Importance: Manual chest compressions are interrupted frequently during treatment of out of hospital cardiac arrest (OHCA). These interruptions rapidly reduce blood flow.

Objective: To assess if continuous manual chest compressions (CCC) versus manual chest compressions with interruptions for ventilations (ICC) affects survival, neurological status, or adverse events.

Design: Randomized cluster design with crossover.


Participants: Adults with non-traumatic OHCA who received compressions from ROC EMS providers dispatched to the scene.

Intervention: The intervention group received continuous compressions (CCC) with positive pressure ventilation without pauses. The control group received compressions with interruptions for ventilations at a ratio of 30 compressions to two ventilations (ICC).

Main Outcome(s) and Measure(s): The primary outcome was survival to hospital discharge. Secondary outcomes included Modified Rankin scale (MRS, scored from 0 to 6, with ≤3 as favorable neurologic status). CPR process was measured to assess compliance with study treatment.

Results: Of 23,698 patients included in the primary analysis, 12,647 were randomly assigned to the CCC group and 11,051 to the ICC group. As of June 14, 2015, vital status was available on 23,485 (99.1% of enrolled.) Results to date are provided (Table). Conclusions and Relevance: In this large cluster randomized effectiveness trial, continuous compressions with positive pressure ventilations as compared with compressions with interruptions for ventilations did not significantly improve overall survival or neurologic status.

Trial Registration: ClinicalTrials.gov registration NCT01372748
Table

<table>
<thead>
<tr>
<th></th>
<th>CCC, n=12,847</th>
<th>ICC, n=11,046</th>
<th>Difference</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survival to discharge</td>
<td>8.8%</td>
<td>9.8%</td>
<td>-0.71 (-1.30, 0.10)</td>
<td>0.07</td>
</tr>
<tr>
<td>MRS ≤ 3</td>
<td>6.9%</td>
<td>7.8%</td>
<td>-0.68 (-1.44, 0.12)</td>
<td>0.10</td>
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</tbody>
</table>

Disclosure: **G. Nichol**: Employment; Significant; University of Washington via the Leonard A. Cobb Medic One Foundation Endowed Chair in Prehospital Emergency Care. Research Grant; Significant; National Heart Lung Blood Institute, Bethesda, MD. Resuscitation Outcomes Consortium (NIH U01 HL077863-05) 2004-2015; Co-PI, Food and Drug Administration, Silver Spring, MD, Cardiac Science Corp, Waukesha, WI, Heartsine Technologies Inc., Newtown, PA, Philips Healthcare Inc., Bothell, WA, Physio-Control Inc., Redmond, WA, ZOLL Inc., Chelmsford, MA, University of Washington Dynamic AED Registry, PI. 2013-2015. Other Research Support; Significant; Velomedix Inc., Menlo Park, CA. Velocity Pilot Study of Ultrafast Hypothermia in Patients with ST-Elevation Myocardial Infarction, Co-PI. 2014-2015. *Waived personal compensation.. Other; Modest; Travel: Abiomed Inc., Danvers, MA in 2015. R. Schmicker: Research Grant; Significant; 5U01 HL077863-University of Washington Data Coordinating Center. H. Wang: Research Grant; Significant; NHLBI, NINR. C. Callaway: Employment; Significant; UPMC Health System; University of Pittsburgh. Research Grant; Significant; NINDS; NHLBI. M. Weisfeldt: Research Grant; Significant; ROC. Ownership Interest; Significant; Board of Directors Vestin Corp. Consultant/Advisory Board; Significant; Vestin Corporation, FDA. G. Sopko: None. L. Morrison: None. S. Cheskes: Research Grant; Significant; NHLBI/CIHR Co PI Toronto ROC. Other Research Support; Significant; Speakers Honorarium Zoll Medical, Physio Control. J. Christenson: Research Grant; Significant; ROC. R. Straight: None. A. Idris: Research Grant; Significant; NIH/NHLBI. Consultant/Advisory Board; Significant; American Heart Association. S. Isaacs: None. I. Stiell: Research Grant; Significant; ROC. C. Vaillancourt: Research Grant; Significant; Ontario SPOR Support Unit (OSSU) IMPACT Award â€“ Gov. of Ontario and CIHR, Ontario SPOR Support Unit (OSSU) IMPACT Award â€“ Gov. of Ontario and CIHR, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research, Social Sciences and Humanities Research, Canadian Association of Emergency Physicians, NIH, The Mach-Gaensslen Foundation of Canada, Heart and Stroke Foundation of Canada, Heart and Stroke Foundation of Ontario, Canadian Institutes of Health Research. P. Kudenchuk: Research Grant; Significant; NIH, ROC. Other Research Support; Significant; Heart Rescue. T. Rea: Research Grant; Modest; Medtronic Philanthropy, Philips Medical, Association of Public Safety Communication Officials. T. Aufderheide: Research Grant; Significant; NIH/NHLBI, NIH/NINDS, Department of Defense. M. Colella: Research Grant; Significant; NIH, ROC. J. Condie: Research Grant; Significant; ROC. S. Stephens: Research Grant; Significant; NIH, NHLBI, UT-Houston. J. Richardson: None. B. Leroux: Research Grant; Significant; NHLBI grant to UW Clinical Trials Center. D. Egan: None. S. May: Research Grant; Significant; NHLBI. Other; Modest; Non academic readers might not be aware that publications are essential for academic professional advancement and for receiving further funding. J. Ornato: Consultant/Advisory Board; Significant; Consultant and Cardiac Co-Chair, ROC.