Body weight does not affect defibrillation, resuscitation, or survival in patients with out-of-hospital cardiac arrest treated with a non-escalating biphasic waveform defibrillator.

Roger D. White, MD; Thomas H. Blackwell, MD; James K. Russell, PhD; Dawn B. Jorgenson, PhD. Critical Care Medicine 2004 Vol. 32, No. 9 (Suppl.) S387-S392.

“The fixed energy protocol used by this automated external defibrillator... appears effective and appropriate.”

**Objective**
To determine the influence of body weight on defibrillation success, resuscitation and survival in patients with out-of-hospital cardiac arrest treated with a non-escalating impedance-compensation 150J biphasic waveform.

**Methodology**
This was a retrospective data analysis of emergency medical service responses over a six-year period in Rochester, Minnesota (USA). Patient weight data was available for 62 of 68 patients. Statistical analysis was performed to determine if body weight effected defibrillation success.

**Results**
Mean body weight was 84±17 kg (minimum 53 kg, maximum 135 kg) and was normally distributed. Most (69%) of the patients were overweight (41%), obese (24%) or extremely obese (4%).

All patients were successfully defibrillated. One-shock success was 92%. Two-shock success was 98%, and three-shock success was 100%.

By all measures, shock success and subsequent patient resuscitation and survival was unaffected by body weight. In fact, the highest and lowest weight patients were defibrillated on the first shock. The successful shocks and the failed shocks were distributed normally across the weight range. Successes are not clustered to the “light” end. Similarly, failed shocks are not clustered to the “heavy” end.
**Conclusions**

Overweight patients were defibrillated by the biphasic waveform used in this study at high rates, with a fixed energy of 150J and without energy escalation. First shock efficacy and subsequent shock success, resuscitation and survival were not related to patient body weight. The fixed protocol used appears appropriate and effective.

**Philips Commentary**

Energy is known to be a poor descriptor for shock strength; current is a more accurate descriptor. The Philips SMART Biphasic waveform delivers high peak current from the very first shock, yet has low energy to avoid stunning a fragile heart. If a waveform has sufficient peak current from the start, escalating to high energy levels is not necessary, even for very large patients.

**References**


Fig. 3.