

Supplemental Material

Supplemental Table 1: Demographics of Stratification Cohort

Characteristic	Statistic	Decile 1 (N=238)	Decile 2 (N=239)	Decile 3 (N=239)	Decile 4 (N=239)	Decile 5 (N=239)	Decile 6 (N=238)	Decile 7 (N=239)	Decile 8 (N=239)	Decile 9 (N=239)	Decile 10 (N=238)
Propensity of Receiving S-ICD	Mean ± SD	0.05 ± 0.01	0.09 ± 0.01	0.11 ± 0.01	0.15 ± 0.01	0.18 ± 0.01	0.24 ± 0.02	0.33 ± 0.03	0.49 ± 0.06	0.69 ± 0.05	0.83 ± 0.04
Device	% - S-ICD	4.2%	13.0%	10.5%	14.6%	16.3%	21.4%	35.6%	50.2%	66.5%	84.0%
	% - DDD TV-ICD	41.2%	28.5%	24.3%	28.0%	20.1%	26.5%	24.3%	18.4%	14.2%	4.2%
	% - VVI TV-ICD	54.6%	58.6%	65.3%	57.3%	63.6%	52.1%	40.2%	31.4%	19.2%	11.8%
Age (years)	Mean ± SD	71 ± 8	70 ± 8	66 ± 8	63 ± 8	61 ± 10	57 ± 10	57 ± 11	53 ± 11	45 ± 11	32 ± 10
BMI (kg/m ²)	Mean ± SD	28 ± 5	28 ± 5	28 ± 5	29 ± 6	28 ± 6	28 ± 6	28 ± 5	28 ± 5	27 ± 6	26 ± 5
LVEF (%)	Mean ± SD	32.9 ± 10.3	30.2 ± 9.5	31.1 ± 11.1	30.9 ± 10.6	30.9 ± 11.0	31.1 ± 11.9	35.4 ± 14.9	43.0 ± 16.8	54.7 ± 15.6	56.5 ± 13.5
QRS (ms)	Mean ± SD	117 ± 27	113 ± 26	111 ± 23	110 ± 23	109 ± 28	108 ± 22	105 ± 22	104 ± 19	104 ± 32	100 ± 19
Female	%	10.5%	13.4%	16.7%	12.6%	15.9%	16.4%	23.0%	27.6%	33.9%	35.7%
Primary Prevention	%	34.0%	69.9%	71.1%	74.1%	75.3%	78.6%	75.3%	64.9%	55.6%	79.4%
Hypertension	%	94.5%	87.9%	81.2%	66.9%	54.0%	42.0%	46.0%	35.1%	14.2%	0.8%
AF	%	19.3%	23.4%	24.3%	20.5%	25.1%	19.7%	23.4%	16.7%	12.6%	8.0%
Stroke/TIA	%	13.4%	13.8%	12.1%	10.9%	9.2%	4.6%	5.4%	6.7%	1.3%	2.5%
Diabetes	%	50.8%	41.8%	30.1%	32.6%	23.4%	16.8%	17.6%	8.8%	3.3%	0.4%
Heart Failure	%	96.6%	84.9%	78.2%	74.9%	67.4%	53.4%	34.7%	16.3%	4.6%	0.4%
NYHA	% - I	21.0%	13.0%	7.5%	9.2%	8.8%	6.7%	1.7%	3.3%	1.7%	0.0%
	% - II	59.7%	50.2%	46.0%	44.4%	36.8%	30.7%	20.1%	8.8%	1.7%	0.0%
	% - III	14.7%	21.3%	23.8%	19.2%	20.9%	16.0%	12.6%	4.2%	1.3%	0.4%
	% - IV	1.3%	0.4%	0.8%	2.1%	0.8%	0.0%	0.4%	0.0%	0.0%	0.0%
	% - None	3.4%	15.1%	21.8%	25.1%	32.6%	46.6%	65.3%	83.7%	95.4%	99.6%
CABG	%	34.0%	40.2%	23.8%	22.2%	19.7%	13.9%	10.5%	3.8%	0.0%	0.0%
Impaired Renal Function	%	19.7%	20.1%	20.1%	23.0%	21.8%	10.5%	10.9%	6.7%	1.7%	0.0%
Ischemic	%	71.0%	79.5%	79.1%	82.0%	78.7%	74.4%	63.6%	31.4%	4.2%	0.0%
Non-Ischemic Diagnosis	% - Channelopathy	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	2.9%	12.6%	29.7%	37.4%
	% - Dilated Cardiomyopathy	29.0%	20.1%	20.9%	16.3%	18.0%	20.2%	10.0%	7.9%	0.8%	0.0%
	% - Hypertrophic Cardiomyopathy	0.0%	0.4%	0.0%	0.0%	1.3%	2.5%	5.4%	18.0%	26.8%	18.9%
	% - Other	0.0%	0.0%	0.0%	1.7%	2.1%	2.1%	18.0%	30.1%	38.5%	43.7%

Supplemental Table 2: Detailed breakdown of complications types in the 1:1 propensity score matched cohort

Category	S-ICD n=391			TV-ICD n=391		
	Patients with events	Freedom from events (%)	95% CI (%)	Patients with events	Freedom from events (%)	95% CI (%)
All Events	34	91.0%	(87.7%, 93.5%)	25	93.5%	(90.6%, 95.6%)
Pocket	14	96.2%	(93.7%, 97.8%)	7	98.2%	(96.2%, 99.1%)
Discomfort	4	99.0%	(97.3%, 99.6%)	3	99.2%	(97.6%, 99.8%)
Erosion	9	97.4%	(95.1%, 98.7%)	1	99.7%	(98.2%, 100.0%)
Hematoma / Hemorrhage	2	99.5%	(98.0%, 99.9%)	3	99.2%	(97.6%, 99.7%)
Migration / PG Movement	1	99.7%	(98.2%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Seroma	0	100.0%	(100.0%, 100.0%)	1	99.7%	(98.2%, 100.0%)
Lead	1	99.7%	(98.2%, 100.0%)	9	97.7%	(95.6%, 98.8%)
Dislodgment / Unable to Capture - RV, Electrode Movement	1	99.7%	(98.2%, 100.0%)	7	98.2%	(96.3%, 99.1%)
Dislodgment / Unable to capture – RA	0	100.0%	(100.0%, 100.0%)	1	99.7%	(98.2%, 100.0%)
Elevated threshold - RV	0	100.0%	(100.0%, 100.0%)	1	99.7%	(98.1%, 100.0%)
Other Lead	0	100.0%	(100.0%, 100.0%)	1	99.7%	(98.2%, 100.0%)
Infection	10	97.4%	(95.3%, 98.6%)	2	99.5%	(98.0%, 99.9%)
Incision/Superficial Infection	2	99.5%	(98.0%, 99.9%)	0	100.0%	(100.0%, 100.0%)
Post-surgical / PG System Infection	9	97.7%	(95.6%, 98.8%)	2	99.5%	(98.0%, 99.9%)
Implant	7	98.2%	(96.3%, 99.1%)	4	99.0%	(97.3%, 99.6%)
Myocardial perforation with tamponade	0	100.0%	(100.0%, 100.0%)	1	99.7%	(98.2%, 100.0%)
Pneumothorax - Procedure	0	100.0%	(100.0%, 100.0%)	1	99.7%	(98.2%, 100.0%)
Sub-optimal PG and/or electrode position	5	98.7%	(96.9%, 99.5%)	0	100.0%	(100.0%, 100.0%)

Thromboembolic events	0	100.0%	(100.0%, 100.0%)	1	99.7%	(98.2%, 100.0%)
Unable to Convert	2	99.5%	(98.0%, 99.9%)	1	99.7%	(98.2%, 100.0%)
Inappropriate Shock	3	99.0%	(96.9%, 99.7%)	2	99.5%	(97.9%, 99.9%)
Inappropriate tachy therapy - Cardiac Oversensing	2	99.3%	(97.1%, 99.8%)	0	100.0%	(100.0%, 100.0%)
Inappropriate tachy therapy - Noise / Non-Cardiac	1	99.7%	(98.2%, 100.0%)	1	99.7%	(98.2%, 100.0%)
Inappropriate tachy therapy - SVT	0	100.0%	(100.0%, 100.0%)	1	99.7%	(98.2%, 100.0%)
PG System	1	99.7%	(98.0%, 100.0%)	3	99.2%	(97.5%, 99.7%)
Other - PG system	0	100.0%	(100.0%, 100.0%)	2	99.5%	(98.0%, 99.9%)
Premature Battery Depletion	0	100.0%	(100.0%, 100.0%)	1	99.7%	(97.8%, 100.0%)
Programmer / Software Error code / Inability to Communicate	1	99.7%	(98.0%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Other	1	99.7%	(98.2%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Near Syncope/Dizziness/Shortness of Breath/Confusion	1	99.7%	(98.2%, 100.0%)	0	100.0%	(100.0%, 100.0%)

Supplemental Table 3: Detailed breakdown of complications types in stratification cohort

Category	S-ICD n=798			TV-ICD n=1644		
	Patients with events	Freedom from events (%)	95% CI (%)	Patients with events	Freedom from events (%)	95% CI (%)
All events	41	94.7%	(84.9%, 98.0%)	105	93.5%	(87.3%, 96.5%)
Pocket	18	97.7%	(91.1%, 99.4%)	7	99.6%	(97.8%, 99.9%)
Discomfort	6	99.1%	(94.5%, 99.8%)	0	100.0%	(100.0%, 100.0%)
Erosion	11	98.6%	(94.6%, 99.6%)	4	99.7%	(98.2%, 100.0%)
Hematoma / Hemorrhage	0	100.0%	(100.0%, 100.0%)	1	100.0%	(99.7%, 100.0%)
Migration / PG Movement	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.3%, 100.0%)
Seroma	1	100.0%	(99.7%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Lead	0	100.0%	(100.0%, 100.0%)	52	96.7%	(91.2%, 98.6%)
Conductor coil fracture - RV	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.1%, 100.0%)
Dislodgment / Unable to Capture - RV, Electrode Movement	0	100.0%	(100.0%, 100.0%)	24	98.4%	(93.9%, 99.5%)
Dislodgment / Unable to capture - RA	0	100.0%	(100.0%, 100.0%)	11	99.2%	(95.7%, 99.8%)
Electrode damaged - RV	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.2%, 100.0%)
Elevated DFT - Defibrillation	0	100.0%	(100.0%, 100.0%)	1	100.0%	(99.7%, 100.0%)
Elevated threshold - RA	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.5%, 100.0%)
Elevated threshold - RV	0	100.0%	(100.0%, 100.0%)	6	99.6%	(97.4%, 99.9%)
Impedance < 300 ohms - RV	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.5%, 100.0%)
Impedance > 2000 ohms - RV	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.3%, 100.0%)

	S-ICD n=798			TV-ICD n=1644		
Category	Patients with events	Freedom from events (%)	95% CI (%)	Patients with events	Freedom from events (%)	95% CI (%)
Insulation breach - RV	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.1%, 100.0%)
Other Lead	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.5%, 100.0%)
Infection	5	99.7%	(98.5%, 99.9%)	11	99.3%	(96.6%, 99.9%)
Incision/Superficial Infection	5	99.7%	(98.5%, 99.9%)	0	100.0%	(100.0%, 100.0%)
Post-surgical / PG System Infection	0	100.0%	(100.0%, 100.0%)	9	99.4%	(96.7%, 99.9%)
Systemic infection	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.2%, 100.0%)
Implant	7	99.0%	(94.0%, 99.8%)	30	98.4%	(95.3%, 99.4%)
Bleeding (Procedure related)	1	99.7%	(98.3%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Distal thromboemboli	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.6%, 100.0%)
Myocardial perforation post-implant - RV	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.6%, 100.0%)
Myocardial perforation with tamponade	0	100.0%	(100.0%, 100.0%)	3	99.9%	(99.0%, 100.0%)
Nerve Damage (Procedure related)	1	99.9%	(99.4%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Pericardial effusion	0	100.0%	(100.0%, 100.0%)	4	99.8%	(98.9%, 100.0%)
Peripheral vascular disease	0	100.0%	(100.0%, 100.0%)	1	100.0%	(99.7%, 100.0%)
Pleural effusion - Procedure	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.5%, 100.0%)
Pneumothorax - Procedure	0	100.0%	(100.0%, 100.0%)	10	99.5%	(97.2%, 99.9%)
Post-surgical pocket hemorrhage	0	100.0%	(100.0%, 100.0%)	3	99.9%	(99.3%, 100.0%)
Pulmonary	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.6%, 100.0%)
Respiratory Failure (Procedure related)	1	99.9%	(99.2%, 100.0%)	0	100.0%	(100.0%, 100.0%)

	S-ICD n=798			TV-ICD n=1644		
Category	Patients with events	Freedom from events (%)	95% CI (%)	Patients with events	Freedom from events (%)	95% CI (%)
Sub-optimal PG and/or electrode position	4	99.5%	(96.7%, 99.9%)	0	100.0%	(100.0%, 100.0%)
Thromboembolic events	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.2%, 100.0%)
Unable to Convert	0	100.0%	(100.0%, 100.0%)	3	99.8%	(98.7%, 100.0%)
Inappropriate Shock	7	98.7%	(92.5%, 99.8%)	1	99.9%	(99.6%, 100.0%)
Inappropriate tachy therapy - Cardiac Oversensing	5	98.8%	(92.5%, 99.8%)	0	100.0%	(100.0%, 100.0%)
Inappropriate tachy therapy - Noise / Non-Cardiac	1	100.0%	(99.7%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Inappropriate tachy therapy - Other	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.6%, 100.0%)
Inappropriate tachy therapy - SVT	1	99.9%	(99.6%, 100.0%)	0	100.0%	(100.0%, 100.0%)
PG System	3	99.8%	(98.9%, 100.0%)	11	99.2%	(95.5%, 99.9%)
Adverse drug reaction	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.4%, 100.0%)
Other - PG system	0	100.0%	(100.0%, 100.0%)	6	99.5%	(96.9%, 99.9%)
Premature Battery Depletion	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.6%, 100.0%)
Programmer / Software Error code / Inability to Communicate	3	99.8%	(98.9%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Undersensing - Defibrillation lead	0	100.0%	(100.0%, 100.0%)	2	99.9%	(99.6%, 100.0%)
Undersensing - RA	0	100.0%	(100.0%, 100.0%)	1	100.0%	(99.7%, 100.0%)
Other	2	99.7%	(98.2%, 100.0%)	1	99.9%	(99.6%, 100.0%)
Near Syncope/Dizziness/Shortness of Breath/Confusion	1	99.9%	(99.2%, 100.0%)	0	100.0%	(100.0%, 100.0%)

	S-ICD n=798			TV-ICD n=1644		
Category	Patients with events	Freedom from events (%)	95% CI (%)	Patients with events	Freedom from events (%)	95% CI (%)
Other: Cardiac not related to the S-ICD System	1	99.9%	(99.0%, 100.0%)	0	100.0%	(100.0%, 100.0%)
Pericardial effusion - Unrelated to procedure	0	100.0%	(100.0%, 100.0%)	1	99.9%	(99.6%, 100.0%)

Supplemental Figure 1: Incidence of all-cause shock: matched patients

