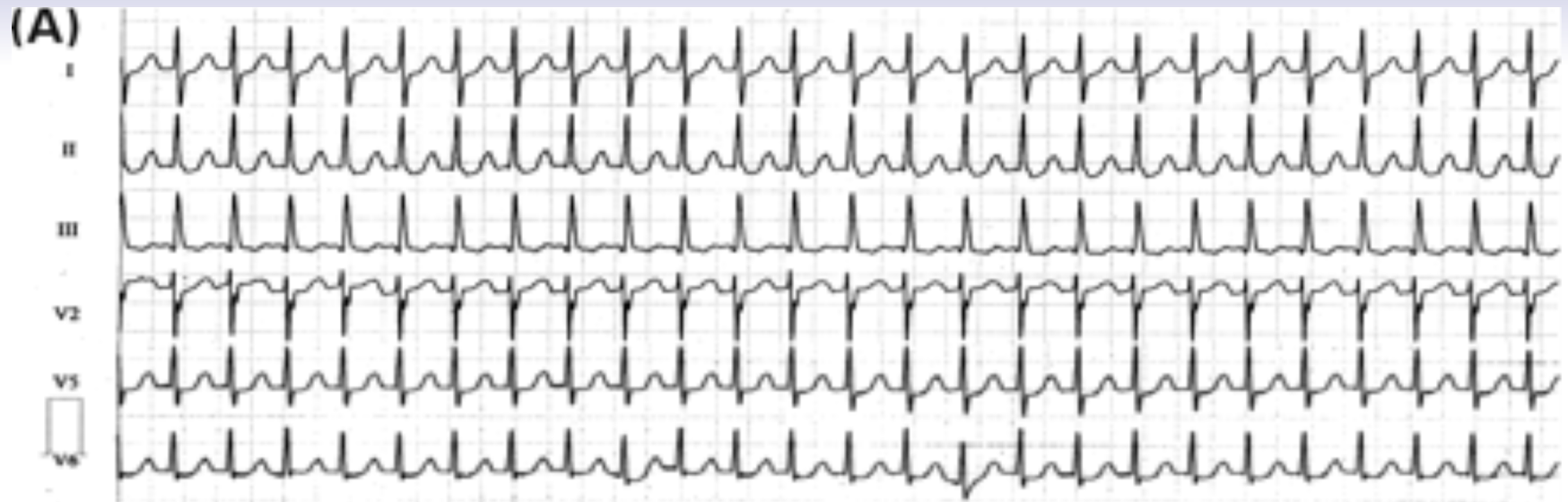
Susceptibility to Pace Termination of Flutter

- 65 consecutive patients referred for pace termination of atrial flutter
- Normal sinus rhythm restored in 38 (65%)
- - Of 20 patients whose flutter was precipitated by heart surgery, 19 (95%) were successfully pace terminated.
 - Pace termination was successful in only 47% of the nonsurgical pts ($P < .001$)

Efficacy of atrial arrhythmia detection and ATP using the Medtronic AT500

- 28 patients with congenital heart disease
 - age 30 ± 18 years
- 15 patients with atrial arrhythmias
 - 14 had atrial tachycardia appropriately detected
- 167 treated episodes
 - successfully converting 90 (54%)
- Rhythms classified as ventricular tachycardia were detected 127 times, yet most were actually atrial or sinus tachycardia with 1:1 atrioventricular conduction.

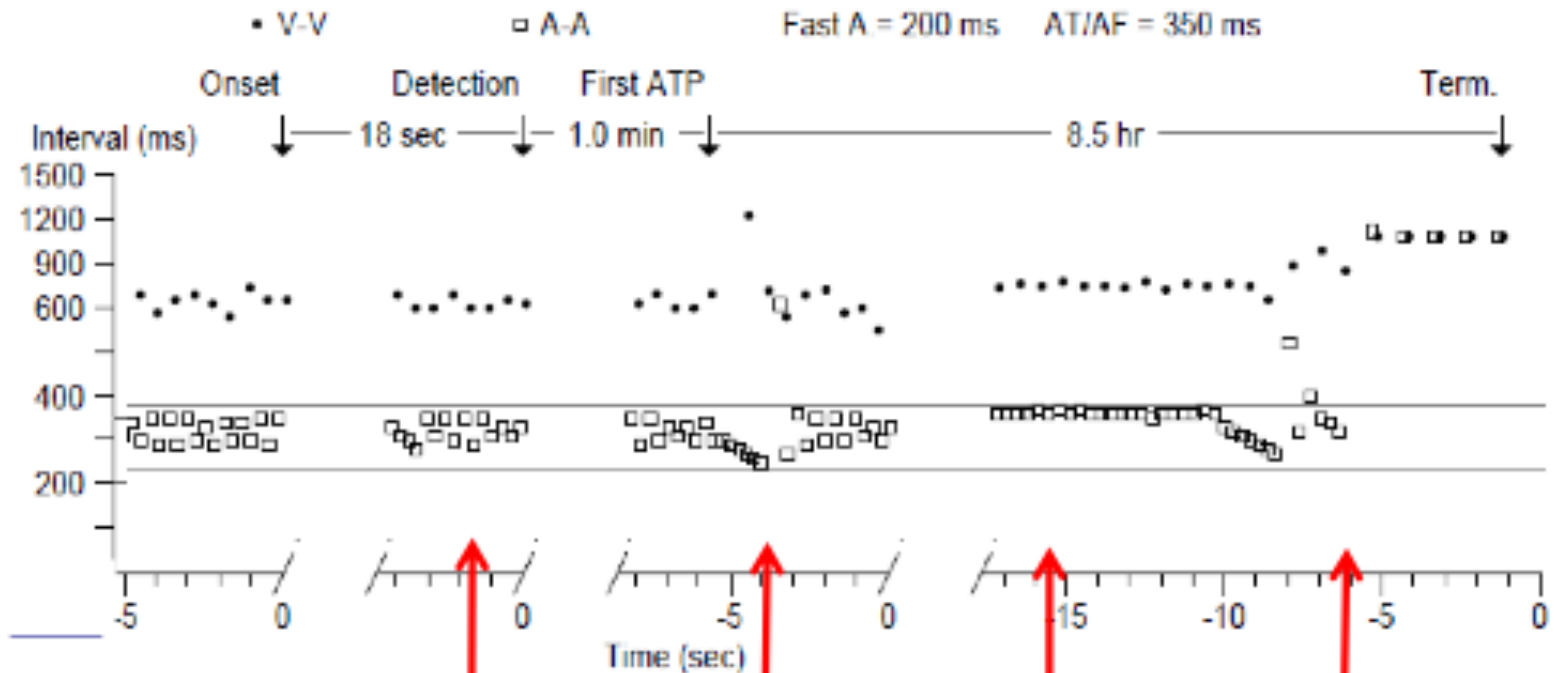
Atrial ATP using the Medtronic AT500 pacemaker



MINERVA

- Randomized 1166 pts with AT/AF and indications for dual chamber pacing to:
 - DDDR
 - DDDRP + MVP
 - MVP
- Study funded by Medtronic

MINERVA: “Reactive ATP”



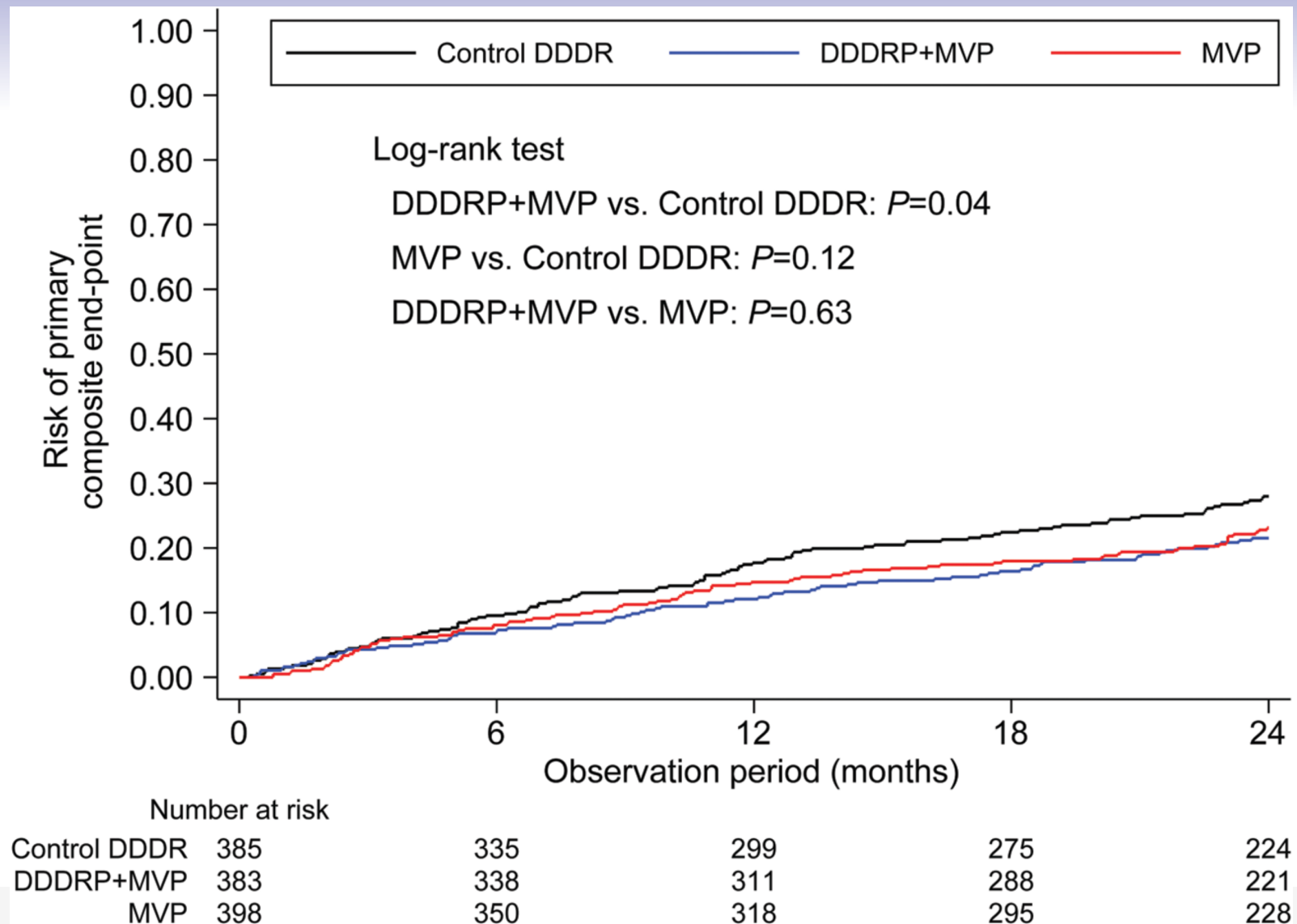
**AT/AF
irregular
(207 bpm)**

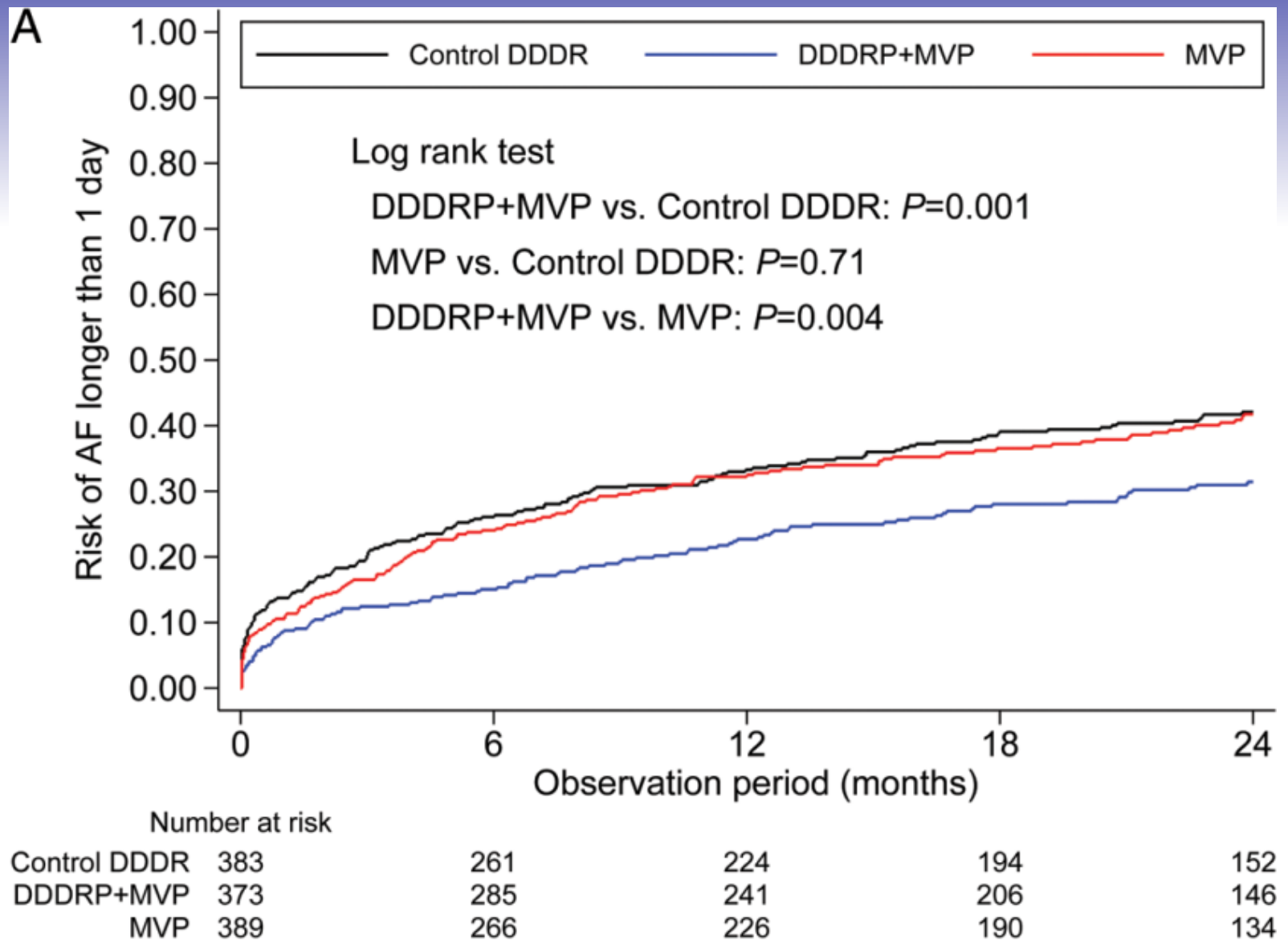
**Failed 1st
ATP**

**AT/AF
regular
(182 bpm)**

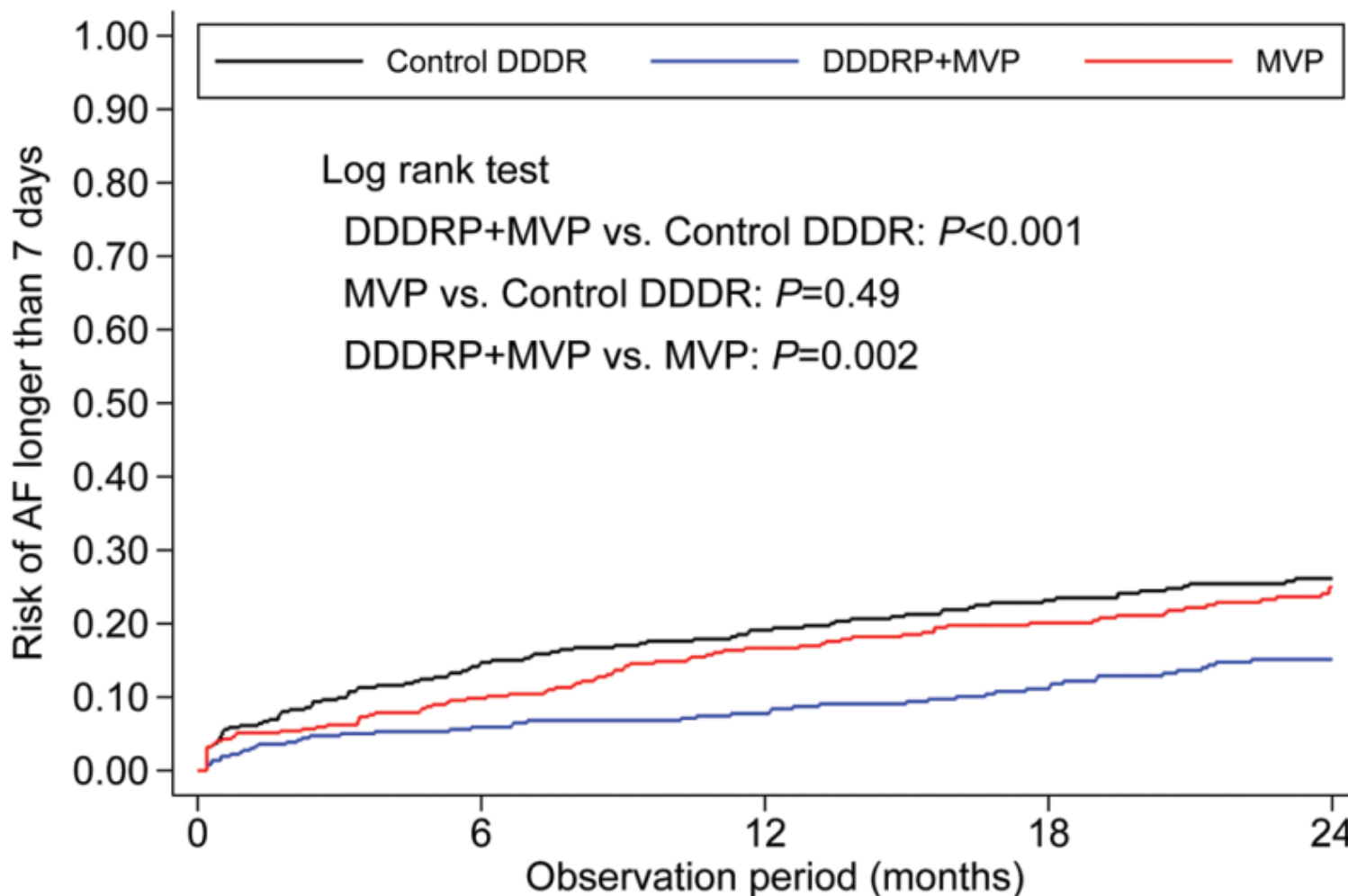
**ATP
terminated**

MINERVA: Primary Endpoint



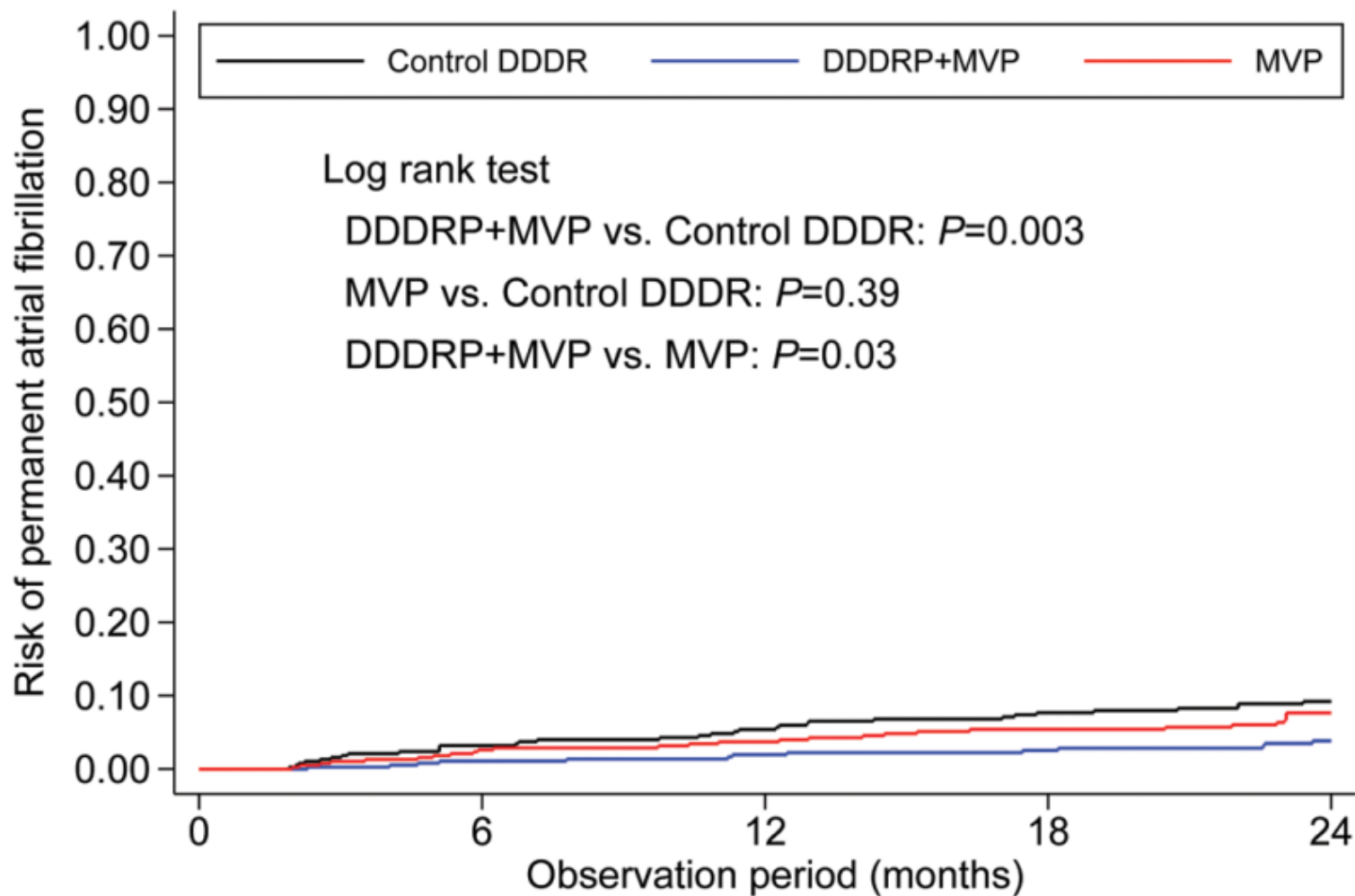


B



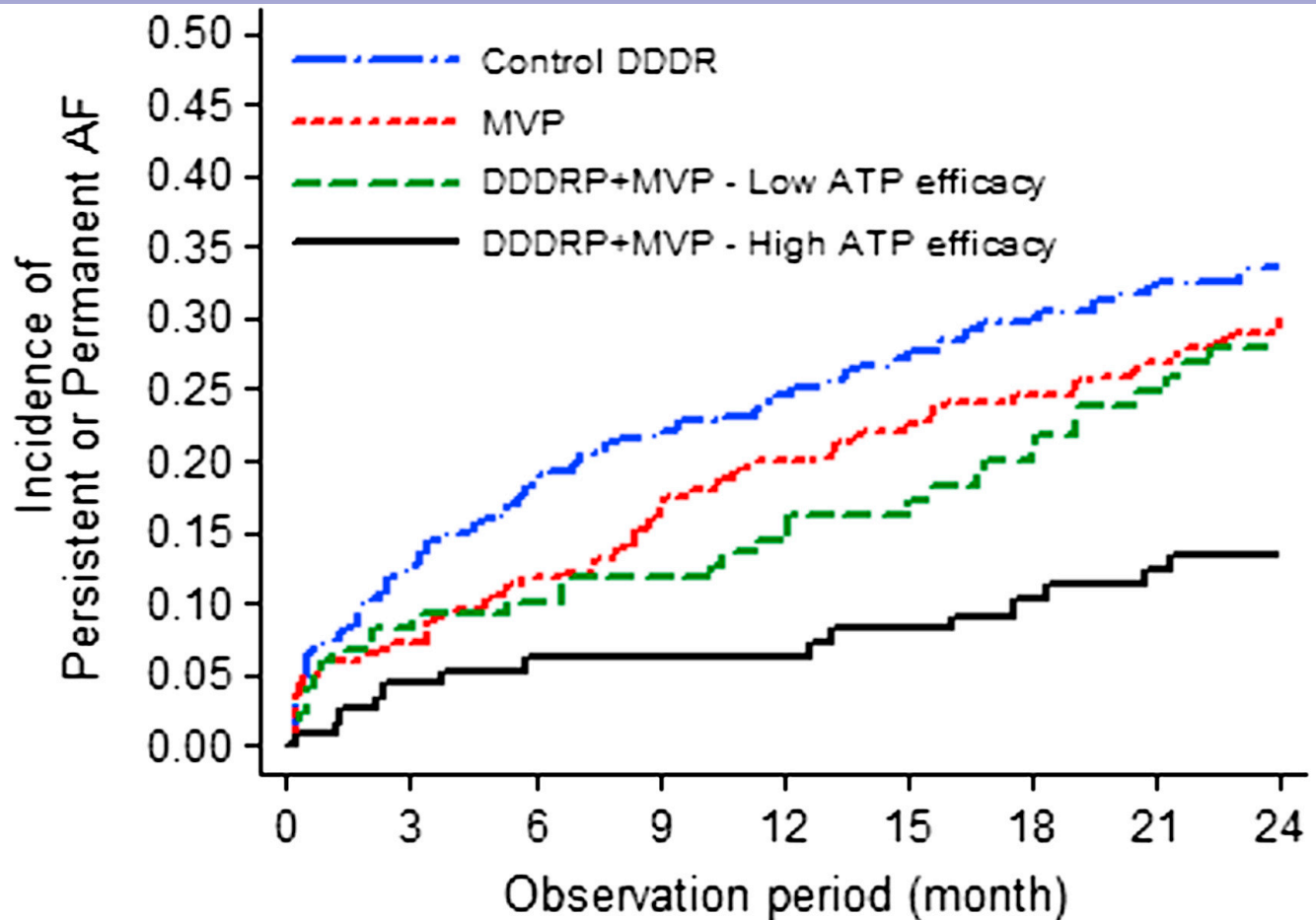
	Number at risk				
Control DDDR	383	298	266	239	190
DDDRP+MVP	373	313	283	253	173
MVP	389	314	272	238	170

C



Number at risk					
Control DDDR	385	355	336	316	265
DDDR+MVP	383	356	339	325	260
MVP	398	366	347	325	260

Persistent of Permanent AF



	Number at risk								
Control DDDR	280	239	215	205	188	176	164	155	133
MVP	268	242	223	205	191	182	168	155	121
DDDRP+MVP - Low ATP efficacy	121	108	105	100	94	90	85	74	50
DDDRP+MVP - High ATP efficacy	118	108	102	102	95	91	84	79	61

Pacing Potential:

- Bradycardia pacing in SND to prevent remodeling may offer some protection
- ATP-enabled pacing may limit AT episodes



Thank You