Gain in CRT Efficacy with Dynamic Electrical Optimization: Real World Effect of SyncAV™ CRT on Heart Failure Hospitalizations

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Disclosures

- NV Research (Contracted Grants for PIs and Named Investigators only) - Abbott. Honoraria/Speaking/Consulting Fee - Biotronik; Medtronic, Inc.

- BT Honoraria/Speaking/Consulting Fee - Abbott Laboratories.
- BS None
- LM Honoraria/Speaking/Consulting Fee - Abbott Vascular; Boston Scientific; Medtronic, Inc..
- AC, YN, & IR Employees - Abbott
- WZ Research (Contracted Grants for PIs and Named Investigators only) - Gilead Sciences, Inc.; LivaNova; EBR Systems; Biotronik

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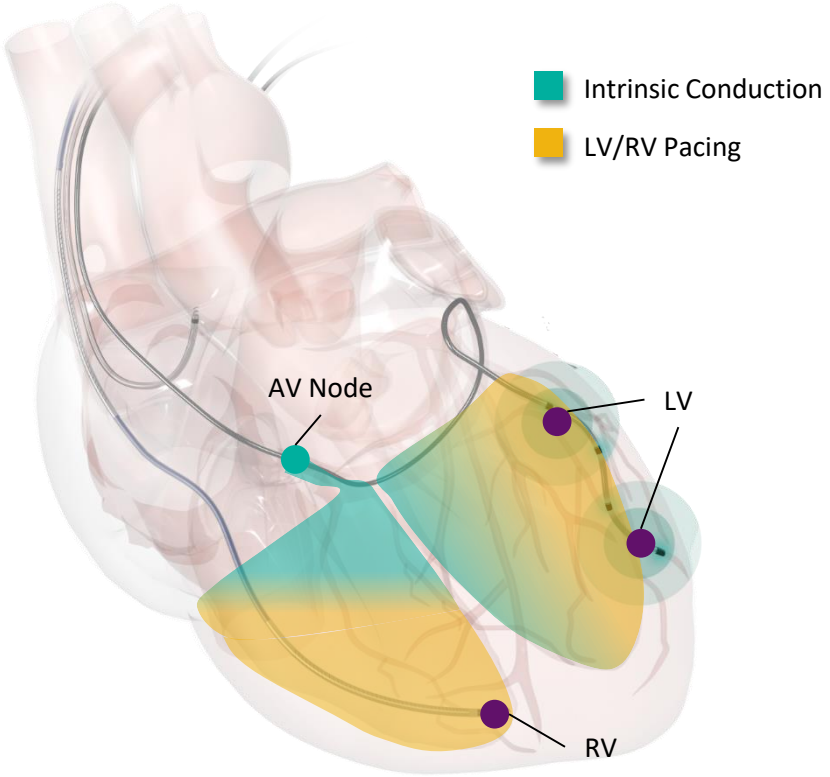
SyncAV™ CRT dynamically tailored to the patient's beat

New dynamic timing feature for quadripolar CRT devices

- Electrical optimization on an *individualized* basis ("triple fusion")
- Dynamically adjust timing (AV Delays) based on intrinsic AV interval

Improve quantity and quality of paced therapy



Objective

Assess the impact of SyncAV™ CRT on the long-term rate of heart failure hospitalizations (HFH) in a large, real-world cohort of CRT patients

Data Sources

- US Abbott quadripolar CRT devices
- Device programming (SyncAV™ CRT)
- Device type (CRTP, CRTD)
- Patient demographics (age, gender)

Data Linking

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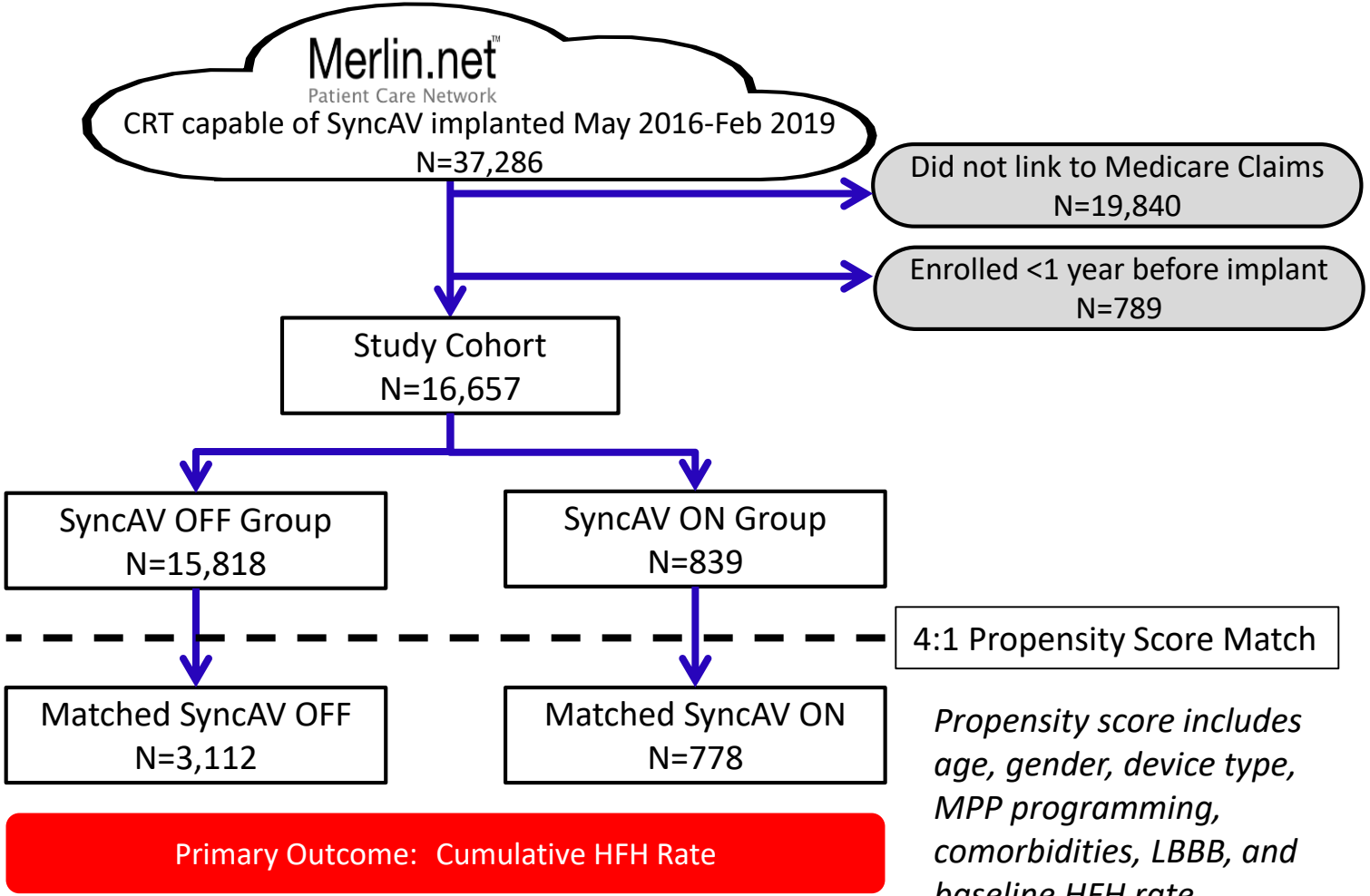
- Disease etiology (LBBB, ischemia)
- Comorbidities
- Heart failure hospitalizations (HFH)

Study Design



Propensity score includes age, gender, device type, MPP programming, comorbidities, LBBB, and baseline HFH rate

Analysis

Outcomes

- HFH Rate
- HFH defined as inpatient hospitalization with primary diagnosis of HF

Comparisons

- Before vs After CRT Implant
- After implant - SyncAV ON (with AV delay ≥190 ms) vs. OFF

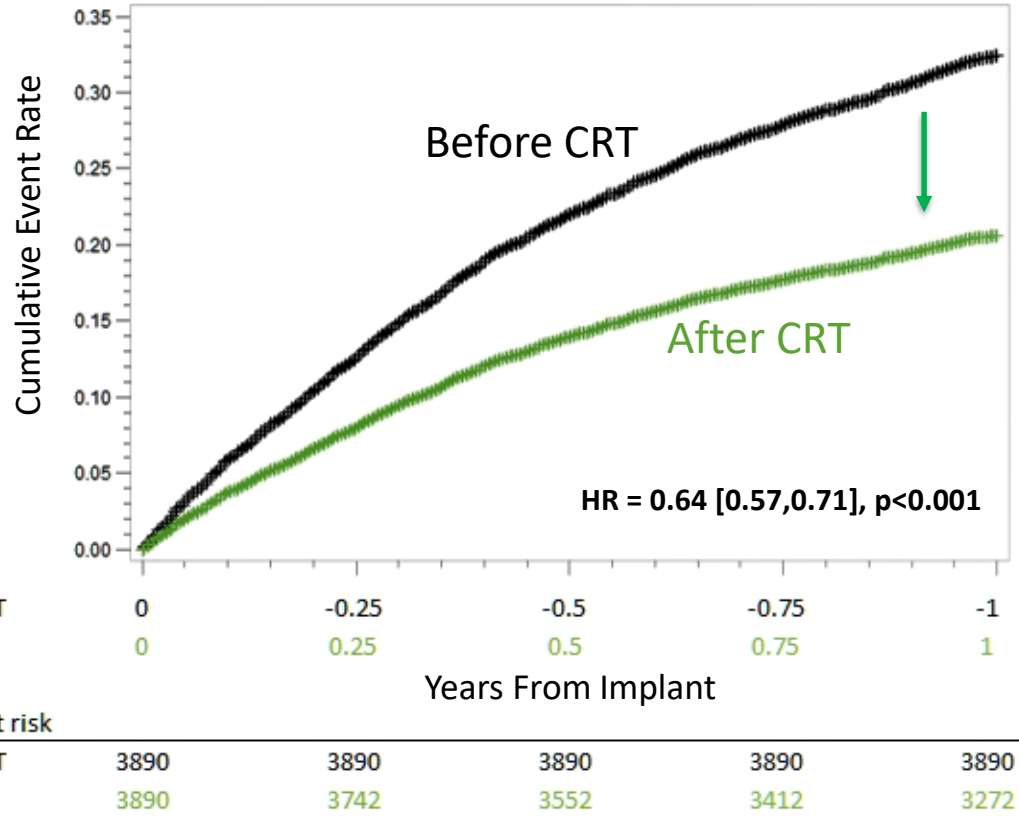
Statistics

- Andersen-Gill model
- Censor at explant, OOS, death, 2 years post implant, end of Medicare enrollment, or when SyncAV turned ON after baseline period (SyncAV OFF only)
- Multivariate Cox proportional hazards test adjusted for age, gender, device type, multi-point pacing programming, history of AF, LBBB, ICM, and baseline HFH rate

Patient Characteristics

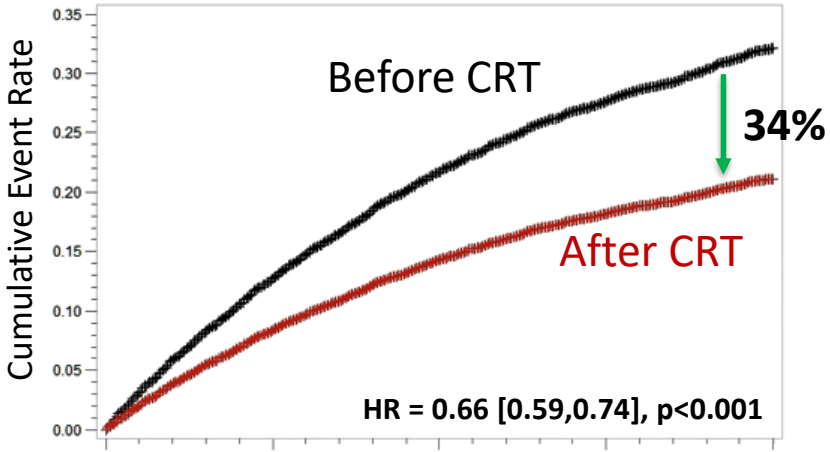
	Before Matching N=16,657			Propensity Score Matched N=3,890		
	SyncAV OFF	SyncAV ON	P-value	SyncAV OFF	SyncAV ON	P-Value
N	15,818	839		3112	778	
Age at Implant	76.7 ± 8.3	74.4 ± 8.6	**<0.001**	74.9 ± 8.8	74.8 ± 8.4	0.715
Gender (Female)	4859 (31%)	315 (38%)	**<0.001**	1107 (36%)	281 (36%)	0.776
Device Type (CRT-D)	10,587 (67%)	714 (85%)	**<0.001**	2634 (85%)	656 (84%)	0.824
Follow-up After CRT Implant (Days)	787 ± 325	669 ± 301	**<0.001**	691± 291	683± 304	0.491
Charlson Comorbidity Index (0-29)	5.4 ± 2.9	5.4 ± 2.9	0.980	5.6 ± 2.9	5.4 ± 2.9	0.215
HFH Rate in Year Before CRT Implant	0.267 ± 0.664	0.330 ± 0.771	**0.004**	0.321 ± 0.720	0.335 ± 0.772	0.622
Medical History						
Atrial Fibrillation	10,649 (67%)	338 (40%)	**<0.001**	1359 (44%)	338 (43%)	0.910
Left Bundle Branch Block	6446 (41%)	627 (75%)	**<0.001**	2335 (75%)	577 (74%)	0.618
Ischemic Cardiomyopathy	7678 (49%)	491 (59%)	**<0.001**	1856 (60%)	458 (59%)	0.695
Previous Myocardial Infarction	5883 (38%)	383 (46%)	**<0.001**	1474 (47%)	358 (46%)	0.500
Diabetes	7669 (49%)	415 (50%)	0.466	1622 (52%)	390 (50%)	0.320
Hypertension	14960 (95%)	795 (96%)	0.305	2972 (96%)	747 (96%)	0.532
Renal Disease	6668 (42%)	342 (41%)	0.516	1315 (42%)	324 (42%)	0.758

CRT Effect: All Patients



HFH rate
DECREASED 36%
after vs before CRT

CRT (SyncAV OFF)

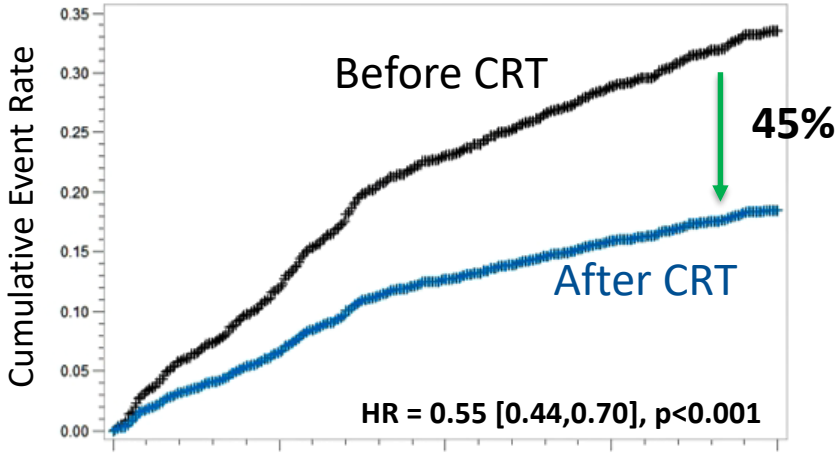


Before CRT	0	-0.25	-0.5	-0.75	-1
After CRT	0	0.25	0.5	0.75	1

Years From Implant

Subjects at risk					
Before CRT	3112	3112	3112	3112	3112
After CRT	3112	2989	2834	2717	2599

CRT (SyncAV ON)



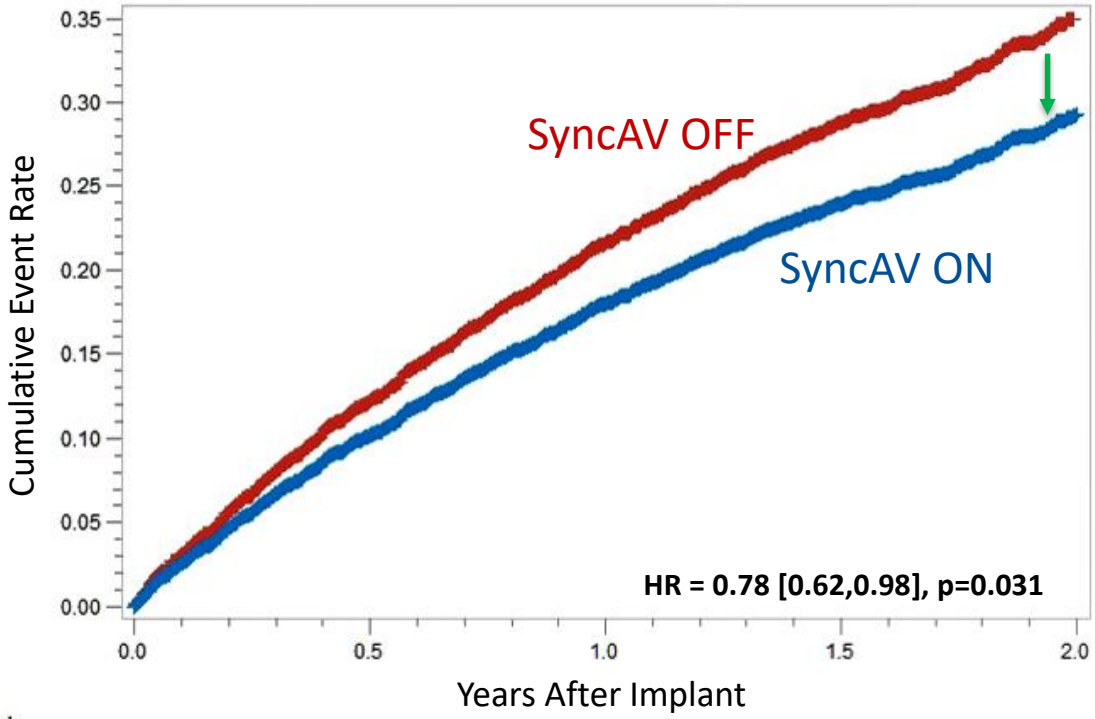
Before CRT	0	-0.25	-0.5	-0.75	-1
After CRT	0	0.25	0.5	0.75	1

Years From Implant

Subjects at risk					
Before CRT	778	778	778	778	778
After CRT	778	753	718	695	672

HFH rate **decreases MORE** for SyncAV ON vs OFF

SyncAV™ CRT vs Standard CRT



HFH rate is **22%** **LOWER** with SyncAV ON vs OFF at **2 years**

Subjects at risk					
SyncAV - OFF	3112	2834	2599	1864	1144
SyncAV - ON	778	718	672	428	274

Limitations

Patients were not randomized

Decision for SyncAV™ programming On vs Off unknown

Medicare claims data are collected for billing purposes

Summary and Conclusion: **SyncAV™ CRT**

In this large, real-world study, heart failure hospitalizations were significantly **reduced** following **CRT** implant

This effect was significantly **more pronounced** in patients receiving **SyncAV™ CRT, compared to standard CRT**

SyncAV™ CRT was associated with a **significant reduction** in the rate of **heart failure hospitalizations** after CRT implant in propensity-matched analysis

Electrical optimization linked to dynamic AV control improves outcomes of patients treated with CRT

Thank you

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Real World Effect of SyncAV™ CRT on Heart Failure Hospitalizations

Niraj Varma, MA, MD, PhD, FRCP, Allison T. Connolly, PhD, Bernard Thibault, MD, FHRS, Balbir Singh, MD, Lluis Mont, MD, PhD, Ignacio J. Reyes, Yelena Nabutovsky, MS, and Wojciech Zareba, MD, PhD

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