The Lancet – 17 March 2007: CPR by bystanders with chest compression only: an observational study

Implications of the SOS-KANTO study on current NAED Medical Dispatch Telephone Pre-Arrival Instructions

The recent Lancet study on cardiac-only bystander CPR demonstrates the growing evidence of the superior patient survival aspects of this relatively new resuscitation method. Cardiac-only resuscitation in a multicenter study in Japan demonstrated an increase in favorable neurological outcomes over regular CPR in adult (age > 18) patients with apnea (6.2% vs. 3.1%), with shockable rhythms such as ventricular fibrillation (19.4% vs. 11.2%), and when resuscitation was started within 4 minutes of arrest (10.1% vs. 5.1%).

This is excellent news for agencies now utilizing versions 11.2 or 11.3 of the AMPDS which incorporated an Academy-approved form of this new clinical technique in 2004. Compressions 1stCPR, which takes into account prolonged response times that may exceed the oxygenation potential of the patient's blood, provide an initial 400 compressions, followed by 2 breaths, then 100 compressions, repeated.

Additionally, the study showed no evidence for any benefit from the addition of mouth-to-mouth ventilation in any subgroup studied. This has implications on the NAED recommendations to give 2 breaths after an initial 400 compressions due to the belief that oxygen may be reaching a toxic low point by the 3-½ minute mark of compressions, as well as toxic CO2 build up. Currently, the Academy-recommended initial 400 compressions is longer than any other recommended interval short of no ventilations ever – regardless of the time of responder arrival – which may be significantly prolonged in some suburban and nearly all rural areas.

It is interesting to note (although not mentioned by the authors) that dispatcher-assisted resuscitation accounted for the largest portion of the cardiac-only group – 139 of 439 (32%) as compared to only 133 of 712 (19%) in the conventional CPR group.

The authors mentioned several advantages to compression-only treatment including no gastric air inflation and more cycle time spent on effective compressions. Intrathoracic pressure drops after each pause for ventilations and several compressions are needed before previous cerebral and coronary perfusion pressures are re-established. They suggested that interruption of chest compressions was the main reason why conventional CPR did not result in better neurological outcomes.

Their conclusion: Bystander cardiac-only resuscitation is the preferred approach to resuscitation for adult patients with witnessed out-of-hospital cardiac arrest, especially those with apnea, a shockable cardiac rhythm, or a short period of untreated arrest.

Our conclusion: Again, the Academy is ahead of the game in bringing cutting-edge dispatch treatments to thousands of communications centers and millions of 911 patients through rapid distribution of its unified protocol upon the changing standards of care and practice. The New PAI Committee of the Council of Standards is to be lauded for their leadership in this regard.

While certainly not scientific (as yet), we are receiving many more case examples of successful resuscitation attempts using the 400 initial compressions (adults/sudden collapse) and infants now treated with a 2 : 30 ratio. Their may be implications for the reversal of this ratio to 30 compressions first, followed by 2 ventilations. The AHA and the affiliated resuscitation councils of ILCOR will continue to be a major Academy guide in these matters as they continue their hard at work in this important area.
The future: The Academy will re-evaluate the issue of prolonged compression sequences due to long response times vs. the increasing hypoxic blood levels accumulating over time. Streamlining of the MPDS Pre-arrival instructions is currently in progress for version 11.4.

References:
