The Electric Heart: When to call your friendly neighbourhood electrician?

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Conflict of Interest Disclosures

- **Grants/research support**: Boston Scientific, Medtronic, Abbott, Servier, Novartis, Bayer, BMS/Pfizer, ARCA Biopharm
- **Consulting fees**: Boston Scientific, Medtronic
- **Speaker fees**: Boston Scientific, Medtronic, Servier, Bayer, BMS/Pfizer, Cipher

- **Other**:

- I will discuss off-label uses for _____N/A_____

Controversies in electrical therapy for heart failure…made simple!

- 1. ICD implantation in patients with non-ischemic cardiomyopathy
- 2. CRT: who and how?
- 3. Tachycardia-induced myopathy
- 4. Management of atrial fibrillation: drugs, pacing and ablation
- 5. Ambulatory monitoring and physiologic sensors

ESTABLISHED IN 1812 SEPTEMBER 29, 2016 VOL. 375 NO. 13

Defibrillator Implantation in Patients with Nonischemic Systolic Heart Failure

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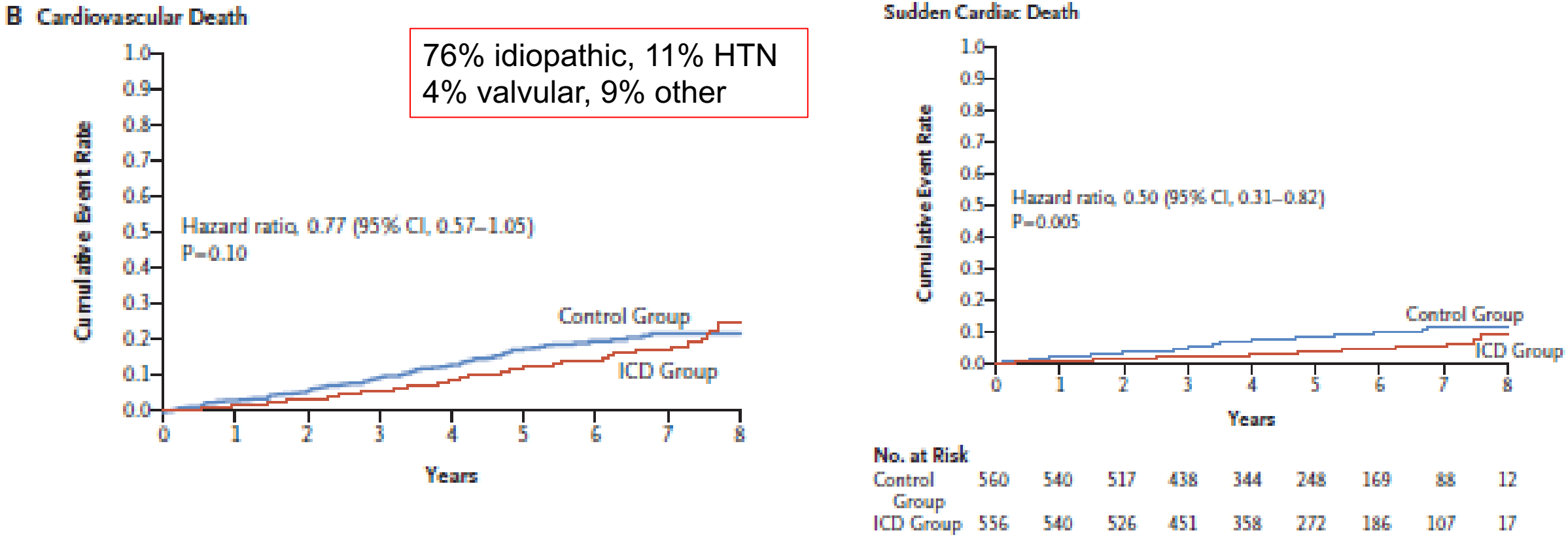
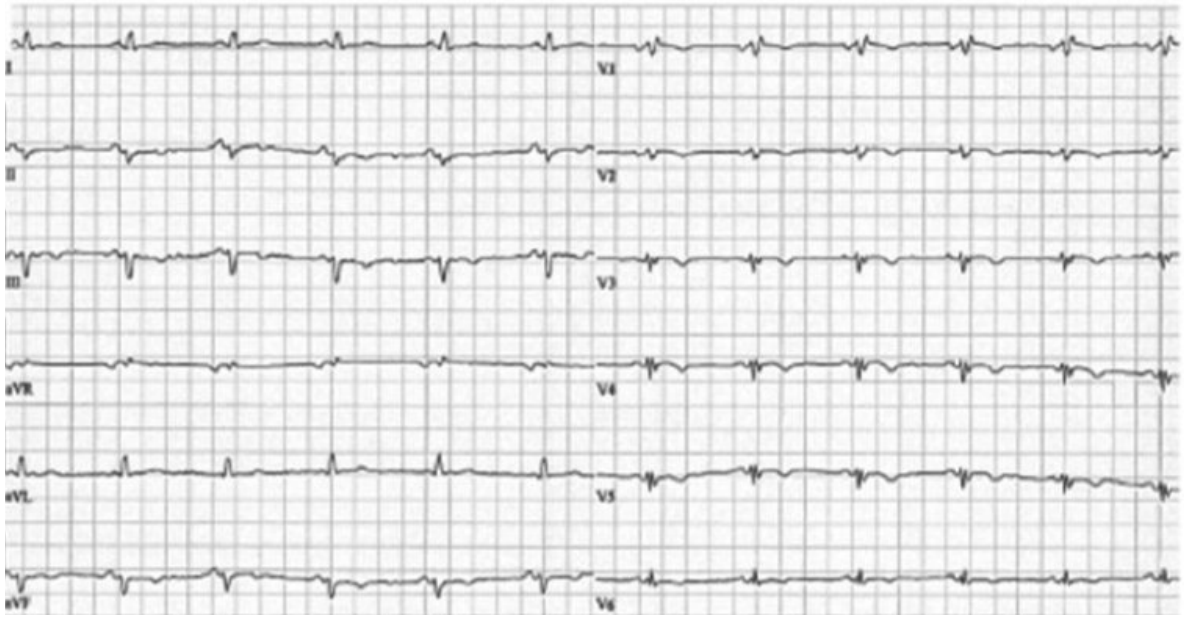
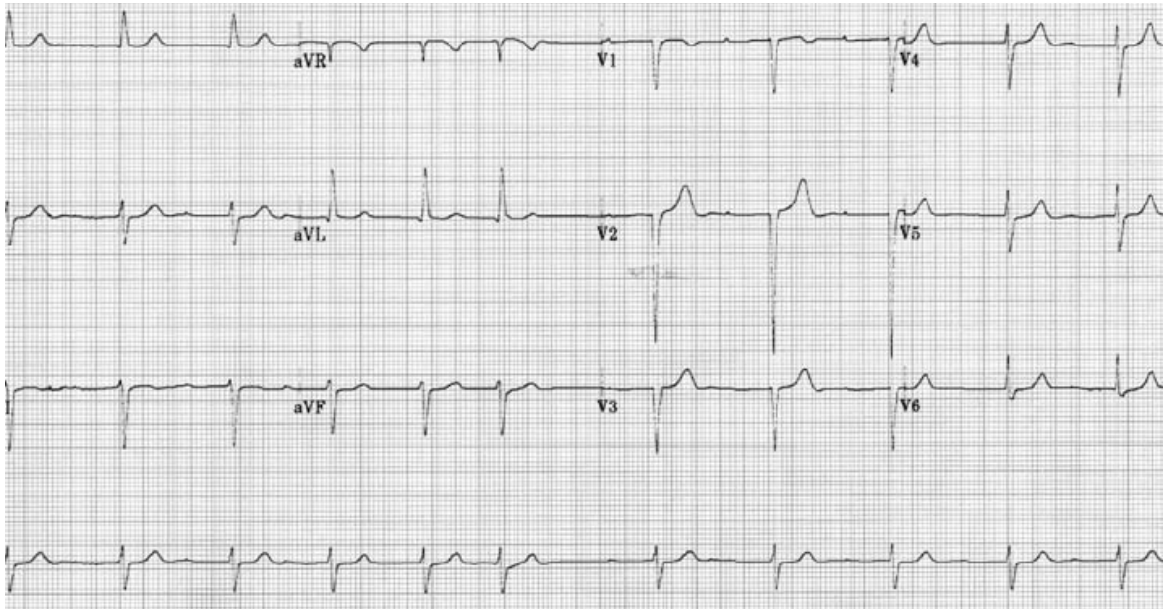
76% idiopathic, 11% HTN
4% valvular, 9% other

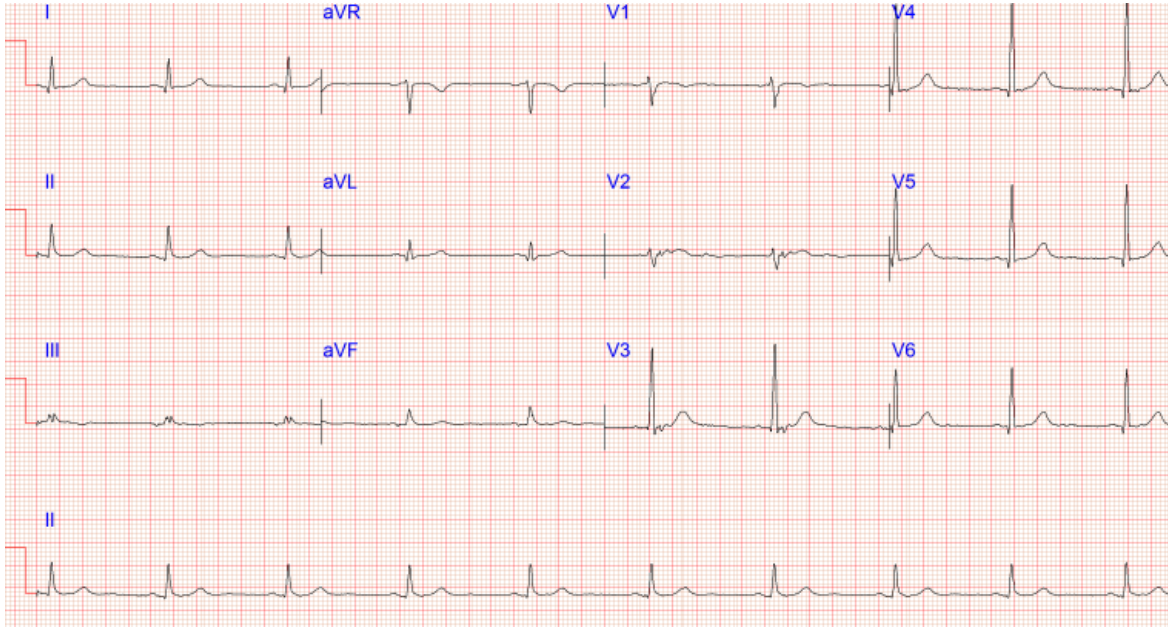




Phospholamban (PLN)



Laminin A/C



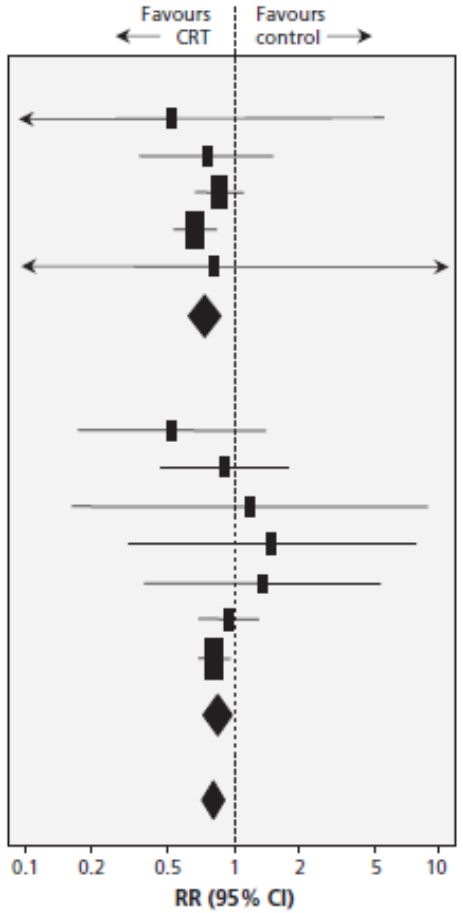
ARVC

Gene-specific prognosis
Unrecognized Fabry's disease with HCM
Unrecognized Amyloid
Unrecognized muscular or myotonic dystrophy
Unrecognized sarcoidosis

Cardiac resynchronization therapy: a meta-analysis of randomized controlled trials

George Wells PhD, Ratika Parkash MD MSc, Jeffrey S. Healey MD MSc, Mario Talajic MD, J. Malcolm Arnold MD, Shannon Sullivan MSc, Joan Peterson BA, Elizabeth Yetisir MSc, Patricia Theoret-Patrick BScRN, Marilynn Luce BScRN, Anthony S.L. Tang MD

Study	Mortality; study group,* *n/N* CRT	Control	RR (95% CI)
CRT v. OMT			
MUSTIC, 2001[20]	1/29	2/29	0.50 (0.05–5.21)
MIRACLE, 2002[21]	12/228	16/225	0.74 (0.36–1.53)
COMPANION, 2004[24]	131/617	77/308	0.85 (0.66–1.09)
CARE-HF, 2005[26]	101/409	154/404	0.65 (0.53–0.80)
VECTOR, 2005[27]	1/59	1/47	0.80 (0.05–12.4)
Subtotal	246/1342	250/1013	0.73 (0.62–0.85)
$I^2 = 0$			
CRT-ICD v. ICD			
Lozano et al., 2000[19]	5/109	10/113	0.52 (0.18–1.47)
MIRACLE ICD, 2003[22]	14/187	15/182	0.91 (0.45–1.83)
MIRACLE ICD II, 2004[23]	2/85	2/101	1.19 (0.17–8.26)
RHYTHM ICD, 2004[25]	6/119	2/60	1.51 (0.31–7.27)
REVERSE, 2008[28]	9/419	3/191	1.37 (0.37–4.99)
MADIT-CRT, 2009[29]	74/1089	53/731	0.94 (0.67–1.32)
RAFT, 2010[14]	186/894	236/904	0.80 (0.67–0.94)
Subtotal	294/2902	321/2282	0.83 (0.72–0.96)
$I^2 = 0$			
Overall	542/4244	571/3295	0.78 (0.70–0.87)



1. RBBB if QRS > 160 msec

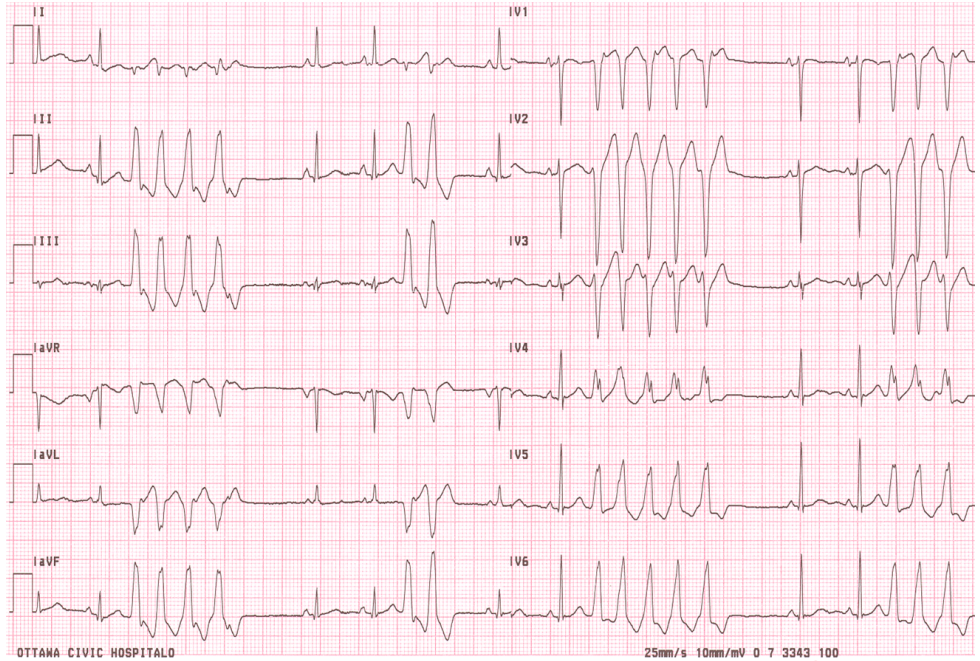
2. Permanent AF uncertain
   - RAFT-Perm AF trial
   - role of AVJ ablation

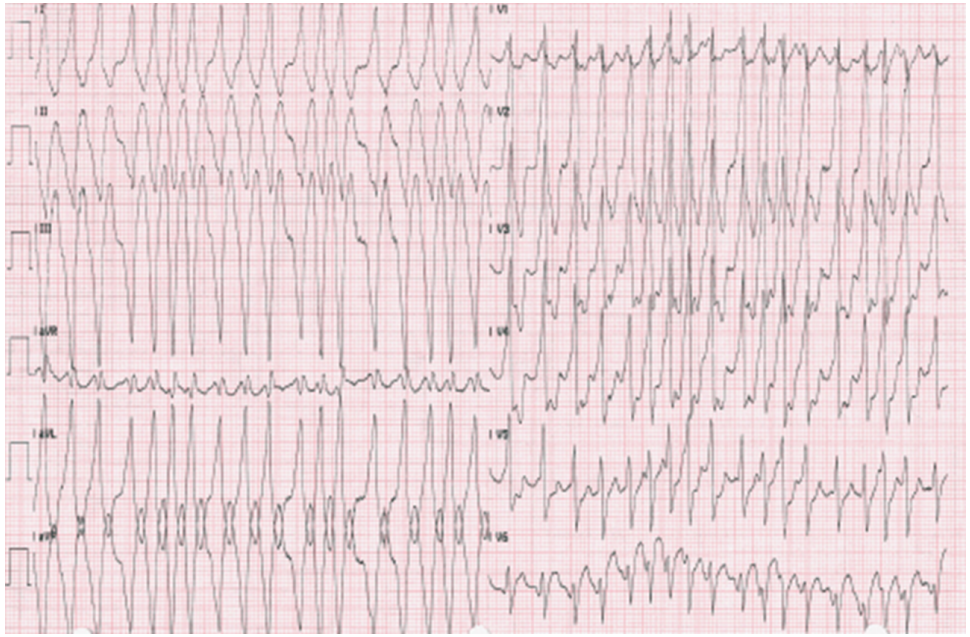
3. Use of direct LBB pacing

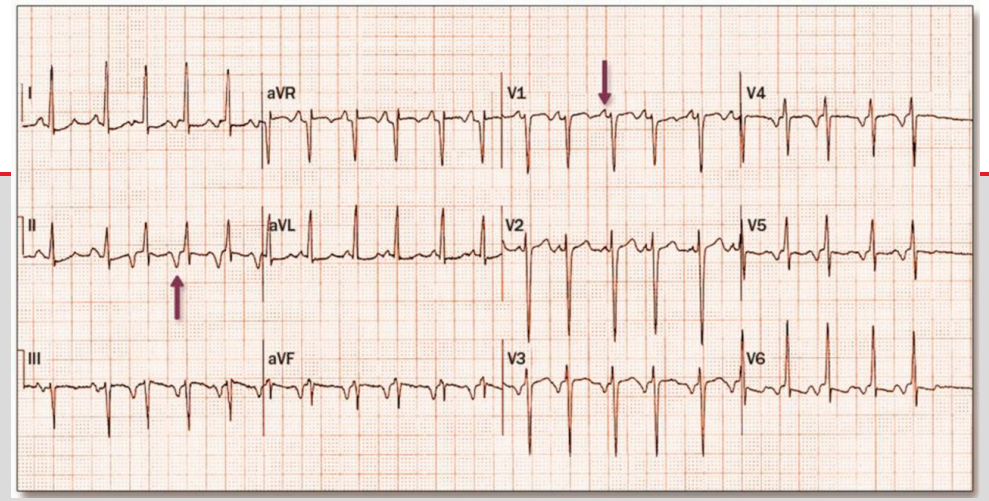
4. Endocardial LV pacing

5. Role of optimization
   Son-R algorithm

Tachycardia-Induced Cardiomyopathy







Frequency of arrhythmia
Rate of arrhythmia
Duration of arrhythmia
Characteristics (e.g. interpolation)

NICM; chicken or egg?

Atrial Fibrillation and Heart Failure

- Worsen prognosis of the other condition
  - Burden of AF correlates with outcomes
- Possible reduced benefit of HF therapies among AF patients
- Pharmacotherapy
  - Rhythm control no better than rate control
  - Moderate rate control (<110/min) appears sufficient
- Catheter ablation
  - CASTLE-AF results encouraging/provocative
  - RAFT-AF results this summer

SCAF Progression Predicts HF Decompensation

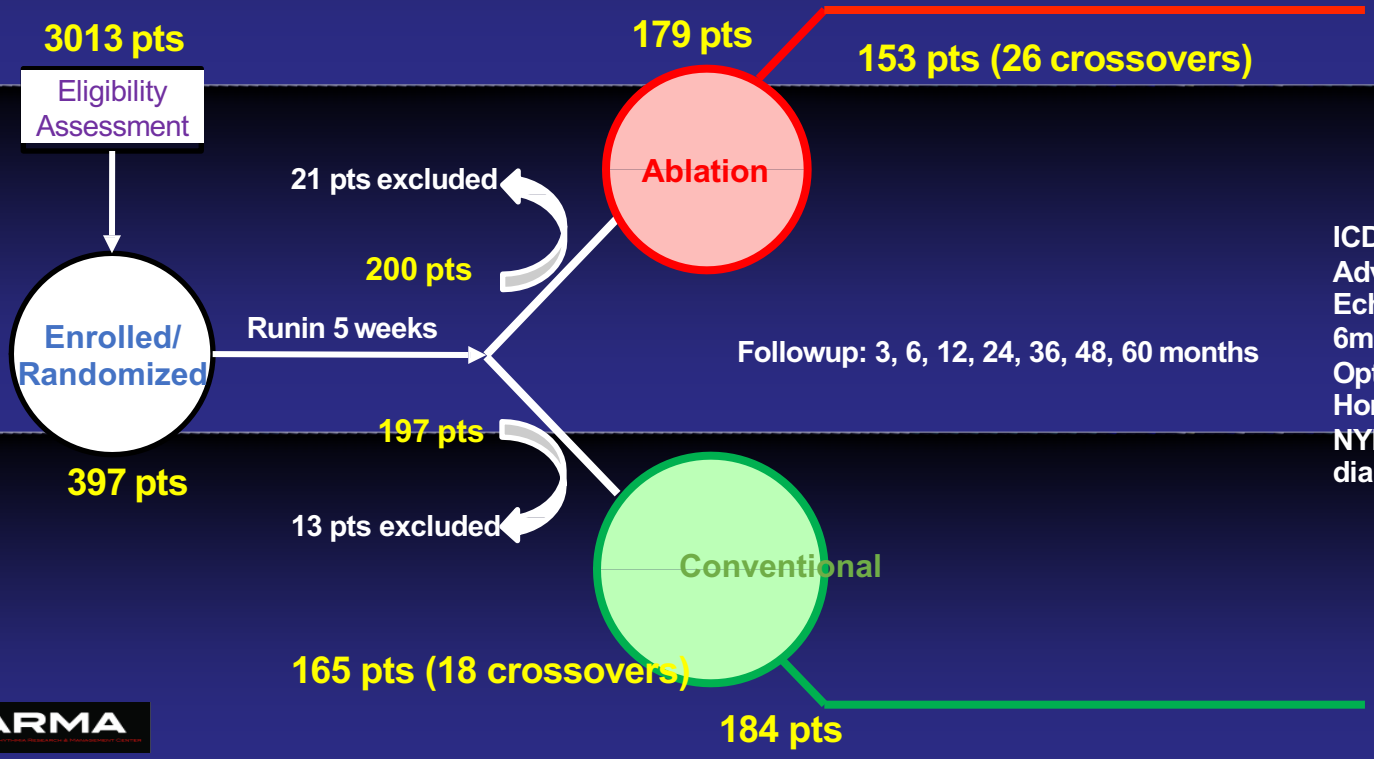
Outcome	Subclinical Atrial Tachyarrhythmia Progression				Unadjusted Risk*			Multivariable Adjusted Risk*		
	Present		Absent							
	Events/ patients	%/year	Events/ patients	%/year	HR	95%-CI	p-value	HR	95%-CI	p-value
HF hospitalization	7/60	8.9	18/355	2.5	4.10	1.65 – 10.2	0.002	4.58	1.64 – 12.8	0.004
Any stroke	0/65	0	8/350	1.1	0.00	–	–	0.00	-	-
Vascular death	4/65	4.5	17/350	2.3	1.99	0.66 – 6.02	0.23	1.71	0.53 – 5.58	0.37
MI	1/65	1.1	3/350	0.4	2.40	0.21 – 27.1	0.48	1.94	0.15 – 25.1	0.61
Stroke/MI/Vascular death	5/65	5.7	24/350	3.3	1.55	0.58 – 4.15	0.38	1.51	0.53 – 4.35	0.44

Wong JA, et al. JACC 2018 – In Press

Study Design— CASTLEAF

CASTLE-AF

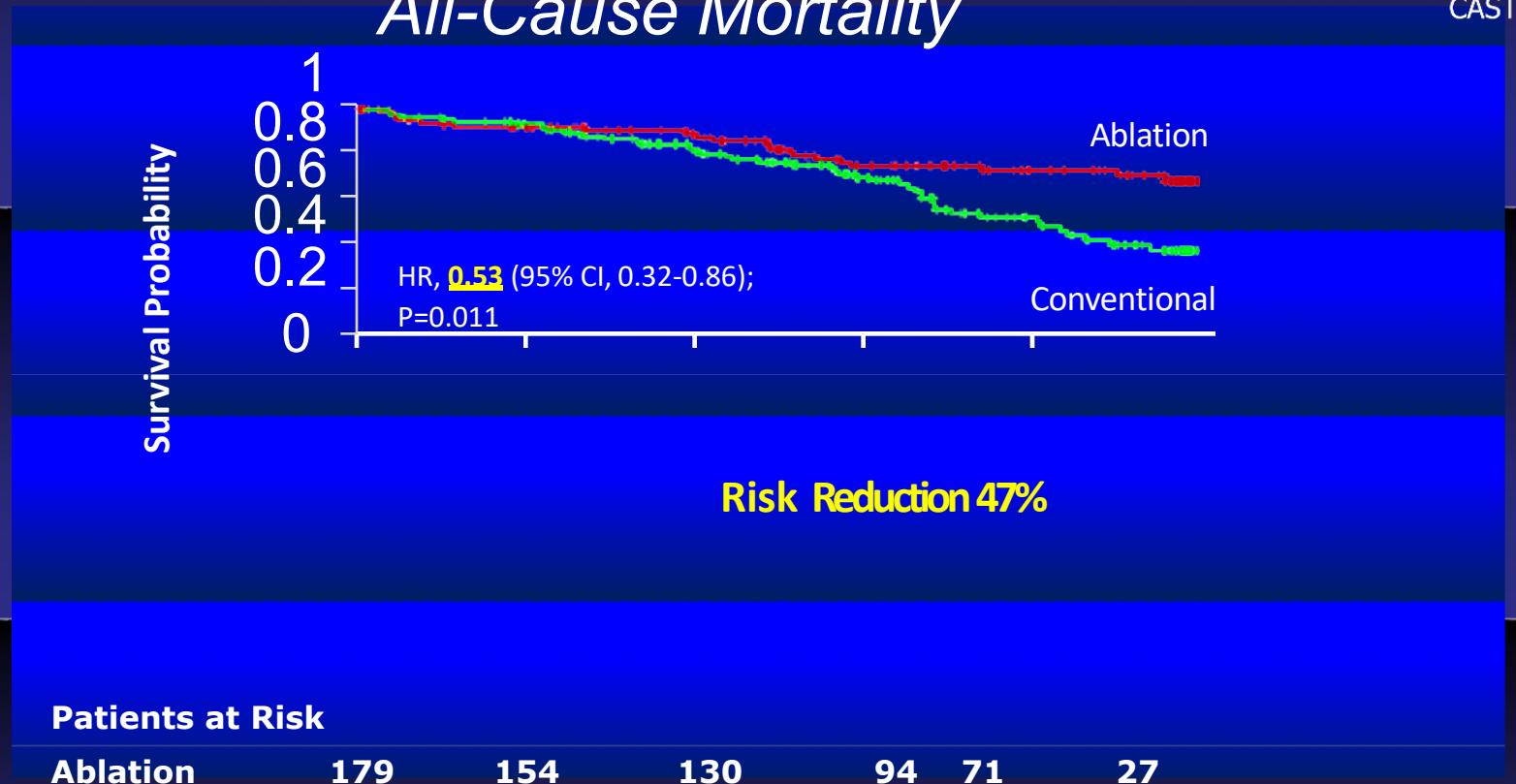
- Investigator initiated, Prospective, Multicenter (31 sites, 9 countries), Randomized, Controlled



CARMA

ResultsCASTLE AF
All-Cause Mortality

CASTLE-AF



Patients at Risk						
Ablation	179	154	130	94	71	27
Conventional	184	168	138	97	63	19

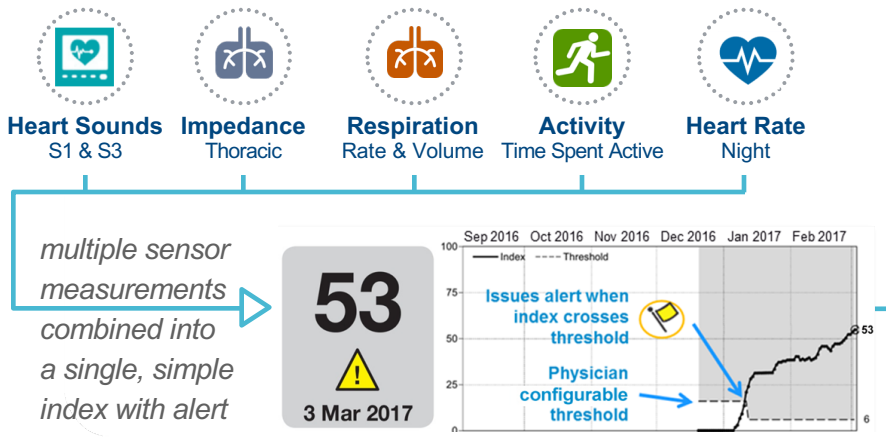
CARMA

ICD-Base Physiologic Sensors: Heart Logic

HeartLogic™ shifts heart failure patient management from reactive treatment to **proactive care,** and was validated in the MultiSENSE Study to have:

- **High sensitivity** of 70% for detecting heart failure events
- **Weeks of advance notice** of a potential heart failure event
- **Low burden** of less than 2 alerts per patient per year

HeartLogic™ incorporates multiple sensors with a single composite alert

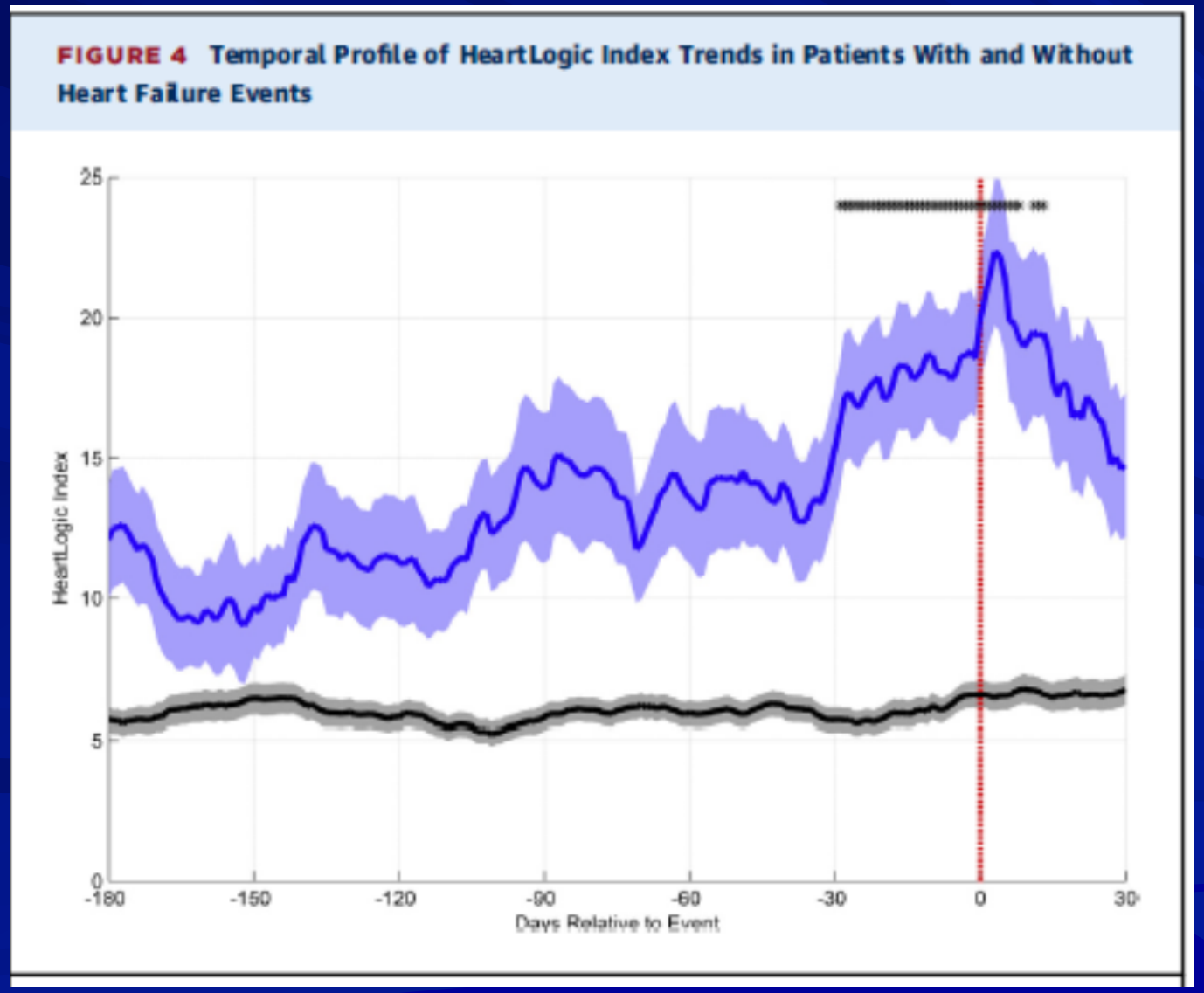


Available on **LATITUDE™ NXT** for patients with **Resonate™** family of ICDs & CRT-Ds

Boehmer, J et al., JACC-HF, 2017;5(3),2 1 6 – 2 5

MULTISENSE Trial: JP Boehmer

JACC-HF 2018



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