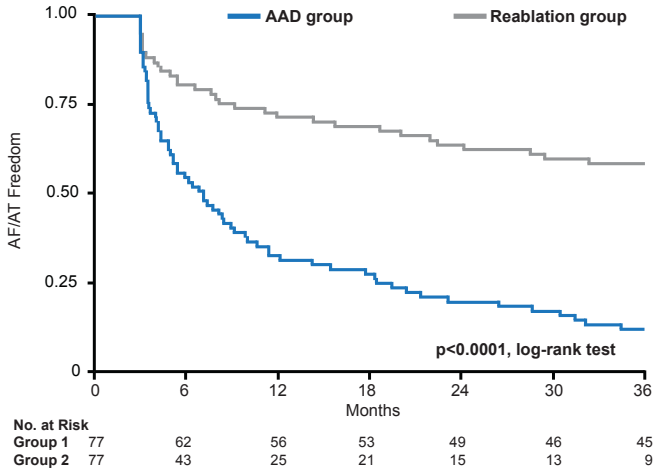
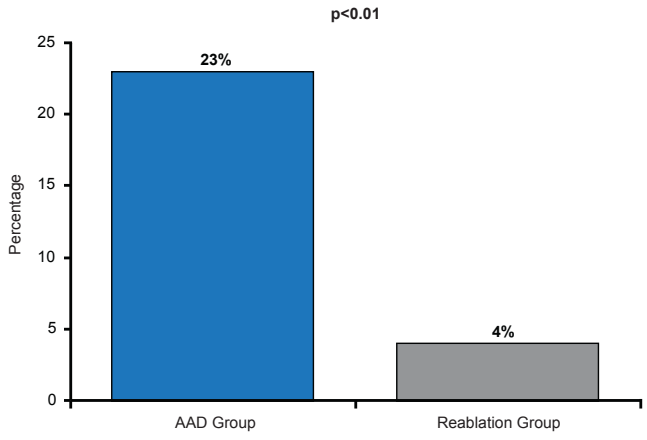
Figure 2. Secondary Endpoint: Freedom From AF/AT



AAD=antiarrhythmic drug; AF=atrial fibrillation; AT=atrial tachyarrhythmia.
Reproduced with permission from JS Steinberg, MD.

Progression to persistent AF was also significantly less (p<0.01) in the reablation group (4% of patients) versus 23% in the AAD group (Figure 3).

Figure 3. Secondary Endpoint: Progression to Persistent AF



AAD=antiarrhythmic drug; AF=atrial fibrillation.
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In the AAD arm, 64% (n=49) of patients discontinued therapy because of intolerance and/or inefficacy, while 3% (n=2) patients experienced cardiac tamponade in the reablation arm.

Dr. Steinberg concluded by saying, "Reablation targeting restoration of PVI should be strongly considered when patients respond inadequately to the initial ablation."

Improving Clinician Adherence to Evidence-Based Recommendations Reduces Unnecessary ICD Shocks

Written by Mary Beth Nierengarten

Late-breaking results from the prospective Shock-Less study indicated that providing clinicians with reports about implantable cardioverter defibrillator (ICD) programming improved adherence to shock-reduction guidelines in real-world practice settings, and significantly reduced the risk of unnecessary ICD shocks in patients. Marc T. Silver, MD, WakeMed Physician Practices, Raleigh, North Carolina, USA, presented the findings.

A total of 4131 patients implanted with a single- or dual-chamber ICD or cardiac resynchronization therapy defibrillator system participated in the study from 2009 to 2012 across 118 international sites. Most patients (85%) were treated with ICDs for primary prevention, with a median follow-up of 22 months after enrollment. After a period of 9 to 12 months, clinicians who programmed ICD shock parameters received therapy reports specific to their clinical sites and patient populations. The reports compared clinicians' programming habits with the targets established in the evidence-based recommendations. These targets included the number of intervals to detect ventricular fibrillation, the longest treatment interval, supraventricular tachycardia discriminators, antitachycardia pacing, and a Lead Integrity Alert (Table 1).

Table 1. Evidence-Based Programming Targets

Programming Parameter	Evidence-Based Target	Source
VF NID (PP)	30/40	PREPARE, RELEVANT
VF NID (SP)	18/24+	PainFREE II
LTI (PP)	329-330 ms	PREPARE, RELEVANT
LTI (SP)	340-360 ms	PainFREE II
Wavelet	ON	WAVE
PR Logic	ON	Wilkoff et al.
SVT Limit	≤300 ms	EMPIRIC, PREPARE
LIA	ON	Swerdlow et al.
ATP	ON to ≤240 ms	PainFREEm ENTRUST, EMPIRIC, PREPARE

ATP=antitachycardia pacing; LIA=lead integrity alert; LTI=longest treatment interval; NID=number of intervals to detect; PP=primary prevention; SP=secondary prevention; SVT=supraventricular tachycardia; VF=ventricular fibrillation.

Clinicians programmed devices at their own discretion; appropriate or inappropriate shock episodes were determined by an independent committee.

The control group (Group 1; n=2693) consisted of patients who were implanted before the clinician received

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.