**WILL ALTERNATE VECTORS YIELD ADDITIONAL INFORMATION WHEN MEASURING INTRATHORACIC IMPEDANCE**

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Objective: Compare intrathoracic impedance using alternate vectors.

Background: Some CRT-D devices (Medtronic Inc.) have the capability of measuring intrathoracic impedance. Serial negative deflections in impedance measurements sufficient to cause a fluid index (FI) crossing may be an indicator of congestion. Current devices utilize a right ventricular (RV) coil to Can vector. Whether alternate impedance vectors would enhance this diagnostic capability has not been studied. This study examined the correlation between RV coil to Can and left ventricular lead (LV) tip to Can vectors to determine if the diagnostic performance of the OptiVol (Medtronic, Inc.) algorithm might be enhanced utilizing an alternate vector.

Methods: Seventy-one CRT-D patients (age: 69.7±9.9 years, 30% women) previously implanted with an OptiVol enhanced device received a software download allowing simultaneous impedance measurements across RV coil to Can and LV tip to Can vectors. Measurements were made every 20 min from 12 noon to 5 PM and every two hours outside this duration.

Results: Approximately 293 patient-months of data were available for analysis. The mean impedance of LV tip to Can vector (45.74±7.75 Ω) was lower than that of RV coil to Can vector (71.31+/-8.82 Ω)(p<0.05). The two vectors were highly correlated (r=0.88±0.05, range: 0.73-0.98).

Conclusion: The RV coil to Can and LV tip to Can impedance vectors are highly correlated. Thus, a multi-vector impedance system incorporating an LV vector is unlikely to yield better performance than a single RV coil to Can vector.