

EM Journal Club Eastern Virginia Medical School

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CITATION: L Svensson, K Bohm, M Castren, **Compression-only CPR or standard CPR in out-of-hospital cardiac arrest..** N Engl J Med 2010;363:434-442

I. WHAT IS BEING STUDIED?	COMPRESSION ONLY CPR VS STANDARD CPR IN OUT-OF-HOSPITAL ARREST
1. Study Objective	Evaluate possible superiority of compression only CPR over standard CPR (using rescue breathing) in the pre hospital setting
2. Study Design	1276 patients randomized into standard vs compression only CPR Randomized by dispatchers who gave instructions on which type of CPR to perform CPR- continuous Standard- 15 to 2 ratio Follow up via EMS reports and national registries
3. Inclusion Criteria	Out of hospital, witnessed cardiac arrest Patient unconscious Not breathing or not breathing normally No one at the scene had started CPR Caller does not know how to perform CPR and willing to be instructed to perform it
4. Exclusion Criteria	Cardiac arrest caused by trauma, airway obstruction, drowning, intoxication Age <8 years Difficulty of the dispatcher in communicating with the caller Signs of death present EMS arrival
5. Interventions Compared	Compression only vs standard CPR in a 15:2 ratio

6. Outcomes Evaluated	Primary: 30 day survival Secondary: 1 day survival, first detected cardiac rhythm, survival to hospital discharge
II. Are the results of the study valid?	
1. Was the assignment of patients randomized?	Yes
2. Were all patients who entered the trial properly accounted for and attributed at its conclusions?	Yes. 3809 randomized cases 1276 remained after exclusion 620 compression only, 656 standard Intention to treat analysis in those assigned to groups who were lost.
3. Was follow-up complete?	1952 (6.8%) lost to f/u due to loss of EMS reports
4. Were patients, health workers and study personnel “blind” to treatment?	No. Health workers and dispatchers could not be blinded. No mention regarding whether those doing data analysis were blinded to treatment arm.
5. Were study groups similar at the start of the trial?	Yes. No statistically significant differences noted.
6. Aside from the experimental intervention, were the groups treated equally	Yes, however 11.7% were not treated per protocol- dispatchers did not follow randomization
III. What were the results?	
1. How large was the treatment effect? (difference between treatment and control group).	The authors made a significant compromise in estimation of sample size from 2213 needed in each group to 1000 per group which was not achieved. Approx 600 subjects per group were included in analysis. The 30 day survival rate of 8.7% in

	<p>compression only (CO) group and 7.0% standard CPR , ARR=1.7 (CI 95% -1.2 to 4.6) P = 0.29 not significant</p> <p>None of the secondary outcome measures showed a statistically significant difference.</p>
<p>2. What was the estimated treatment effect at a 95% confidence interval?</p>	<p>Primary Outcome ARR 1.7 (CI 95% -1.2 to 4.6)</p> <p>No mention that their subgroup analysis was a-priori. Nevertheless, no sig differences in their post-hoc subgroup analysis.</p>
<p>IV. Will the results help me in caring for my patients? (applicable ?)</p>	<p>Results suggest no advantage of CPR alone vs CPR with ventilation. The practical issue at hand that was not directly addressed by the authors is whether CPR alone is likely to garner more frequent and earlier bystander CPR which has been shown to improve outcomes in cardiac arrest victimehelp guide out of hospital arrest protocols, ACLS and BLS guidelines</p> <p>Not applicable to in-hospital</p>
<p>1. Were all clinically important outcomes considered?</p>	<p>Yes.</p>
<p>2. Are treatment outcomes worth the potential harms?</p>	<p>Uncertain. There appeared to be no harms regarding their specified outcome measures when withholding rescue breathing. That stated, there was no long term comparison regarding functional neurologic status in those who had rescue breathing withheld.</p> <p>From a pragmatic standpoint, despite any evidence in favor of withholding ventilation in the cardiac arrest victim, is compression only a reasonable alternative to no CPR when the typical bystander is unlikely to ventilate anyway.</p>

Additional Comments:

Limitations

- Small study that was not powered sufficiently. In view of this the authors conclusion that CPR alone is not superior to CPR plus ventilation seems unwarranted as they never reached statistical significance. This study is not powered enough to claim non-inferiority to traditional CPR and should not be interpreted as such.