

Excerpts from

## “Comparison of six clinically used external defibrillators in swine”\*

- The first and only published, peer-reviewed manuscript that directly compares biphasic defibrillators on actual hearts.
- This study shows statistically significant differences in efficacy among biphasic manufacturers in difficult to defibrillate situations (higher impedance) with ADAPTIV™ biphasic technology demonstrating the highest efficacy.
- No other defibrillator manufacturer has studied and published, with peer review, comparative results of multiple biphasic devices in difficult to defibrillate hearts (at higher impedance).
- The defibrillation success rate in difficult to defibrillate situations (high impedance) was highest for ADAPTIV biphasic technology, followed by Cardiac Science, Zoll and Philips.

### Comparing Biphasic Devices

“The present study provides the first data comparing external defibrillation efficacy among the four commercially available biphasic waveforms, and it uses the specific shock doses clinically implemented in each device.” p 80

“The results of this study...suggest modest but statistically significant differences in efficacy (at higher impedance) among four biphasic waveforms and dosing schemes now in clinical use.” p 82

“The defibrillation success rate (in high impedances) was highest for waveform B (Medtronic Physio-Control), followed closely by waveform C (Cardiac Science), which in turn was followed by waveforms D (Zoll) and A (Philips).” p 81

### Difficult to Defibrillate Situations (Higher Impedance)

“The study also reveals that, despite the implementation of impedance-compensation schemes in each, the efficacy of all four biphasic waveforms is still affected by impedance...” p 82

“Among these devices, ‘impedance-compensation’ refers to the active adjustment of waveform duration, amplitude, and/or shape as a function of patient impedance. However, these adjustments are relatively modest, and thus only partially counteract the natural attenuation of current caused by higher impedance.” p 81

“Achleitner et al recently reported salient discharge characteristics of these four biphasic waveforms for shocks delivered into various resistors, and concluded that ‘the tested defibrillators showed remarkable differences in their waveform design and their varying dependence on transthoracic impedance.’” p 80

“Three findings reported in literature indicate that it is reasonable to model the relatively higher impedance of a typical adult human by placing a resistor in a series with a low-impedance animal.” p 81

\*Walker *et al.* 2003. Comparison of six clinically used external defibrillators in swine. *Resuscitation* 57/1: 73–83.