

CARDIAC RESUSCITATION

Assisted CPR improves outcomes

Manual cardiopulmonary resuscitation (CPR) is inherently inefficient.

Alternative techniques are compression–decompression CPR, which improves forward blood flow on compression and returns the chest to the starting position, and applying negative intrathoracic pressure during decompression using impedance-threshold devices, which improve venous return to the heart. A new report shows that combining these two approaches improves 1-year survival—by nearly 50% versus manual CPR—for patients who have out-of-hospital cardiac arrests.

The trial was conducted in 46 emergency medical service agencies in the USA. Of 1,653 adults who had an out-of-hospital cardiac arrest and were enrolled in the study, 813 were randomly assigned to manual CPR and 840 to assisted CPR using the two approaches. Of the patients who received manual CPR, 47 (6%) were discharged from hospital with good neurological function (modified Rankin score ≤ 3), compared

with 75 (9%) patients who received assisted CPR. This advantage was sustained throughout follow-up; 48 (6%) patients in the manual-CPR group and 74 (9%) in the assisted-CPR group survived for 1 year. Adverse-event rates did not differ between the two groups, except for pulmonary edema, which was significantly more frequent in the assisted-CPR group (11% versus 8%).

“The professional rescuers in this study were easily trained in this approach, which should be generalizable to clinical practice,” says Tom Aufderheide, the study’s lead researcher. The team are now investigating combined pharmacological and mechanical approaches to improve blood flow during CPR.

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Original article Aufderheide, T. P. *et al.* Standard cardiopulmonary resuscitation versus active compression–decompression cardiopulmonary resuscitation with augmentation of negative intrathoracic pressure for out-of-hospital cardiac arrest: a randomised trial. *Lancet* **377**, 301–311 (2011)