

Supplemental Material

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1. Supplemental Tables

Supplemental Table I. Baseline Patient Characteristics According to Prior Heart Failure or Low Systolic Left Ventricular Function

	No History of HF/LVD (N=4,776)	History of HF/LVD			p*
		Overall (N=398)	HFrEF (n=221)	HFpEF (n=177)	
CCS Angina Class					0.258
None	945/4775 (19.8%)	88/397 (22.2%)	51/221 (23.1%)	37/176 (21.0%)	
I	1295/4775 (27.1%)	91/397 (22.9%)	57/221 (25.8%)	34/176 (19.3%)	
II	2327/4775 (48.7%)	195/397 (49.1%)	105/221 (47.5%)	90/176 (51.1%)	
III	207/4775 (4.3%)	23/397 (5.8%)	8/221 (3.6%)	15/176 (8.5%)	
IV	1/4775 (<0.1%)	0			
Current smoker	581/4772 (12.2%)	58/397 (14.6%)	31/221 (14.0%)	27/176 (15.3%)	0.157
LVEF, %					<.001
n	4252	381	214	167	
Median (Q1, Q3)	60 (56, 65)	44 (40, 58)	41 (39, 43)	60 (54, 64)	
BMI, kg/m ²					<.001
n	4725	394	219	175	
Median (Q1, Q3)	28 (25, 31)	29 (26, 33)	29 (25, 33)	30 (26, 34)	
Systolic blood pressure, mmHg					0.118
n	4748	397	221	176	
Median (Q1, Q3)	130 (120, 142)	130 (120, 140)	131 (120, 143)	130 (120, 140)	
Diastolic blood pressure, mmHg					0.846
n	4748	397	221	176	
Median (Q1, Q3)	77 (70, 81)	78 (70, 82)	77 (70, 84)	78 (70, 80)	
Heart rate, bpm					0.143
n	4744	397	221	176	
Median (Q1, Q3)	67 (60, 75)	68 (61, 75)	68 (62, 77)	66 (60, 72)	
Atrial fibrillation	169/4773 (3.5%)	52/395 (13.2%)	21/220 (9.5%)	31/175 (17.7%)	<.001
AF Type					0.056
Paroxysmal	105/154 (68.2%)	25/49 (51.0%)	10/18 (55.6%)	15/31 (48.4%)	
Persistent	17/154 (11.0%)	11/49 (22.4%)	5/18 (27.8%)	6/31 (19.4%)	
Chronic/Permanent	32/154 (20.8%)	13/49 (26.5%)	3/18 (16.7%)	10/31 (32.3%)	
QOL					
SAQ Angina Frequency Score					0.902
n	4262	380	204	176	
Median (Q1, Q3)	90 (70, 100)	90 (70, 100)	90 (70, 100)	85 (65, 100)	
SAQ Physical Limitation Score					<.001
n	3959	342	183	159	
Median (Q1, Q3)	83 (67, 100)	75 (50, 100)	83 (58, 100)	67 (50, 92)	
SAQ Quality of Life Score					0.010
n	4255	381	205	176	
Median (Q1, Q3)	63 (50, 88)	63 (38, 88)	63 (38, 88)	50 (38, 88)	
SAQ Summary Score					<.001

	No History of HF/LVD (N=4,776)	History of HF/LVD			p*
		Overall (N=398)	HFrEF (n=221)	HFpEF (n=177)	
n	4264	381	205	176	
Median (Q1, Q3)	77 (63, 89)	73 (57, 88)	74 (59, 89)	69 (51, 88)	
Rose Dyspnea Scale					<.001
0	1701/4508 (37.7%)	109/387 (28.2%)	71/215 (33.0%)	38/172 (22.1%)	
1	1607/4508 (35.6%)	130/387 (33.6%)	72/215 (33.5%)	58/172 (33.7%)	
2	684/4508 (15.2%)	72/387 (18.6%)	34/215 (15.8%)	38/172 (22.1%)	
3	304/4508 (6.7%)	42/387 (10.9%)	25/215 (11.6%)	17/172 (9.9%)	
4	212/4508 (4.7%)	34/387 (8.8%)	13/215 (6.0%)	21/172 (12.2%)	
Biochemistry					
Estimated GFR, mL/min					<.001
n	4145	328	191	137	
Median (Q1, Q3)	82 (69, 97)	72 (60, 87)	76 (63, 91)	66 (57, 82)	
Creatinine, mg/dL					<.001
n	4145	328	191	137	
Median (Q1, Q3)	0.94 (0.80, 1.10)	1.06 (0.91, 1.24)	1.04 (0.90, 1.20)	1.09 (0.92, 1.30)	
Glucose, mg/dL					0.385
n	4226	362	199	163	
Median (Q1, Q3)	106 (94, 133)	108 (95, 131)	108 (94, 130)	107 (96, 134)	
HbA1c, %					0.042
n	3187	250	153	97	
Median (Q1, Q3)	6.3 (5.7, 7.4)	6.5 (5.8, 7.5)	6.3 (5.8, 7.3)	6.8 (6.0, 7.7)	
Sodium, mmol/L					0.343
n	4338	359	194	165	
Median (Q1, Q3)	140 (138, 142)	140 (138, 142)	139 (137, 141)	140 (139, 142)	
Potassium, mmol/L					0.002
n	4366	364	197	167	
Median (Q1, Q3)	4.4 (4.1, 4.7)	4.4 (4.2, 4.8)	4.4 (4.1, 4.8)	4.5 (4.3, 4.8)	
WBC, 10 ⁹ /L					0.125
n	4455	372	202	170	
Median (Q1, Q3)	7.2 (6.1, 8.5)	7.4 (6.2, 8.9)	7.3 (6.1, 8.9)	7.4 (6.4, 8.7)	
LDL, mg/dL					0.043
n	4561	376	210	166	
Median (Q1, Q3)	83 (63, 110)	88 (66, 116)	86 (63, 109)	89 (70, 126)	
Total cholesterol, mg/dL					0.134
n	4682	388	214	174	
Median (Q1, Q3)	154 (129, 186)	154 (133, 189)	154 (132, 184)	153 (135, 197)	

CCS, Canadian Cardiovascular Society; CCTA, coronary computed tomography angiography; GFR, glomerular filtration rate; HbA1c, hemoglobin A1c; HF/LVD, Heart Failure/ Left ventricular dysfunction; HFrEF, Heart failure with reduced ejection fraction; HFpEF, heart failure with preserved ejection fraction; LDL, low-density lipoprotein; Q1, first quartile; Q3, third quartile; QOL, Quality of Life; SAQ, Seattle Angina Questionnaire; WBC, white blood count

* P-values comparing **any history of HF/LVD** versus none (first 2 columns)

† Uninterpretable degree of ischemia set to missing for chi-square test; Zero vessels with 50% stenosis is combined with one vessel for chi-square test

Supplemental Table II. Baseline Patient Characteristics According to Prior HF or LVEF < 50%

	No history of HF (N=4,491)	History of HF (N=647)	HFmEF (n=490)	HFpEF (n=154)	p*
Demographics					
Age, years					0.003
n	4491	647	490	154	
Median (Q1, Q3)	65 (58, 71)	66 (59, 72)	65 (58, 72)	67 (60, 73)	
Female sex	1043/4491 (23.2%)	120/647 (18.5%)	70/490 (14.3%)	48/154 (31.2%)	0.008
Race					<.001
White	2878/4445 (64.7%)	496/643 (77.1%)	351/487 (72.1%)	143/153 (93.5%)	
Asian	1380/4445 (31.0%)	100/643 (15.6%)	95/487 (19.5%)	5/153 (3.3%)	
Black or African American	156/4445 (3.5%)	43/643 (6.7%)	37/487 (7.6%)	5/153 (3.3%)	
Other	31/4445 (0.7%)	4/643 (0.6%)	4/487 (0.8%)	0	
NYHA Class					<.001
None	2886/4491 (64.3%)	255/647 (39.4%)	240/490 (49.0%)	14/154 (9.1%)	
I	852/4491 (19.0%)	134/647 (20.7%)	99/490 (20.2%)	34/154 (22.1%)	
II	753/4491 (16.8%)	258/647 (39.9%)	151/490 (30.8%)	106/154 (68.8%)	
CCS Angina Class					0.070
None	871/4490 (19.4%)	155/646 (24.0%)	123/490 (25.1%)	31/153 (20.3%)	
I	1221/4490 (27.2%)	154/646 (23.8%)	125/490 (25.5%)	28/153 (18.3%)	
II	2198/4490 (49.0%)	308/646 (47.7%)	227/490 (46.3%)	81/153 (52.9%)	
III	199/4490 (4.4%)	29/646 (4.5%)	15/490 (3.1%)	13/153 (8.5%)	
IV	1/4490 (<0.1%)	0			
Current smoker	534/4487 (11.9%)	95/646 (14.7%)	70/490 (14.3%)	24/153 (15.7%)	0.042
LVEF, %					<.001
n	4003	630	483	147	
Median (Q1, Q3)	60 (57, 65)	46 (43, 49)	45 (41, 47)	60 (56, 65)	
BMI, kg/m2					<.001
n	4445	639	484	152	
Median (Q1, Q3)	28 (25, 31)	29 (26, 33)	29 (26, 33)	30 (26, 34)	
Systolic blood pressure, mmHg					0.317
n	4464	646	490	153	
Median (Q1, Q3)	130 (120, 142)	130 (120, 141)	132 (120, 142)	130 (120, 140)	
Diastolic blood pressure, mmHg					0.927
n	4464	646	490	153	
Median (Q1, Q3)	77 (70, 81)	78 (70, 82)	78 (70, 82)	78 (70, 80)	
Heart rate, bpm					0.030
n	4460	646	490	153	
Median (Q1, Q3)	67 (60, 75)	68 (61, 75)	68 (62, 76)	65 (60, 72)	
Medical history					
Angina	4034/4491 (89.8%)	572/647 (88.4%)	422/490 (86.1%)	148/154 (96.1%)	0.269
MI	747/4477 (16.7%)	230/644 (35.7%)	172/488 (35.2%)	57/153 (37.3%)	<.001

	No history of HF (N=4,491)	History of HF (N=647)	HFmEF (n=490)	HFpEF (n=154)	p*
PCI	834/4487 (18.6%)	201/647 (31.1%)	134/490 (27.3%)	66/154 (42.9%)	<.001
CABG	162/4491 (3.6%)	38/647 (5.9%)	23/490 (4.7%)	15/154 (9.7%)	0.005
PVD	167/4483 (3.7%)	36/644 (5.6%)	22/487 (4.5%)	14/154 (9.1%)	0.023
Stroke	112/4490 (2.5%)	34/647 (5.3%)	28/490 (5.7%)	6/154 (3.9%)	<.001
Hypertension	3237/4477 (72.3%)	521/643 (81.0%)	383/486 (78.8%)	135/154 (87.7%)	<.001
Diabetes	1839/4491 (40.9%)	305/647 (47.1%)	237/490 (48.4%)	67/154 (43.5%)	0.003
Chronic lung disease	242/4481 (5.4%)	53/644 (8.2%)	32/488 (6.6%)	21/154 (13.6%)	0.004
Hospitalization for heart failure	0	56/647 (8.7%)	23/490 (4.7%)	33/154 (21.4%)	<.001
OMT at Randomization					
Aspirin	4053/4487 (90.3%)	557/647 (86.1%)	423/490 (86.3%)	132/154 (85.7%)	<.001
Statin	4251/4486 (94.8%)	617/647 (95.4%)	470/490 (95.9%)	144/154 (93.5%)	0.518
High intensity statin	1664/4486 (37.1%)	230/647 (35.5%)	178/490 (36.3%)	52/154 (33.8%)	0.447
ACE/ARB	2876/4487 (64.1%)	515/647 (79.6%)	376/490 (76.7%)	136/154 (88.3%)	<.001
Beta blockers	3576/4487 (79.7%)	552/647 (85.3%)	409/490 (83.5%)	140/154 (90.9%)	<.001
Aldosterone antagonist	72/4487 (1.6%)	40/647 (6.2%)	29/490 (5.9%)	9/154 (5.8%)	<.001
Long-acting nitrate	1502/4487 (33.5%)	164/647 (25.3%)	125/490 (25.5%)	38/154 (24.7%)	<.001
Diuretic	861/4487 (19.2%)	208/647 (32.1%)	137/490 (28.0%)	69/154 (44.8%)	<.001
Antiarrhythmics	51/4457 (1.1%)	17/639 (2.7%)	9/484 (1.9%)	8/154 (5.2%)	0.002
Anticoagulants	139/4448 (3.1%)	64/643 (10.0%)	47/486 (9.7%)	16/154 (10.4%)	<.001
Dual antiplatelet	1082/4487 (24.1%)	134/647 (20.7%)	106/490 (21.6%)	28/154 (18.2%)	0.057
QOL					
SAQ Angina Frequency Score					0.036
n	3998	611	455	153	
Median (Q1, Q3)	80 (70, 100)	90 (70, 100)	90 (70, 100)	80 (60, 100)	
SAQ Physical Limitation Score					<.001
n	3715	553	411	139	
Median (Q1, Q3)	83 (67, 100)	83 (58, 100)	83 (67, 100)	67 (42, 92)	
SAQ Quality of Life Score					0.146
n	3992	612	456	153	
Median (Q1, Q3)	63 (38, 88)	63 (38, 88)	63 (38, 88)	50 (38, 75)	
SAQ Summary Score					0.119
n	4000	612	456	153	
Median (Q1, Q3)	77 (63, 89)	75 (59, 89)	76 (62, 90)	67 (49, 84)	
Rose Dyspnea Scale					0.002
0	1590/4234 (37.6%)	209/629 (33.2%)	177/475 (37.3%)	32/151 (21.2%)	
1	1518/4234 (35.9%)	208/629 (33.1%)	156/475 (32.8%)	51/151 (33.8%)	
2	642/4234 (15.2%)	109/629 (17.3%)	74/475 (15.6%)	34/151 (22.5%)	
3	286/4234 (6.8%)	57/629 (9.1%)	43/475 (9.1%)	14/151 (9.3%)	
4	198/4234 (4.7%)	46/629 (7.3%)	25/475 (5.3%)	20/151 (13.2%)	
Biochemistry					

	No history of HF (N=4,491)	History of HF (N=647)	HFmEF (n=490)	HFpEF (n=154)	p*
Estimated GFR, mL/min					<.001
n	3908	538	418	118	
Median (Q1, Q3)	82 (69, 97)	75 (61, 91)	77 (63, 94)	67 (57, 82)	
Creatinine, mg/dL					<.001
n	3908	538	418	118	
Median (Q1, Q3)	0.94 (0.80, 1.10)	1.03 (0.90, 1.20)	1.02 (0.89, 1.20)	1.07 (0.92, 1.30)	
Glucose, mg/dL					0.033
n	3974	584	440	142	
Median (Q1, Q3)	106 (94, 131)	109 (95, 135)	109 (95, 136)	106 (97, 129)	
HbA1c, %					0.019
n	2980	433	349	81	
Median (Q1, Q3)	6.3 (5.7, 7.4)	6.5 (5.8, 7.5)	6.4 (5.8, 7.4)	6.7 (6.0, 7.7)	
Sodium, mmol/L					0.485
n	4073	590	443	144	
Median (Q1, Q3)	140 (138, 142)	140 (138, 142)	140 (138, 142)	140 (139, 142)	
Potassium, mmol/L					0.015
n	4102	594	446	145	
Median (Q1, Q3)	4.4 (4.1, 4.7)	4.4 (4.1, 4.8)	4.4 (4.1, 4.8)	4.5 (4.3, 4.8)	
WBC, 10 ⁹ /L					0.006
n	4193	600	448	150	
Median (Q1, Q3)	7.2 (6.1, 8.5)	7.4 (6.2, 8.9)	7.3 (6.2, 8.9)	7.6 (6.5, 8.8)	
LDL, mg/dL					0.198
n	4288	614	466	146	
Median (Q1, Q3)	83 (63, 110)	85 (63, 114)	84 (62, 111)	89 (69, 128)	
Total cholesterol, mg/dL					0.182
n	4404	631	477	151	
Median (Q1, Q3)	155 (129, 186)	153 (131, 190)	154 (131, 187)	152 (132, 200)	
Stress imaging and ETT detail					
Degree of ischemia					0.010
None	213/4479 (4.8%)	37/647 (5.7%)	25/490 (5.1%)	12/154 (7.8%)	
Mild	300/4479 (6.7%)	49/647 (7.6%)	40/490 (8.2%)	8/154 (5.2%)	
Moderate	1441/4479 (32.2%)	244/647 (37.7%)	173/490 (35.3%)	70/154 (45.5%)	
Severe	2466/4479 (55.1%)	314/647 (48.5%)	249/490 (50.8%)	64/154 (41.6%)	
Uninterpretable	59/4479 (1.3%)	3/647 (0.5%)	3/490 (0.6%)	0	
Anterior ischemia	1100/3274 (33.6%)	183/584 (31.3%)	156/448 (34.8%)	27/133 (20.3%)	0.285
Duke Prognostic Score					0.015
n	2642	325	250	74	
Median (Q1, Q3)	5 (5, 6)	5 (5, 6)	6 (5, 6)	5 (5, 6)	
Number of 50% Diseased Vessels by CCTA					0.248

	No history of HF (N=4,491)	History of HF (N=647)	HFmEF (n=490)	HFpEF (n=154)	p*
0	3/2641 (0.1%)	1/325 (0.3%)	1/250 (0.4%)	0	
1	630/2641 (23.9%)	64/325 (19.7%)	48/250 (19.2%)	16/74 (21.6%)	
2	828/2641 (31.4%)	103/325 (31.7%)	76/250 (30.4%)	26/74 (35.1%)	
3	1180/2641 (44.7%)	157/325 (48.3%)	125/250 (50.0%)	32/74 (43.2%)	
LM ≥ 50% Stenosis by CCTA	35/3388 (1.0%)	4/431 (0.9%)	3/338 (0.9%)	1/91 (1.1%)	1.000
Proximal LAD ≥ 50% Stenosis by CCTA	1568/3295 (47.6%)	169/419 (40.3%)	133/328 (40.5%)	36/89 (40.4%)	0.005
Number of 70% Diseased Vessels by CCTA					0.100
0	275/2250 (12.2%)	25/294 (8.5%)	20/226 (8.8%)	5/67 (7.5%)	
1	909/2250 (40.4%)	110/294 (37.4%)	87/226 (38.5%)	23/67 (34.3%)	
2	632/2250 (28.1%)	97/294 (33.0%)	71/226 (31.4%)	25/67 (37.3%)	
3	434/2250 (19.3%)	62/294 (21.1%)	48/226 (21.2%)	14/67 (20.9%)	
Proximal LAD ≥ 70% Stenosis by CCTA	733/3286 (22.3%)	68/419 (16.2%)	55/328 (16.8%)	13/89 (14.6%)	0.004

* P-values comparing **any history of HF** versus none (first 2 columns)

† Uninterpretable degree of ischemia set to missing for chi-square test; Zero vessels with 50% stenosis is combined with one vessel for chi-square test.

Supplemental Table III: Association between heart failure subtype at baseline (HFpEF and HFmEF) and outcomes

Variable Label	CIF estimate (95% CI)	N events	Unadjusted HR (95% CI)	Unadjusted p	Adjusted HR (95% CI)	Adjusted p
Primary endpoint				<0.001		<0.001
No history of HF	13.37 (12.24, 14.55)	539	1.00	-	1.00	-
HFpEF	17.31 (10.53, 25.49)	22	1.29 (0.84, 1.97)	0.248	1.04 (0.67, 1.59)	0.873
HFmEF	23.20 (18.95, 27.71)	104	1.82 (1.48, 2.25)	<0.001	1.62 (1.31, 2.00)	<0.001
CV death/MI				<0.001		<0.001
No history of HF	11.91 (10.83, 13.05)	476	1.00	-	1.00	-
HFpEF	14.22 (8.06, 22.08)	18	1.19 (0.74, 1.90)	0.478	0.95 (0.59, 1.53)	0.838
HFmEF	20.33 (16.32, 24.65)	91	1.77 (1.42, 2.22)	<0.001	1.57 (1.25, 1.97)	<0.001
All-cause Death				<0.001		<0.001
No history of HF	5.76 (4.96, 6.65)	220	1.00	-	1.00	-
HFpEF	9.64 (4.83, 16.44)	12	1.69 (0.94, 3.02)	0.078	1.20 (0.67, 2.17)	0.540
HFmEF	11.83 (8.64, 15.56)	55	2.29 (1.71, 3.08)	<0.001	1.95 (1.44, 2.63)	<0.001
CV Death				<0.001		<0.001
No history of HF	3.79 (3.16, 4.51)	145	1.00	-	1.00	-
HFpEF	5.67 (2.12, 11.82)	7	1.51 (0.71, 3.23)	0.286	1.04 (0.48, 2.23)	0.929
HFmEF	10.86 (7.84, 14.42)	49	3.06 (2.21, 4.24)	<0.001	2.61 (1.88, 3.63)	<0.001
Primary MI				0.042		0.216
No history of HF	9.11 (8.18, 10.10)	370	1.00	-	1.00	-
HFpEF	8.93 (4.54, 15.15)	13	1.09 (0.63, 1.90)	0.757	0.93 (0.53, 1.62)	
HFmEF	13.69 (10.31, 17.54)	57	1.43 (1.08, 1.89)	0.012	1.28 (0.96, 1.69)	
Unstable Angina				0.951		0.924
No history of HF	1.03 (0.74, 1.41)	42	1.00	-	1.00	-
HFpEF	0.66 (0.06, 3.33)	1	0.76 (0.10, 5.50)		0.74 (0.10, 5.39)	
HFmEF	1.22 (0.44, 2.76)	5	1.07 (0.42, 2.71)		1.12 (0.44, 2.87)	
Heart Failure				<0.001		<0.001
No history of HF	1.14 (0.82, 1.56)	50	1.00	-	1.00	-
HFpEF	3.02 (0.96, 7.19)	4	2.40 (0.86, 6.64)	0.093	1.61 (0.57, 4.53)	0.369

Variable Label	CIF estimate (95% CI)	N events	Unadjusted HR (95% CI)	Unadjusted p	Adjusted HR (95% CI)	Adjusted p
HFmEF	4.48 (2.66, 7.02)	21	4.23 (2.54, 7.07)	<0.001	3.50 (2.08, 5.90)	<0.001
All-cause death or HF				<0.001		<0.001
No history of HF	6.53 (5.68, 7.45)	254	1.00	-	1.00	-
HFpEF	12.01 (6.58, 19.18)	15	1.82 (1.08, 3.06)	0.024	1.29 (0.76, 2.18)	0.350
HFmEF	14.63 (11.09, 18.64)	67	2.52 (1.93, 3.31)	<0.001	2.14 (1.63, 2.81)	<0.001
HF death				<0.001		0.004
No history of HF	0.16 (0.06, 0.38)	6	1.00	-	1.00	-
HFpEF	0.65 (0.06, 3.31)	1	5.19 (0.62, 43.22)	0.127	3.82 (0.43, 33.87)	0.229
HFmEF	1.02 (0.28, 2.81)	6	9.99 (3.20, 31.13)	<0.001	7.24 (2.27, 23.09)	<0.001
New NYHA class II or greater				0.332		0.438
No history of HF	27.70 (26.06, 29.35)	927	1.00		1.00	
HFpEF	34.29 (19.40, 49.74)	14	1.31 (0.77, 2.22)		1.29 (0.76, 2.20)	
HFmEF	30.95 (25.45, 36.60)	96	1.13 (0.92, 1.39)		1.10 (0.89, 1.36)	
New Rose Dyspnea Scale 2 or more				0.056		0.114
No history of HF	33.80 (31.88, 35.73)	965	1.00		1.00	
HFpEF	48.49 (35.05, 60.67)	36	1.50 (1.08, 2.09)		1.43 (1.02, 1.99)	
HFmEF	35.21 (29.61, 40.84)	110	1.04 (0.85, 1.26)		1.02 (0.83, 1.24)	

Supplemental Table IV. Association between heart failure subtype at baseline and outcomes

	CIF estimate (95% CI)	N events	Unadjusted		Adjusted*	
			HR (95% CI)	p [†]	HR (95% CI)	p [†]
Primary endpoint				<0.001		<0.001
No history of HF	13.78 (12.67, 14.93)	592	1.00	-	1.00	-
HFpEF	18.34 (11.65, 26.24)	27	1.32 (0.89, 1.94)	0.163	1.04 (0.70, 1.53)	0.857
HFrEF	25.77 (19.13, 32.90)	51	1.96 (1.47, 2.61)	<0.001	1.78 (1.33, 2.37)	<0.001
CV death/MI				<0.001		0.001
No history of HF	12.26 (11.20, 13.37)	523	1.00	-	1.00	-
HFpEF	15.60 (9.24, 23.47)	22	1.20 (0.79, 1.85)	0.395	0.94 (0.61, 1.45)	0.782
HFrEF	22.76 (16.53, 29.60)	45	1.93 (1.43, 2.62)	<0.001	1.76 (1.30, 2.39)	<0.001
All-cause Death				<0.001		<0.001
No history of HF	6.05 (5.25, 6.92)	249	1.00	-	1.00	-
HFpEF	8.22 (4.14, 14.09)	12	1.36 (0.76, 2.42)	0.302	0.92 (0.51, 1.65)	0.779
HFrEF	14.11 (9.00, 20.34)	28	2.50 (1.69, 3.69)	<0.001	2.25 (1.52, 3.34)	<0.001
CV Death				<0.001		<0.001
No history of HF	4.15 (3.50, 4.88)	170	1.00	-	1.00	-
HFpEF	4.86 (1.83, 10.16)	7	1.17 (0.55, 2.50)	0.680	0.76 (0.35, 1.64)	0.487
HFrEF	12.96 (8.23, 18.81)	26	3.40 (2.25, 5.13)	<0.001	3.07 (2.02, 4.65)	<0.001
Primary MI				0.087		0.258
No history of HF	9.26 (8.35, 10.23)	399	1.00		1.00	
HFpEF	11.07 (5.95, 17.96)	17	1.21 (0.74, 1.96)		1.01 (0.62, 1.65)	
HFrEF	14.81 (9.79, 20.80)	27	1.52 (1.03, 2.25)		1.39 (0.94, 2.06)	
Unstable Angina				0.908		0.894
No history of HF	1.05 (0.77, 1.42)	45	1.00		1.00	
HFpEF	0.57 (0.05, 2.92)	1	0.64 (0.09, 4.65)		0.62 (0.08, 4.53)	
HFrEF	0.94 (0.19, 3.11)	2	1.00 (0.24, 4.10)		1.00 (0.24, 4.15)	
Heart Failure				<0.001		0.001
No history of HF	1.30 (0.96, 1.73)	59	1.00	-	1.00	-
HFpEF	4.81 (2.07, 9.30)	8	3.76 (1.79, 7.88)	<0.001	2.39 (1.12, 5.12)	0.024
HFrEF	4.17 (1.78, 8.16)	9	3.49 (1.73, 7.04)	<0.001	3.11 (1.53, 6.34)	0.002
All-cause death or HF				<0.001		<0.001
No history of HF	6.88 (6.04, 7.80)	287	1.00	-	1.00	-

	CIF estimate (95% CI)	N events	Unadjusted		Adjusted*	
			HR (95% CI)	p [†]	HR (95% CI)	p [†]
HFpEF	12.50 (7.33, 19.11)	19	1.88 (1.18, 3.00)	0.008	1.28 (0.80, 2.05)	0.306
HFrEF	16.77 (11.13, 23.40)	33	2.61 (1.82, 3.75)	<0.001	2.33 (1.62, 3.35)	<0.001
HF death				0.009		0.023
No history of HF	0.18 (0.07, 0.40)	9	1.00	-	1.00	-
HFpEF	0.57 (0.05, 2.90)	1	3.18 (0.40, 25.15)	0.273	1.94 (0.23, 16.15)	0.541
HFrEF	1.66 (0.31, 5.45)	3	7.53 (2.03, 27.89)	0.003	6.58 (1.71, 25.39)	0.006
NYHA class 2 or higher‡				0.096		0.096
No history of HF	27.77 (26.18, 29.38)	984	1.00		1.00	
HFpEF	36.49 (23.08, 50.00)	19	1.43 (0.91, 2.25)		1.43 (0.90, 2.25)	
HFrEF	33.79 (25.03, 42.75)	43	1.27 (0.94, 1.73)		1.28 (0.94, 1.74)	
Rose Dyspnea Scale 2 or more ^{††}				0.058		0.158
No history of HF	33.77 (31.91, 35.64)	1026	1.00		1.00	
HFpEF	45.30 (33.50, 56.37)	40	1.39 (1.01, 1.91)		1.28 (0.93, 1.76)	
HFrEF	37.55 (28.80, 46.27)	51	1.21 (0.91, 1.60)		1.20 (0.90, 1.59)	

* Adjusted for age (restricted cubic spline), sex, eGFR (restricted cubic spline), and diabetes

† The overall p-value is testing whether any of the HF categories differ. When a significant difference is identified, separate p-values comparing HFpEF to no history of HF and HFrEF to no history of HF are given.

‡ NYHA Class II or greater endpoint is restricted to 4157 participants without NYHA Class II or greater at baseline.

†† Rose Dyspnea Scale 2 or more endpoint is restricted to 3565 participants without Rose Dyspnea Scale 2 or more at baseline.

Supplemental Table V. Association between baseline continuous LVEF and trial endpoints

Endpoint	Unadjusted		Adjusted*	
	HR (95% CI) corresponding to a 10% increase in LVEF	p	HR (95% CI) corresponding to a 10% increase in LVEF	p
Primary endpoint	0.80 (0.73, 0.88)	<0.001	0.83 (0.75, 0.91)	<0.001
CV death/MI	0.80 (0.72, 0.88)	<0.001	0.82 (0.75, 0.91)	<0.001
All-cause Death	0.68 (0.59, 0.78)	<0.001	0.71 (0.62, 0.81)	<0.001
CV Death	0.61 (0.52, 0.72)	<0.001	0.63 (0.54, 0.74)	<0.001
Primary MI	0.86 (0.77, 0.97)	0.012	0.90 (0.80, 1.01)	0.063
Unstable Angina	1.23 (0.87, 1.75)	0.239	1.20 (0.84, 1.71)	0.320
Heart Failure	0.55 (0.42, 0.72)	<0.001	0.57 (0.44, 0.74)	<0.001
All-cause death or HF	0.66 (0.59, 0.75)	<0.001	0.69 (0.61, 0.78)	<0.001
HF death	0.38 (0.20, 0.72)	0.003	0.41 (0.22, 0.77)	0.006
NYHA Class II or greater†	1.03 (0.96, 1.12)	0.389	1.01 (0.94, 1.10)	0.738
Rose Dyspnea Scale 2 or more‡	0.97 (0.90, 1.04)	0.351	0.94 (0.88, 1.01)	0.110

* Adjusted for age (restricted cubic spline), sex, eGFR (restricted cubic spline), and diabetes

† NYHA Class II or greater endpoint is restricted to 4157 participants without NYHA Class II or greater at baseline.

‡ Rose Dyspnea Scale 2 or more endpoint is restricted to 3565 participants without Rose Dyspnea Scale 2 or more at baseline.

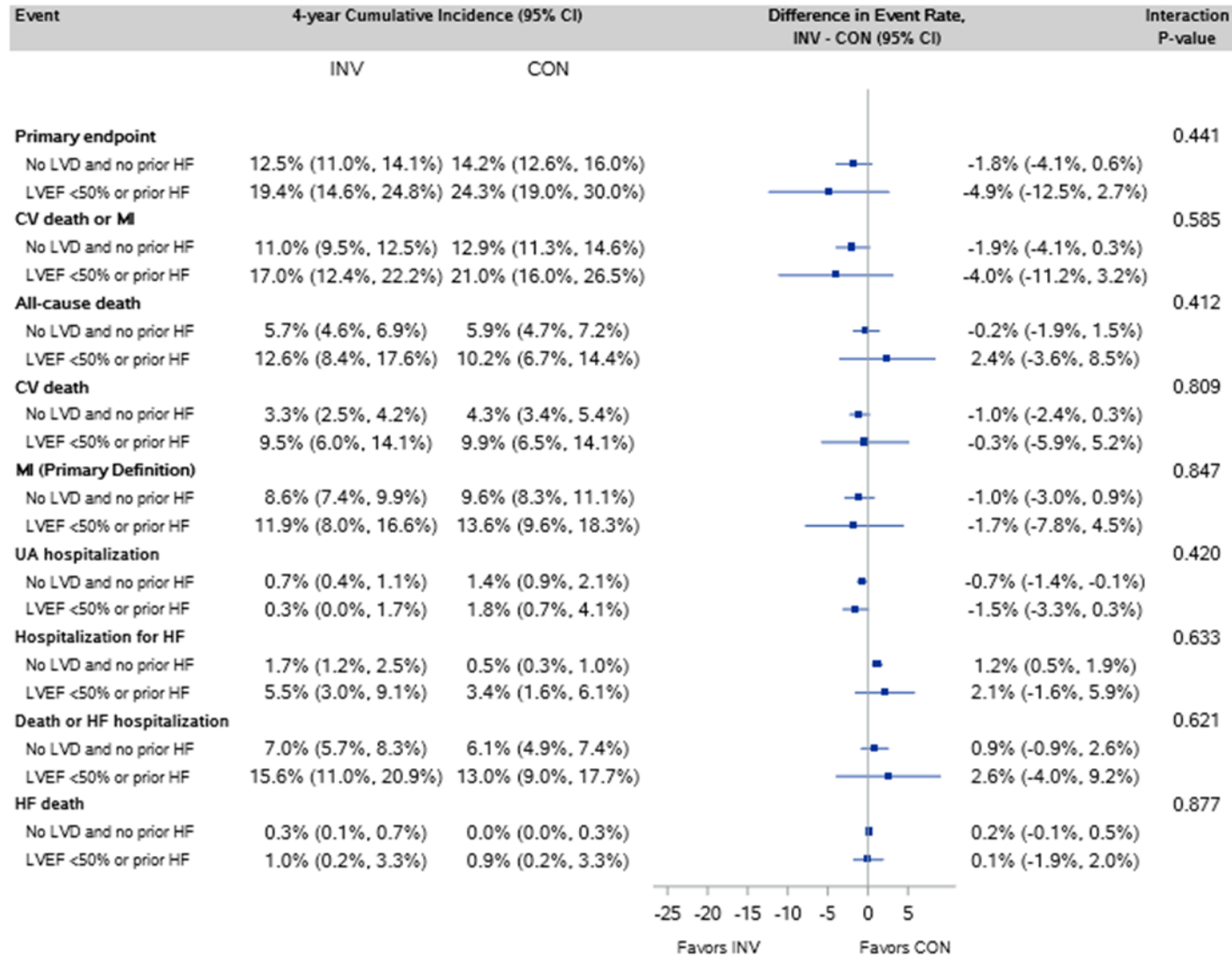
Supplemental Table VI. Cumulative incidence and 95%CI for the primary outcomes according to randomized treatment and history of HF/LVD over time

Cumulative incidence (95% CI) at 1, 2, 3, and 4 years

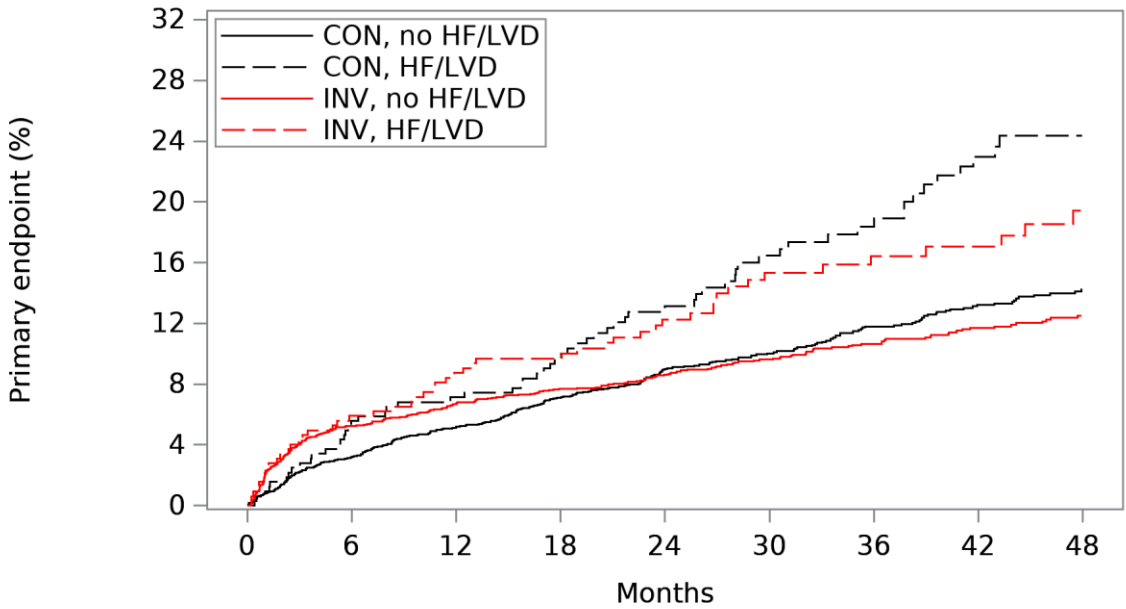
Randomized treatment and history of HF/LVD	1 year	2 years	3 years	4 years
CON, no HF/LVD	5.3% (4.4%, 6.2%)	9.1% (8.0%, 10.4%)	12.0% (10.7%, 13.4%)	14.6% (13.0%, 16.2%)
CON, HF/LVD	7.7% (4.4%, 12.1%)	14.8% (10.0%, 20.5%)	21.6% (15.4%, 28.7%)	29.4% (21.2%, 38.0%)
INV, no HF/LVD	7.1% (6.1%, 8.2%)	8.9% (7.8%, 10.1%)	11.1% (9.8%, 12.5%)	13.0% (11.5%, 14.6%)
INV, HF/LVD	5.6% (3.1%, 9.3%)	10.5% (6.7%, 15.3%)	14.0% (9.4%, 19.6%)	17.2% (11.6%, 23.8%)

2. Supplemental Figures

Supplemental Figure I. Association between randomized treatment and endpoints for patients with and without HF/LVD at baseline using LVEF<50% to define LVD

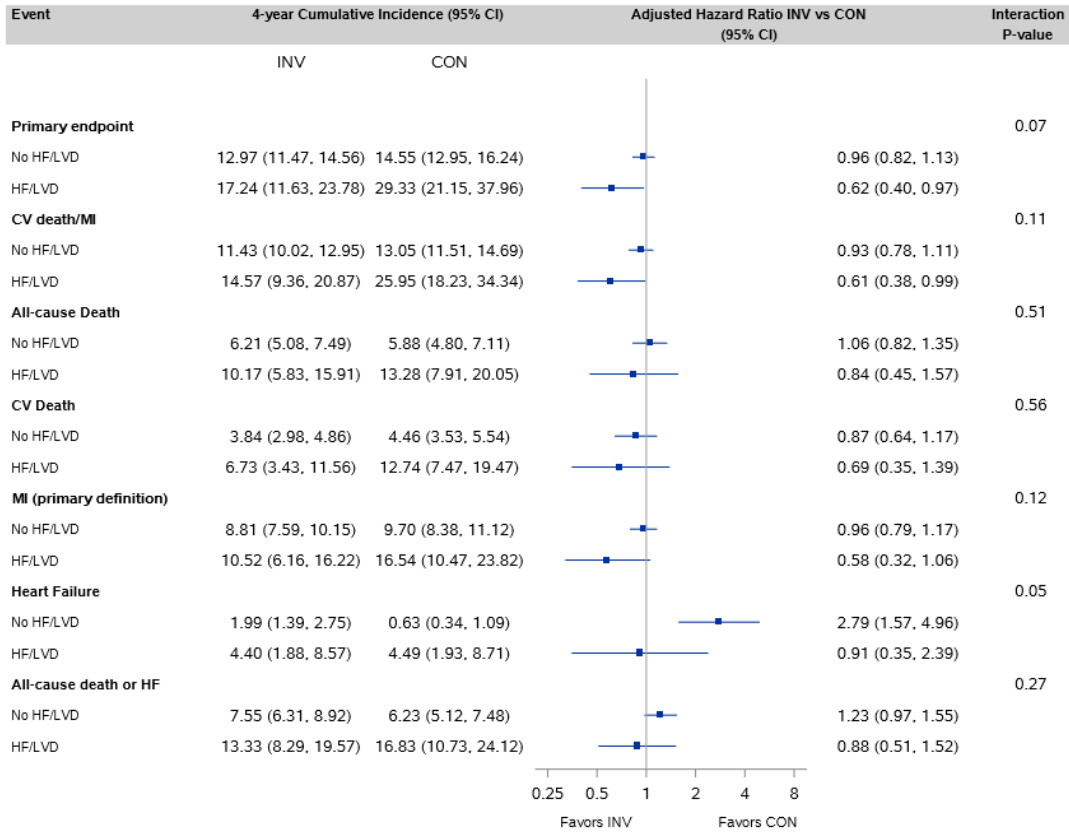


Supplemental Figure II. Cumulative incidence curves for the primary endpoint according to randomized treatment and history of HF/LVD using LVEF<50% to define LVD



	Subjects at Risk								
	0	6	12	18	24	30	36	42	48
CON, no HF/LVD	2244	2158	2112	1974	1657	1362	1128	872	631
CON, HF/LVD	324	306	299	276	232	189	156	119	94
INV, no HF/LVD	2247	2105	2060	1944	1678	1389	1135	877	647
INV, HF/LVD	323	301	288	268	217	179	150	117	84

Supplemental Figure III. Association between randomized treatment and outcomes for patients with and without HF/LVD at baseline based on adjusted proportional hazards regression models



3. Supplemental Statistical Methods

Imputation of LVEF values

For some patients ejection fraction was available in a categorical (35-44, 45-54, 55+) but not continuous form. We used a multiple imputation procedure to convert these patients' categorical ejection fraction values into continuous. The statistical techniques used for multiple imputation include chained equations and predictive mean matching (PMM). The particular algorithm used to implement PMM is Van Buuren's Type 1 matching. For the associations between baseline continuous LVEF and trial endpoints that are reported in supplemental table 4, models were fit in each of the 100 imputed datasets and hazard ratios come from combining the parameter estimates using SAS PROC MIANALYZE. For the figures that use continuous EF, we averaged the LVEF values across the 100 imputed datasets so we would have a single LVEF per person to plot.

Calculating 95% confidence intervals for the differences in the CIF estimates

The CIF and standard errors for each strata were used to calculate confidence limits using the formula: $(CIF_{inv} - CIF_{con}) \pm 1.96 \sqrt{(se_{inv}^2 + se_{con}^2)}$. Standard errors were based on the theory of counting processes³⁰.

Calculation of interaction p-values for the test of differences in CIF differences

The interaction p-values are calculated from unadjusted cumulative incidence rates at 4 years. The chi-square statistic corresponding to the interaction p-value was calculated using matrix algebra as follows:

$$X = (C_2 D)' [C_2 V C_2]^{-1} (C_2 D)$$

where $C_2 = (1 \ -1)$, D is a vector of $CIF_{inv} - CIF_{con}$ differences for those with and without prior HF/LVD, and V is a diagonal covariance matrix.

Reference

30. Aalen, O. Nonparametric Estimation of Partial Transition Probabilities in Multiple Decrement Models. *Annals of Statistics*. 1978;6:534–545.

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Kaatje Goetschalckx

Ann Luyten

Valerie Robesyn

South Australian Health and Medical Research Institute Ltd (SAHMRI) - Australia

Joseph B. Selvanayagam (Country Leader)

Deirdre Murphy

Contract Research Organizations (CROs) for ISCHEMIA Trial

FOCUS Clinical Research Center d.o.o. Belgrade - Serbia

Nevena Garcevic

Jelena Stojkovic

iProcess Global Research Inc. - India

Asker Ahmed

Richa Bhatt

Nitika Chadha*

Vijay Kumar*

Sadath Lubna*

Pushpa Naik

Shruti Pandey*

Karthik Ramasamy*

Mohammed Saleem

Pratiksha Sharma

Hemalata Siddaram*

**past members / past organizations*

***deceased*

II. Site Personnel

Country (No. Randomizations)	Investigator(s)	Study Coordinator(s)	City & State (if applicable)	Institution (No. Randomizations)
*United States (853)				
Country Leader				
David J. Maron, MD				
Regional Leader for VA Sites				
William E. Boden, MD				
	Kreton Mavromatis, MD	John Doan, MD		
	Jason Linefsky, MD	Raven Lee, CCRP	Decatur, GA	Atlanta VA Medical Center (139)
		Risha Patel		
		So Yang Cho		
	Todd D. Miller, MD	Susan Milbrandt	Rochester, MN	Mayo Clinic (50)
		Dawn Shelstad		
	Subhash Banerjee, MD	Preeti Kamath, BDS, MHA, CCRP	Dallas, TX	V.A. North Texas Health Care System (35)
		Ishita Tejani, BDS, MS, MSPH		
	Harmony R. Reynolds, MD	Stanley E. Cobos, BA		
	Jonathan D. Newman, MD, MPH	Kirsten J. Quiles, MS		
	Sripal Bangalore, MD, MHA	Raven R. Dwyer, MPH		
	Robert M. Donnino, MD	Dalisa Espinosa, MBS	New York, NY	NYU Langone Medical Center- Bellevue Hospital (26)
	Lawrence M. Phillips, MD			
	Muhammed Saric, MD, PhD			
	Khaled Abdul-Nour, MD	Allison Schley, BS	Detroit, MI	Henry Ford Health System (21)
		Heather Golden		
		Hermine Osseni, MS		
		Charlene Wiyarand		
	Peter H. Stone, MD	Peter Douglass, BA	Boston, MA	Brigham & Women's Hospital, Harvard Medical School (21)
		Hayley Pomeroy, BA		
		Alexandra Craft, BA		
		Bethany Harvey, BA		
	James J. Jang, MD	Olivia Anaya		
	Gennie Yee, MD	Phoebe Goold, RN	San Jose, CA	Kaiser Permanente San Jose (18)
		Steven Giovannone		
	Steven Weitz, MD	Lori Pritchard, RN	Schenectady, NY	Cardiology Associates of Schenectady P.C. (17)

Suzanne Arnold, MD James Henry O'Keefe, Jr, MD (PI from 2012-2016)	Rosann Gans, RN Paul Kennedy, RN	Kansas City, MO	Saint Luke's Hospital (17)
Michael D. Shapiro, DO	Shobana Ganesan, PhD David Schlichting, LPN Aynun Naher	Portland, OR	Oregon Health & Science University (17)
Mohammad El-Hajjar, MD Mandeep S. Sidhu, MD, MBA Steven A. Fein, MD Mikhail T. Torosoff, MD, PhD Radmila Lyubarova, MD Sulagna Mookherjee, MD Krzysztof Drzymalski, MD Edward O. McFalls, MD, PhD Santiago A. Garcia, MD Stefan C. Bertog, MD Rizwan A. Siddiqui, MD Areef Ishani, MD Ronnell A. Hansen, MD	Wendy L. Stewart, MS Kristin M. Salmi, BS	Albany, NY	Albany Medical Center Hospital (16)
	Debra K. Johnson, RN Rebekah R. Herrmann, RN	Minneapolis, MN	Minneapolis VAMC (15)
Michel Georges Khouri, MD	Kristine Arges Melissa LeFevre Jennifer Tomfohr Kimberly Ann Byrne	Durham, NC	Duke University Medical Center (15)
Jonathan L. Goldberg, MS, MD	Taissa Zappernick	Cleveland, OH	Louis Stokes Cleveland Veterans Affairs Medical Center (14)
Richard Goldweit, MD	Sallie Canada Meghana Kakade Patricia Mieses Stanley E. Cobos, BA Raven R. Dwyer, MPH	Englewood, NJ	Englewood Hospital and Medical Center (13)
Ronny A. Cohen, MD Brooks Mirrer, MD Victor Navarro, MD	Dalisa Espinosa, MBS Kirsten J. Quiles, MS Magdalena Rantinella, BS Jessica Rodriguez, BS	Brooklyn, NY	NYU-HHC Woodhull Hospital (12)

David E. Winchester, MD, MS Marvin Kronenberg, MD Philip Rogal, MD Christopher McFarren, MD	Olivia Mancilla, BS Susan Stinson, RN Terry Weyand Sherron C. Crook	Gainesville, FL Nashville, TN	Malcom Randall VAMC (11) Vanderbilt University Medical Center (11)
John F. Heitner, MD	Jean Ho Saadat Khan Mahmoud Mohamed Mary R. Soltau, RN Delsa K. Rose, RN	Brooklyn, NY	New York - Presbyterian/Brooklyn Methodist Hospital (10)
Ira M. Dauber, MD	Rebecca J. Wimmer, RN Kathy E. Siegel, RN Susan Derbyshire	Littleton, CO	South Denver Cardiology Associates, P.C. (10)
Charles Cannan, MD	Michelle Dixon Gerald Leonard Ciarra Heard, LVN	Portland, OR	Providence Heart and Vascular Institute (10)
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Puja K. Mehta, MD Michael McDaniel, MD Stamatios Lerakis, MD Arshed Quyyumi, MD Nanette K. Wenger, MD Chester M. Hedgepeth, MD, PhD Heather Hurlburt, MD Alan Rosen, MD	Fauzia Rashid, PhD Senait Asier Keyur Patel Jennifer Gillis, APRN	Atlanta, GA	Emory University (9)
Heather Hurlburt, MD Alan Rosen, MD	Megan Manocchia, RN Susan Moore, RN Elizabeth Congdon Gail Brandt	Warwick, RI	Kent Hospital (9)
Zakir Sahul, MD	Nora Marchelletta Kristina Wippler	Ypsilanti, MI	Michigan Heart, PC (9)
David Booth, MD Steve Leung, MD Ahmed Abdel-Latif, MD, PhD Hassan Reda, MD Khaled Ziada, MD	Yvonne Taul, RN Jennifer Isaacs, MS Viktoria Bulkley, RN Caroline Rodgers	Lexington, KY	University of Kentucky (8)

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Rajat S. Barua, MD, PhD	Amarachi Ojajuni Oni Olurinde Kamalakar Surineni	Kansas City, MO	Kansas City VA Medical Center (8)
Fadi Hage, MD Christiano Caldeira, MD James E. Davies, MD Massoud Leesar, MD Jaekyeong Heo, MD Amy Iskandrian, MD Firas Al Solaiman, MD Satinder Singh, MD Khaled Dajani, MD	Badhma Valaiyapathi, MD	Birmingham, AL	UAB Vascular Biology and Hypertension Program (8)
Mohammad El-Hajjar, MD Paul Der Mesropian, MD Joseph Sacco, MD Brian McCandless, MD Marisa Orgera, MD Mandeep S. Sidhu, MD, MBA (2012-2016)	Carol M. Kartje, BSN Michele Rawlins, NP Jennifer Thomson, MA	Maywood, IL Albany, NY	Loyola University Medical Center (8) Samuel Stratton VA Medical Center of Albany NY (7)
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Joseph Hannan, MD Robert Bojar, MD Deepti Kumar, MD John Mukai, MD	Patricia Arsenault, RN Pamela Sigel, RN	Worcester, MA	Saint Vincent Hospital at Worcester Medical Center (7)
Edward T. Martin, MS, MD	Miriam Brooks	Tulsa, OK	Oklahoma Heart Institute (7)
Gabriel Vorobiof, MD	Ladda Douangvila Rubine Gevorgyan Fatima Ranjbaran, RN	Los Angeles, CA	Ronald Reagan UCLA Medical Center (7)
Alec Moorman, MD	Bryn Smith, BS Carly Ohmart	Seattle, WA	University of Washington Medical Center (7)
Scott Kinlay, MBBS, PhD Robert J. Hamburger, MD Thomas P. Rocco, MD Deepak L. Bhatt, MD, MPH Kevin Croce, MD, PhD Jacquelyn A Quin, MD Jati Anumpa, MD Marco Zenati, MD, MSc David P Faxon, MD	Samantha Ly, MA Margot C. Quinn, BA Sara Temiyasathit, PhD Jacquelyn Do, MPH Desiree Tobin, MPH	West Roxbury, MA	VA Boston Healthcare System (6)
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Ashraf Seedhom, MD Lance Sullenberger, MD	Erin Orvis Mandy Murphy, RN	Albany, NY Bethesda, MD	Capital Cardiology Associates (6)

Gregory Kumkumian, MD	Ann Greenberg, RN Margaret Iraola, RN		NIH Heart Center at Suburban Hospital (6)
Steven P. Sedlis, MD			
Robert M. Donnino, MD	Leandro C. Maranan, CCRC	New York, NY	VA New York Harbor Health Care System (6)
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Jacqueline E. Tamis-Holland, MD			
Robert Kornberg, MD	Ammy Malinay, RN	Ridgewood, NJ	Mount Sinai Saint Luke's Hospital (6)
Robert Leber, MD			
Souheil Saba, MD			
Michael W. Lee, MD			
Delano R. Small, MD			
Wassim Nona, MD	Candice P. Edillo, RN	Southfield, MI	Providence - Providence Park Hospital (6)
Patrick B. Alexander, MD			
Iram Rehman, MD			
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Kevin Marzo, MD	Wendy Drewes, RN Dipti Patel, RN	Mineola, NY	NYU Winthrop (5)
Inga H. Robbins, MD			
Howard A. Levite, MD	Jackie M White, RN, BSN CCRC	Pomona, NJ	AtlantiCare Regional Medical Center (5)
Sanjay Shetty, MD	Alison Hallam		
Mayuri Patel, MD			
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Charles Y. Lui, MD			
Brigham R. Smith, MD			
Daniel P. Vezina, MD, MSC			
Lillian L. Khor, MBBCh, MSc	Nona A Eskelson, RN	Salt Lake City, UT	Salt Lake City VA Medical Center (4)
Josephine D. Abraham, MD, MPH			
David A. Bull, MD			
Stephen H. McKellar, MD, MSc			

David Booth, MD	Yvonne Taul, RN		
John Kotter, MD	Caroline Rodgers, RN		
Ahmed Abdel-Latif, MD, PhD	Jennifer Isaacs, MS	Lexington, KY	Lexington VA Medical Center (4)
	Viktoria Bulkley		
Bob Hu, MD	Renee Kaneshiro	Palo Alto, CA	Palo Alto Medical Foundation Research Institute (4)
Arthur J. Labovitz, MD			
Michael Berlowitz, MD	Bonnie J. Kirby, RN, MSN		
Philip Rogal, MD	Nhi N. Tran, MS	Tampa, FL	University of South Florida (4)
Christopher McFarren, MD	Catherine Jahrsdorfer, RN, BSN		
Fadi Matar, MD			
Christiano Caldeira, MD			
David J. Maron, MD			
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William F. Fearon, MD			
Prakash Deedwania, MD	Antonia Vega	Fresno, CA	UCSF - Fresno Community Regional Medical Center (4)
Kiran Reddy, MD	Hugo Bloise-Adames		
	Santa Jimenez		
Joseph Sweeny, MD	Nicole Saint Vrestil	New York, NY	Icahn School of Medicine at Mount Sinai (4)
	Reyna Bhandari		
	Danielle Schade		
Christopher Spizzieri, MD	Roxanne Yost	Camp Hill, PA	Holy Spirit Hospital Cardiovascular Institute (4)
	Paula Beardsley		
Claudia P Hochberg, MD	Denise Fine	Boston, MA	Boston Medical Center (4)
	Jana Tancredi, RN, MA/MSN, CCRN		
	Patricia Arakelian		
William D. Salerno, MD	Susan Mathus	Saddle Brook, NJ	Hackensack University Medical Center (4)
	Deborah O'Neill		
	Joy Burkhardt, CCRP		
	Suellen Hosino, RN, BSN, CCRP		
Ray Wyman, MD		Torrance, CA	Torrance Memorial Medical Center (4)
	Oksana A. Lubyayaya, BA	Santa Ana, CA	Coastal Heart Medical Group (4)
	Jose D. Salas, BS		

Amer Zarka, MD	Maria Aguirre		
Anil V. Shah, MD	Manu Dhawan		
	Diana Parra		
	Tri Tran		
	Catherine Weick, BSRT(R)(VI)		
Thomas Haldis, DO	Katie Fowler-Lehman, BSN	Fargo, ND	Sanford Health (4)
	Natalie Spitzer, BSN		
	Casey Riedberger		
	Catherine Weick		
	Stanley E. Cobos, BA		
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	Kirsten J. Quiles, MS		
	Carrie Drum, RN		
Saket Girotra, MD	Kimberly Miller-Cox, RN	Iowa City, IA	University of Iowa Hospitals and Clinics (4)
	Amy Ollinger, RN		
	Elizabeth Capasso- Gulve		
Omar Almousalli, MD	Alaine Melanie Loehr	Fairview Heights, IL	Advanced Heart Care Group (4)
	Marlowe Mosley		
Mayil S. Krishnam, MD	Shirin Heydari, MS		
Jeffrey C. Milliken, MD	Andrea M. Lundeen, MA		
Pranav M. Patel, MD	Edgar Karanjah, MD		
Arnold H. Seto, MD	Wanda C. Marfori, MD	Orange, CA	University of California Irvine Medical Center (3)
Kevin T. Harley, MD	Eduardo Hernandez- Rangel, MD		
Michael A. Gibson, MD	Pam Singh		
Byron J. Allen, MD			
	Anne Marie Webb, BSN		
Rita Coram, MD	Ellie Fridell, BS	Louisville, KY	University of Louisville (3)
	Heidi Wilson, BS		
Sabu Thomas, MD, MSc	Angela Kim, BS		
Ronald G Schwartz, MD, MS	Patrick Wilmot, BS	Rochester, NY	University of Rochester (3)
Wei Chen, MD, MS			
Mahfouz El Shahawy, MD	Ramona Stevens	Sarasota, FL	Cardiovascular Center of Sarasota (3)
James Stafford, MD	Loriane Black	Baltimore, MD	University of Maryland Medical Center (3)

	Amber B. Hull, RN Olivia J. Lim, RN Helen C. Tucker		
William B. Abernethy, MD	Natasha C. Putnam, RN Linda L. Hall Tia Cauthren Trish Tucker	Asheville, NC	Asheville Cardiology Associates (3)
Andrew Zurick, MD	Hollie Horton Jan Orga	Nashville, TN	Saint Thomas Hospital (3)
Thomas M. Meyer, MD Ronald G. Morford, MD Bruce Rutkin, MD	Joyce R. White, MSN NP-C Cynthia Baumann, RN	Lynchburg, VA	Stroobants Cardiovascular Center (3)
Sabahat Bokhari, MD Seth I. Sokol, MD Jay Meisner, MD Ihab Hamzeh, MD Arunima Misra, MD	Vidya Seeratan Magnolia Jimenez Cidney Schultz, RN Jeanne Russo, RN	Manhasset, NY New York, NY Bronx, NY	Northwell Health - Manhasset (3) Columbia University Medical Center (3) Jacobi Medical Center (3)
Matthew Wall Jr., MD Veronica Lenges De Rosen, MD Mahboob Alam, MD Michael C. Turner, MD Thomas J. Mulhearn, MD	Zohra Huda, RN, BSN, CCRP Araceli Boan Christine R Hinton	Houston, TX Lake Charles, LA	Baylor College of Medicine (3) Cardiovascular Specialists of Southwest Louisiana (3)
Arnold P. Good, MD	Beth A. Archer, BSN, RN Julia S. Dionne, BA Cheryl A. Allardyce, BSN, RN Lindsey N. Sikora, BSN, RN Jennifer H. Czerniak, RN Jennifer A. Mull, MSN, RN Elizabeth Ferguson Frances Laube	Columbus, OH	Ohio Health Grant Medical Center (3)
Nicolas W. Shammass, MD, MS	Gail A Shammass, BSN, RN Lori Christensen Holly Park	Davenport, IA	Midwest Cardiovascular Research Foundation (3)
Robert Chilton, MD	Joan Hecht	San Antonio, TX	Audie Murphy V.A. (2)

Patricia K. Nguyen, MD	Davis Vo, BS James Hirsch	Palo Alto, CA	VA Palo Alto Healthcare System (2)
Matthew Jezior, MD	Jody Bindeman Sara Salkind	Bethesda, MD	Walter Reed National Military Medical Center (2)
Paul C. Gordon, MD Thomas Crain, MD	Dalisa Espinosa, MBS Lori-Ann Desimone, BSN Lina Felix-Stern Jassira Gomes	Providence, RI	Miriam Hospital (2)
Robert Stenberg, MD	Catherine Gordon, BSN Aimee Mann Theresa McCreary	Johnstown, PA	Conemaugh Valley Memorial Hospital (2)
Ronald P. Pedalino, MD	Stanley E. Cobos, BA Raven R. Dwyer, MPH Dalisa Espinosa, MBS Kirsten J. Quiles, MS Stanley E. Cobos, BA	Brooklyn, NY	NYU-HHC Kings County Hospital Center (2)
Joseph Wiesel, MD	Raven R. Dwyer, MPH Dalisa Espinosa, MBS Kirsten J. Quiles, MS Candace Gopaul, BS	Flushing, NY	New York University - Langone Cardiovascular Associates (2)
George J. Juang, MD	Karen Hultberg Tauqir Huk Afshan Hussain Yesenia Zambrano, BS	Brooklyn, NY	Coney Island Hospital (2)
Mohammed Al-Amoodi, MD	Sarah Medina Rodriguez Trudie Milner	Yuma, AZ	Yuma Regional Medical Center (2)
David Wohns, MD	Abbey Mulder, RN Stacie Van Oosterhout, MEd	Grand Rapids, MI	Spectrum Health (2)
Ellis W. Lader, MD	Martha Meyer, RN, MSN Nancy L. Clapp, RN, BA, CCRC	Kingston, NY	Mid Valley Cardiology (1)
Michael Mumma, MD	Heather Barrentine Jenne M. Jose, PA	Sarasota, FL	Sarasota Memorial Hospital (1)
Lekshmi Dharmarajan, MD	Stanley E. Cobos, BA Raven R. Dwyer, MPH Dalisa Espinosa, MBS Kirsten J. Quiles, MS Jenne Manchery	Bronx, NY	NYU-HHC Lincoln Medical and Mental Health Center (1)

Joseph F.X. McGarvey Jr, MD	Vera McKinney, RN Linda Schwarz, RN Scott M. Kaczowski	Doylestown, PA	Doylestown Health Cardiology (1)
Thomas R. Downes, MD (till Dec. 2016)			
Gary J. Luckasen, MD (from Dec. 2016)	Adam J. Jaskowiak	Loveland, CO	Medical Center of the Rockies (1)
	Joel Klitch		
Benjamin Cheong, MD	Debra Dees	Houston, TX	Baylor St. Luke's Medical Center (1)
Srinivasa Potluri, MD	Precilia Vasquez	Plano, TX	Baylor Research Institute at Legacy Heart Center (1) **
Ronald A. Mastouri, MD			
Jeffery A. Breall, MD, PhD	Elise L. Hannemann, RN,CCRC	Indianapolis, IN	Indiana University/Krannert Institute of Cardiology (1)
George E. Revtyak, MD	Judy Mae Foltz, RN,CCRC		
Jonathan W. Bazeley, MD	Emily DeRosa		
Dayuan Li, MD	Beth Jorgenson Joyce Riestenberg-Smith	St. Paul, MN	HealthEast Saint Joseph's Hospital (1)
Kenneth Giedd, MD		New York, NY	Beth Israel Medical Center (1)
Wayne Old, MD	Rebecca Bariciano	Chesapeake, VA	Cardiovascular Associates, Ltd. (1)
Francis Burt, MD		Bethlehem, PA	Saint Luke's Hospital and Health Network (1)
Kozhaya Sokhon, MD	Jessica Waldron Michelle Mayon	Sugar land, TX	Medicus Alliance Clinical Research Org., Inc. (1)
Deepika Gopal, MD		Plano, TX	The Heart Hospital Baylor (1)
Uma S. Valeti, MD	Gretchen Ann Peichel, RN Brandy Starks	Minneapolis, MN	University of Minnesota (1)
Jon Kobashigawa, MD	Lucilla Garcia Maria Thottam	Beverly Hills, CA	Cedars Sinai Medical Center (1)

India (941)
Country Leader
Balram Bhargava, DM

	Anjali Anand, MSc		
Sajeev Chakanalil Govindan, MD, DNB, DM, PhD	Janitha Raj, B.Tech	Calicut	Government Medical College (208)
Rajesh Gopalan Nair, MD, DNB, DM	Reshma Ravindran, MSc		

Cholenahally Nanjappa Manjunath, MD, DM	Rajalekshmi VS, MSc, MScCRRA Nandita Nataraj, BE(Biotech) PGDICRCDM	Bangalore	Sri Jayadeva Institute of Cardiovascular Sciences and Research (149)
Nagaraja Moorthy, MD, DM	Soundarya Nayak, BE(Biotech) PGDICRCDM		
Satvic Cholenahally Manjunath, MD,DM	Mahevamma Mylarappa, GNM (General Nursing)		
Suryaprakash Narayanappa, MBBS Neeraj Pandit, MD, DM	Sheromani Bajaj	New Delhi	Dr Ram Manohar Lohia Hospital (101)
Ranjit Kumar Nath, MD, DM	Vandana Yadav, Msc,PGDACR Girish Mishra, Msc, PGDACR		
S.K. Dwivedi, DM V.S. Narain, DM Sharad Chandra, DM	Roma Tewari, PG Meenakshi Mishra, PG Shivali Patel	Lucknow	King George's Medical University, Department of Cardiology (100)
Gurpreet S. Wander, DM Rohit Tandon, MD	Suman Singh, PG		
Sarju Ralhan, M.Ch (CTVS) Naved Aslam, DM	Baljeet Kaur, MSc (Biotechnology) Sonika Gupta , MBA, B. Pharmacy	Ludhiana	Hero DMC Heart Institute, Dayanand Medical College and Hospital (83)
Abhishek Goyal, DM Balram Bhargava, DM G.Karthikeyan, DM S.Ramakrishnan, DM Sandeep Seth, DM Rakesh Yadav, DM Sandeep Singh, DM	Chandini Suvarna, BDS	New Delhi	All India Institute Of Medical Sciences (67)
Ambuj Roy, DM Neeraj Parakh, DM Sunil Kumar Verma, DM Rajiv Narang, DM Sundeep Mishra, DM Nitish Naik, DM Gautam Sharma, DM			

Shiv Kumar Choudhary, M.Ch Chetan Patel, DNB Gurpreet Gulati, MD Sanjeev Sharma, MD V K Bahl, DM Anoop Mathew, MD	Binoy Mannekkattukudy Kurian	Kolenchery	MOSC Medical College Hospital (39)
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Santhosh Satheesh, MBBS, MD, DM	R. J. Vindhya, B.Sc. (Bio-Technology), MSc(Bio-Informatics)	Pondicherry	Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER) (31)
Atul Mathur, MD Upendra Kaul, MD	Peeyush Jain, MD Ashok Seth, MD Zile Singh Meharwal, MD Atul Verma, MD Mona Bhatia, MD Ankush Sachdeva, MD Thounaojam Indira Devi, RN Nungshi Jungla, RN	New Delhi	Fortis Escort Heart Institute (31)
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Robert Mao, MD, DM Hilda Solomon, PhD Sudhir Naik, MD, DM Sajeeda Parveen Khan, MBBS, (Dip.Card)	Ramakrishnan T., B.Tech(Biotechnology) Rajesh Francis, MSc(Clinical Research) Vamshi Priya P., MSc	Chennai Hyderabad	Apollo Research and Innovation (23) Apollo Research & Innovations (13)

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Purvez Grant, MD	Shweta Hande, BHMS, PGDCR Poonam Sonawane, B.ScMicrobiology, ACCR Abhishek Dubey	Pune	Ruby Hall Clinic, Grant Medical Foundation (10)
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Ajit Kumar VK, MD, DM Sanjay Ganapathi, MD, DM Jayakumar K, MS, M.Ch Harikrishnan Sivadasanpillai, MD, DM Bijulal Sasidharan, MD, DM Kapilamoorthy TR, MD	Vineeth CP Manas Chacko, RN Suresh Babu	Trivandrum	Sree Chitra Tirunal Institute for Medical Sciences and Technology (3)
Johann Christopher, MD Praneeth Polamuri, MD	Sowjanya Reddy Manjula Rani	Hyderabad	CARE Hospital (3)
Upendra Kaul, MD	Priyadarshani Arambam Bebek Singh	New Delhi	Batra Hospital and Medical Research Centre (BHMRC) (3)

United Kingdom (539)

Country Leaders

Roxy Senior, MBBS, MD, DM

Keith AA Fox, MBChB
(past)

Country Coordinators

Grace M. Young , MSc, BSc (Hons)

Kathryn Carruthers
(past)

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Ahmed Elghamaz, MB BCh
Sothinathan Gurunathan, MBChB
Nikolaos Karogiannis, MBBS
Benoy N Shah, MD, MBBS, BSc (Hons)
Richard HJ Trimlett, MBBS, CCST

Grace M. Young , MSc, BSc (Hons)
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Reto Andreas Gamma, MBBS	Sarah Williams, RN Kim Holland, RN Karen Swan, RN	Chelmsford	Broomfield Hospital (39)
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	Eric Nicolle, MD	Sarah Hadjih	Corbeil-Essonnes Cedex	Centre Hospitalier Sud Francilien (2)
	Pascal Goube, MD	Patricia Brito		
	Gilles Barone-Rochette, MD	Gilles Barone-Rochette	Grenoble	Grenoble University Hospital (2)
	Alain Furber, MD	Charles Cornet, MD, PhD		
	Loïc Bière, MD	Jeremy Rautureau, MD, PhD	Angers Cedex 9	Centre Hospitalier Universitaire d'Angers (1)
Lithuania (39)		Agne Juceviciene, MD		
		Irma Kalibataite-Rutkauskiene, MD		
		Laura Keinaite		
	Aleksandras Laucevicius, MD	Monika Laukyte		
	Jelena Celutkiene, MD	Gelmina Mikolaitiene	Vilnius	Vilnius University Hospital Santariskes Clinic (39)
		Akvile Smigelskaite, MD		
		Ilona Tamasauskiene, MD		
		Agne Urboniene, MD		
*Netherlands (37)				
	Elvin Kedhi MD, PhD			
	Jorik Timmer, MD	Ilse Bouwhuis		
	Rik Hermanides, MD	Lia Nijmeijer	Zwolle	Isala Klinieken (25)
	Eliza Kaplan, MD			
	Robert K. Riezebos, MD, PhD			
	Pouneh Samadi, MD	Jeannette, J. M. Schoep, RN	Amsterdam	Cardio Research Hartcentrum OLVG (11)

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Country Leader				
Rafael Diaz, MD (<i>past</i>)				
	Luis Guzman, MD	Veronica Tinnirello	Cordoba	Instituto Medico DAMIC (11)
	Julio César Figal, MD			
	Oscar Méndiz, MD			
	Claudia Cortés, MD	Matías Nicolás Mungo	Ciudad Autonoma de Buenos Aires	Fundación Favaloro (10)
	Roberto René Favaloro, MD			
	Carlos Alvarez, MD	Marina Garcia	Bahia Blanca	Hospital Italiano Regional del Sur Bahia Blanca (3)
	Javier Courtis, MD			
	Gabriela Zeballos, MD	Valeria Godoy	Cordoba	Clinica Romagosa and Clinica De La Familia (2)
	Lilia Schiavi, MD	Maria Victoria Actis	Cordoba	Clinica Del Prado (2)
	Mariano Rubio, MD	Graciela Scaro, MD	Cordoba	Clínica Privada Vélez Sarsfield (1)
*New Zealand (28)				
Country Leader				
Harvey D. White, DSc				
Country Coordinator				
Caroline Alswailer				
	Gerard Patrick Devlin, MD	Liz Low, RN		
	Raewyn Fisher, MD	Jayne Scales, RN	Hamilton	Waikato Hospital (22)
		Kirsty Abercrombie, RN		
	Ralph Alan Huston Stewart, MB,ChB, MD			
	Harvey D. White, DSc	Leah Howell , RN		
	Jocelyne Benatar, MD	Cathrine Patten, RN	Auckland	Auckland City Hospital (6)
*Macedonia (28)				
	Sasko Kedev, MD, PhD		Skopje	University Clinic of Cardiology (28)
	Irena Peovska Mitevaska, MD, PhD			

	Elizabetha Srbinovska Kostovska, MD, PhD			
	Hristo Pejkov, MD, PhD			
*Sweden (23)				
Country Leader				
Claes Held, MD, PhD				
	Claes Held, MD, PhD			
	Kai Eggers, MD, PHhD			
	Gunnar Frostfelt, MD, PhD	Christina Björklund, RN		
	Nina Johnston, MD, PhD	Maria Andreasson, RN	Uppsala	Uppsala University (18)
	Maciej Olsowka, MD	Marie Essermark, RN		
	Axel Åkerblom, MD, PhD			
	Inga Soveri, MD, PhD			
	Johannes Aspberg, MD	Liselotte Persson	Stockholm	Karolinska Institutet at Danderyd Hospital (5)
Israel (15)				
Country Leaders				
Rafael Beyar, MD, MD, DSc, MPH				
Tali Sharir, MD				
Country Coordinator				
Eugenia Nikolsky, MD				
	Tali Sharir, MD			
	Dan Elian, MD	Or Harel, MA	Tel-Aviv	Assuta Medical Centers (9)
	Arthur Kerner, MD	Margalit Bentzvi		
	Samia Massalha, MD	Ludmila Helmer	Haifa	Rambam Medical Center (6)
Japan (14)				
Country Leader				
Shun Kohsaka, MD				
	Keiichi Fukuda, MD, PhD	Ikuko Ueda, PhD		
	Shun Kohsaka, MD	Jun Fujita, MD	Shinjuku-ku	Keio University (7)
	Satoshi Yasuda, MD, PhD	Akemi Furukawa, RN		
		Kanae Hirase, RN	Suita-shi	National Cerebral and Cardiovascular

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*Belgium (7)	Shigeyuki Nishimura, MD			
Country Leader				
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Kaatje Goetschalckx, MD				
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	Yueh-Hung Lin, MD			
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	Hani Najm, MD Ali Alghamdi, MD			
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Thailand (3)				
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		Warangkana Mekara, RN Supap Kulthawong, RN Anong Amaritakomol, RN	Chiang Mai	Maharaj Nakorn Chiang Mai Hospital (2)
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Hafidz Abd Hadi,
MD
Shaiful Azmi
Yahaya, MD

Nor Asiah Basri, RN
Irni Yusnida, RN
Humayrah Hashim

** Countries participated in Economics Quality of Life (EQoL) Questionnaires*

***This site received one participant in transfer that was randomized at another site*

