

Excerpts from “Comparison of six clinically used external defibrillators in swine”¹:

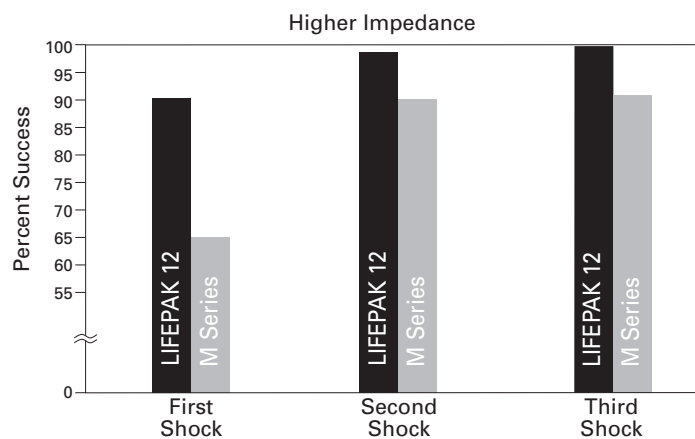
LIFEPAK[®] Defibrillator with ADAPTIV[™] Biphasic Technology Versus Zoll

Study Objectives: To compare the effectiveness of four commercially available biphasic external defibrillators in a pig model of electrically-induced ventricular fibrillation of short duration.

Methods: Each manufacturer’s recommended/default automated shock protocol was used to deliver a sequence of up to 3 shocks, as needed, to terminate ventricular fibrillation (LIFEPAK 12 defibrillator at 200J, 300J, 360J and M Series at 120J, 150J, 200J). In 8 animals, a total of 62 defibrillation trials were performed for each device at the low impedance characteristic of pigs. Since impedance dramatically affects the characteristics of these biphasic waveforms, a total of 61 defibrillation trials were also performed at a higher impedance. By placing a 50-ohm resistor in series with the pig for these higher impedance trials, this study was able to compare waveforms of identical size, shape and duration as those delivered to the typical human.

Results: Across the 8 animals, shocks at low impedance averaged 40 ± 7 ohms; shocks at higher impedance averaged 92 ± 7 ohms.

Cumulative shock success rates for the LIFEPAK 12 defibrillator and Zoll M Series



Conclusions: Both defibrillators were highly effective for low impedance shocks. However, there were statistically significant differences in efficacy between these two devices at an impedance typical of the average human.

Discussion: The waveforms and energy settings compared in this study reflect the clinical options presently available to treat “real world” sudden cardiac arrest. These results indicate that choices in waveform design and energy dosing strategies made by each manufacturer do significantly impact the efficacy of their devices. For external defibrillation, human impedance is known to vary from as low as 30-40 ohms to as high as 150-200 ohms, with an average of approximately 80 ohms. This study reveals that some devices offer more consistently high shock effectiveness than others in higher impedance situations typical of human defibrillation.

Questions to Consider: How many of your patients have average to high impedance? Is their dosage of defibrillation therapy limited by the defibrillator in use? LIFEPAK 12 defibrillators with ADAPTIV biphasic technology provide the widest range of energy options for all of your patients.

1. Walker, R.G., Melnick, S.B., Chapman, F.W., Walcott, G.P., Schmitt, G.P., Ideker, R.E. 2003. Comparison of six clinically used external defibrillators in swine. *Resuscitation*, Vol. 57: 1: 73–83



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