

SUPPLEMENTAL MATERIAL

Appendix

CHAMPION Investigator Group

Site Name	Investigator
Northwest Texas Hospital	Suresh B. Neelagaru
Bryan LGH	Steven Krueger
Mother Frances	Stan Weiner
Oklahoma Heart	Philip Adamson
Spectrum Health- Grand Rapids	Michael Dickinson
Ohio State U	Ayesha Hasan
St. Thomas Hospital	Mark Aaron
U of Alabama at Birmingham	Salpy Pamboukian
Northwestern Memorial Hospital	John B. O'Connell
Kennestone	Rajnish Prasad
Moses H. Cone Memorial	Daniel Bensimhon
Northeast GA Heart	Brenda Hott
Intermountain	Dale Renlund
Shands Hospital/U of FL	Juan Aranda
U of Pennsylvania	Lee Goldberg
Sanford USD	Orvar Jonsson
Brigham & Women's	Michael Givertz
Penn State Hershey	John Boehmer
Hennepin County Medical Center	Steven Goldsmith
Springhill Medical Center	Kenneth Burnham
Albert Einstein Medical Center	Darshak Karia
University of Iowa Health Care	Barry Cabuay
Barnes Jewish Hospital	Gregory Ewald
OSF Saint Francis Medical Center	Barry Clemson
Methodist Hospital	Guillermo Torre-Amione
University of Pittsburgh Medical Center	Michael Mathier
California Pacific Medical Center	Ernest Haeusslein
Edwards Hospital	Maria Constanzo
USC University Hospital	Leonardo Clavijo
Henry Ford Hospital	Barbara Czerska
Emory University Hospital	Andrew Smith
Columbia Presbyterian	Donna Mancini
Advocate Christ Medical Center	Marc Silver
Scripps	J. Thomas Heywood
Piedmont Hospital	Raval/ Vivek Rajagopal
Alexian Brothers	G. Martin Mullen
Lehigh Valley- Allentown	Ronald Freudenberger
Geisinger	Henry Fesniak
St. Joseph's of Atlanta	Nick Chronos
U of Minnesota	Andrew Boyle
Holy Cross Hospital	Alan Niederman
Huntsville Hospital	Warren Strickland

Orlando Regional	Barry Weinstock
Mercy	Javier Jimenez
Harbor-UCLA Med Center	David Shavelle
Via Christi Healthcare System	Darrell Youngman
Washington Adventist Hospital	Fayaz Shawl
Baptist Health - Princeton	Alain Bouchard
Med Center of Central Georgia	Mark Dorogy
Providence Hospital	Charles Parrott
Wake Med	J. Tift Mann
Trinity Medical Center	Tom Eagan
Carolinas Medical Center	Theodore Frank
Sharp Memorial	Brian Jaski
Swedish Heart and Vascular Clinic	Mark Reisman
Good Samaritan-Los Angeles, CA	David Shavelle
Baptist Memorial Hospital-Memphis	Ed Garrett
Good Samaritan-Dayton	Eugene Simoni
Washington Hospital	Ron Waksman
Allegheny	Raymond Benza
Lancaster Heart	Roy Small
Lynchburg General Hospital at Cenra	Thomas Nygaard
North Mississippi	Barry Bertolet
St. Luke's Episcopal Hospital & Texas Heart Institute	Pranav Loyalka

Table S1. Descriptive Statistics on Number of HF Hospitalizations.

Randomization	N	Mean	Std Dev	Minimum	Maximum
CONTROL	99	0.9	1.4	0.0	6.0
TREATMENT	91	0.7	1.0	0.0	5.0

Frequency of HF Hospitalizations

Table of HF Hospitalizations by Randomization			
HF Hospitalizations	Randomization (Randomization)		
	CONTROL	TREATMENT	Total
0	54	52	106
1	21	22	43
2	13	14	27
3	4	1	5
4	3	1	4
5	2	1	3
6	2	0	2
Total	99	91	190

Table S2. Baseline Dosing of GDMT in Patients with CRT Enrolled in CHAMPION Trial.

HF Drug Class	Drug	Treatment Group (n = 91)		Control Group (n = 99)		Analysis	
		No. (%)	Total Daily Dose, mg	No. (%)	Total Daily Dose, mg	P Value*	P Value†
Diuretic	Loop diuretic	84 (92)	94	96 (97)	110	0.1988	0.2737
	Thiazide diuretic	12 (13)	4	7 (7)	5	0.2260	0.2109
	Thiazide diuretic PRN	8 (9)	3	10 (10)	4	0.8085	0.5891
Vasodilator	Nitrate	22 (24)	62	18 (18)	64	0.3740	0.9328
	Hydralazine	7 (8)	119	9 (9)	69	0.7979	0.4557
Neuro-hormonal antagonist	ACE/ARB (enalapril equivalent)	69 (76)	20	84 (85)	19	0.1430	0.5432
	Beta blocker (carvedilol equivalent)	83 (91)	32	90 (91)	36	1.0000	0.9502
	Aldosterone antagonist (spironolactone equivalent)	35 (38)	26	43 (43)	30	0.5554	0.4913

* P-value testing Treatment vs Control prevalence obtained from Fisher's exact test.

† P-value testing Treatment vs Control total daily dose obtained from exact Wilcoxon rank-sum test.

ACE/ARB, angiotensin converting enzyme/angiotensin receptor blocker; CRT, cardiac resynchronization therapy; GDMT, guideline-directed medical therapy; HF, heart failure; PRN, Latin term "as needed."

Table S3. Total Number of Medication Changes in CRT Patients Enrolled in CHAMPION

Trial*.

Group	Drug Category	Dosage Increase	Dosage Decrease	Total Changes
CONTROL N=99	Diuretics	132	71	203
	Vasodilators	21	1	22
	ACE-I/ARB	25	17	42
	Beta-blocker	33	21	54
	MRA	22	3	25
	Total †	233	113	346
TREATMENT N=91	Diuretics	299	198	497
	Vasodilators	103	22	125
	ACE-I/ARB	60	41	101
	Beta-blocker	51	34	85
	MRA	31	8	39
	Total †	544	303	847

* Medication changes were recorded for each patient during the first 6 months of randomized access.

† *P*-value testing Treatment vs Control for total medication change dosage increase frequencies ($p < 0.001$) and dosage decrease frequencies ($p < 0.001$) from Poisson means test.

Abbreviations: ACE-I/ARB, angiotensin converting enzyme/angiotensin receptor blocker; MRA, mineralocorticoid receptor antagonist. Vasodilators included nitrates and hydralazine. Dosing changes that did not result in a change in bioavailability of the drug are not included.