

IMPLEMENTATION OF THE 2005 CARDIOPULMONARY RESUSCITATION GUIDELINES AND USE OF AN IMPEDANCE THRESHOLD DEVICE IMPROVE SURVIVAL FROM INHOSPITAL CARDIAC ARREST

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Abstract:

Study Objective: The 2005 American Heart Association guidelines recommended many new interventions during cardiopulmonary resuscitation (CPR), including a Level IIa recommendation for an impedance threshold device (ITD), which is intended to further optimize circulation during CPR. To date, all data published supporting use of an ITD have been following prehospital cardiac arrest. This study's objective was to determine the effect that implementing new CPR guidelines, which included use of an ITD, would have on survival to hospital discharge following in-hospital cardiac arrest.

Methods: Quality assurance data from adult patients (≥ 18 years) experiencing an in-hospital cardiac arrest at a 571-bed, acute care hospital were analyzed. Survival rates from a historical (control) period (01/2006 – 09/2006) were compared to matched patients in a prospective period (10/2006 – 08/2007) during which the new CPR guidelines and use of an ITD (ResQPOD[®], Advanced Circulatory Systems; Minneapolis, Minnesota) were implemented. Per hospital protocol, the ITD was used on both a facemask and/or endotracheal tube in patients regardless of cardiac arrest etiology, unless specifically overridden by physician.

Results: In both study populations, patients, on average, were 67 years and 49% were male. The results were as follows:

Table: Survival Following In-hospital Cardiac Arrest

	Historical (n=157)	Prospective (n=136)	Odds Ratio	95% Confidence Intervals	Fischer's Exact Test
Return of Spontaneous Circulation	52/157 (33.1%)	79/136 (58.1%)	2.80	1.69, 4.64	p<0.001
Survival to Hospital Discharge	27/157 (17.2%)	38/136 (27.9%)	1.87	1.03, 3.41	P=0.034

Conclusion: Adoption of the new CPR guidelines and an ITD resulted in a 75% increase in initial arrest survival rates and a 62% increase in survival to hospital discharge rates. This first known reporting of data demonstrating the impact of new CPR plus and an ITD following in-hospital cardiac arrest represent a currently optimized sequence of therapeutic interventions and support widespread adoption of these therapies.