



## CLINICAL TRIAL HIGHLIGHTS

a therapy report. The intervention arm (Group 2; n=1438) included patients who were implanted after the first therapy report was delivered, with time to first all-cause shock as the primary endpoint.

The study found that 381 patients experienced at least one shock event: 265 occurred in Group 1 and 116 in Group 2. Patients in Group 2 had a 27% relative risk reduction in all-cause shock episodes as compared with Group 1 (HR, 0.73; 95% CI, 0.58 to 0.91; p=0.005). The number of unnecessary shocks fell by the same percentage; among the 162 patients who experienced inappropriate shocks, 114 occurred in Group 1 and 48 in Group 2.

The risk reduction remained significant (HR, 0.71; 95% CI, 0.57 to 0.89; p=0.002) after adjusting for a number of factors, including the patient's device history, age, blood pressure, and history of atrial fibrillation, smoking, coronary artery disease, statin use, NYHA class, and coronary bypass surgery.

These findings suggest that improving clinician adherence to evidence-based ICD programming guidelines holds promise in reducing morbidity—and potential mortality—in ICD patients. The study investigators have posed alternative methods of increasing clinician compliance, such as enhancing algorithms and having ICD manufacturers institute nominal device settings that reflect current guidelines.

## Driver Mapping and Driver-Guided Ablation Reduces Need for Antiarrhythmic Medication

Written by Emma Hitt, PhD

Driver-guided ablation for the treatment of persistent atrial fibrillation (AF) reduces the need for antiarrhythmic treatment as compared with standard ablation. T. Jared Bunch, MD, Intermountain Medical Center, Salt Lake City, Utah, USA, presented data from a consecutive series of chronic AF patients from their center who underwent a modified ablation procedure involving pulmonary vein isolation with additional ablation of stable repetitive drivers.

Radiofrequency ablation is a standard treatment for symptomatic AF with good outcomes in patients with paroxysmal AF. In patients with persistent or longstanding AF, successful outcomes decrease. According to Dr. Bunch, patients with persistent or longstanding AF likely have multiple drivers that may interact in a complex fashion. This trial tested the hypothesis that mapping the drivers and then ablating specific drivers would lead to improved outcomes in patients with persistent or longstanding AF.

In the case-control study, standard ablation was performed on 49 patients and then patients were randomized 4:1 to undergo driver mapping and

subsequent driver-guided ablation. Three-dimensional mapping of electrograms using morphology sorting and frequency analysis allowed the physician to specifically target suspected drivers and assess the outcome of the ablation real-time on improving the underlying AF stability. Additional drivers were ablated as required.

Follow-up was performed at 1, 3, 6, 9, and 12 months and included 2-week ambulatory event or telemetry monitors. Symptom-driven visits were assessed as well. Discontinuation of antiarrhythmic medication was done at 3 months, if the heart rhythm remained stable. The primary endpoint was discontinuation of antiarrhythmic medication following a 3-month blanking period.

At 3, 6, and 9 months following the 3-month blanking period, a significantly greater number of patients that underwent driver-guided ablation did not require antiarrhythmic treatment, as compared with patients who underwent conventional ablation. At 3 months, 95% of patients that received driver-guided ablation were antiarrhythmic medication-free, as compared with 68% of patients who received conventional ablation (p<0.0001). The number of patients that were antiarrhythmic medication-free dropped to 82% at 6 months post blanking period in the patients that received driver-guided ablation, as compared with 54% of the patients who received conventional ablation (p=0.001). At 9 months, 79% of patients that had received driver-guided ablation were medication free, as compared with 47% of patients who had received conventional ablation (p=0.01).

In the driver-guided ablation arm, the average number of extrapulmonary drivers that were ablated was 1.6±1.1 (range, 1 to 6). None of the study participants experienced perforation, atrio-esophageal injury, cerebrovascular accident, or a transient ischemic attack. In the study, 8% of patients experienced cardioversion during the 3-month blanking period, 8% required a redo-ablation, and one patient required atrioventricular node ablation with pacemaker implantation.

Driver assessment and sorting using electrocardiograms is an essential part of this technique, according to Dr. Bunch. In this study, mapping was performed manually, but he stated that the next step would be to transform this technique into an automated format. In conclusion, Dr. Bunch stated that, in his opinion, driver mapping can lead to novel targets for ablation and removal of drivers by ablation could potentially improve success rates, even in patients with persistent AF.