Refibrillation, resuscitation and survival in out-of-hospital sudden cardiac arrest victims treated with biphasic automated external defibrillators.


Purpose
To determine the incidence and time course of refibrillation, and patient outcomes, in witnessed adult ventricular fibrillation (VF) patients treated by Basic Life Support (BLS) first responders using 150 Joule (J) fixed-energy impedance-compensating biphasic automated external defibrillators (Philips Medical Systems AEDs).

Methods
- Retrospective, observational study
- Rhythms were determined to be VF, asystole, or organized at 5 seconds following each shock. An organized rhythm was defined by the presence of at least one QRS complex.
- Neurological status at hospital discharge was determined using the Overall Performance Category (OPC) scoring system.

Findings
- Of 49 patients with witnessed VF arrest, 44% received bystander cardiopulmonary resuscitation. Call-to-shock time averaged 6.1 minutes, however, patients who achieved return of spontaneous circulation following shocks by BLS responders (BLS ROSC) prior to arrival of Advanced Life Support were more likely to have shorter time-to-first shock; a difference of one minute to earlier defibrillation was associated with greater survival.
- First shock efficacy was 92% (45/49) for all patients, and 100% (19/19) for BLS ROSC patients. Rhythms were similar following the first shock for all patients. The most common 5-second rhythm was asystole. While under BLS care, 61% (29/49) of patients refibrillated, many (35%) more than once.
- Both BLS- and ALS ROSC on scene were associated with survival to hospital admission but only BLS ROSC was associated with survival to discharge and neurological outcome. The majority of BLS ROSC patients (95%) survived to hospital discharge, whereas only 22% of those who attained ROSC later in the resuscitation survived. Overall, 41% of patients were discharged neurologically intact. Most (89%) patients who achieved ROSC with BLS rescuers (BLS ROSC) survived neurologically intact, while a minority (17%) of ALS ROSC patients did so.
- Refibrillation was not a good predictor of BLS ROSC, survival to hospital discharge, or neurological outcome in survivors.

Conclusions
The authors state, “Refibrillation had no evident adverse effect on outcome for patients with witnessed VF arrest in this study. Defibrillation of recurrent VF by first
responders is frequently followed by sustained ROSC without need for ALS interventions.”