

## Left Atrial Volume and the Benefit of Cardiac Resynchronization Therapy in MADIT-CRT

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### **Background:**

Left atrial volume (LAV) is a reliable predictor of outcomes in congestive heart failure (CHF). We evaluated the relation between LAV and clinical outcomes in mildly symptomatic HF patients randomized to cardiac resynchronization therapy with a defibrillator (CRT-D) or defibrillator-only in MADIT-CRT

### **Methods:**

The benefit of CRT-D vs. defibrillator-only therapy in reducing the risk of HF or death was assessed by LAV index ([LAVi] dichotomized at the upper quartile of  $>52$  ml/m<sup>2</sup> among 1,785 patients enrolled in MADIT-CRT. Landmark analysis was employed to evaluate the relation between LAVi response to CRT-D and subsequent clinical outcomes.

### **Results:**

Multivariate analysis showed that patients with high LAVi ( $>52$  ml/m<sup>2</sup>) experienced a 63% increased risk for HF or death ( $p<0.01$ ) and a pronounced 59% ( $p=0.02$ ) increase in the risk of death as compared with patients with lower LAVi. This risk remained independent after adjustment for LVESV. CRT-D similarly benefitted patients with both high and low LAVi, and induced a significant reductions in LAVi compared with ICD-only therapy (-28% and -10%, respectively;  $p<0.001$ ). Landmark analysis showed that LAV responders to CRT-D (defined as  $>25\%$  reductions in LAVi at 1-year) experienced a significant lower risk of subsequent HF or death compared with both ICD-only patients and LAV non-responders to the device (Figure), independent of the CRT-D induced changes on LVESV.

### **Conclusions:**

LAV is an independent predictor of prognosis in patients with mild HF treated with CRT-D. CRT-D exerts pronounced reverse remodeling effects on the LA that are associated with improved subsequent outcome.

Cumulative Probability of Heart Failure or Death Following the 12-month Echocardiography Stratified by dichotomized LAV response to CRT

