

Prehospital randomised assessment of a mechanical compression device in out-of-hospital cardiac arrest (PARAMEDIC): a pragmatic, cluster randomised trial and economic evaluation

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Plain English summary

Mechanical chest compression for out-of-hospital cardiac arrest

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Plain English summary

The main treatment for people who suffer a cardiac arrest out of hospital is cardiopulmonary resuscitation (CPR), whereby blood circulation is maintained by repeatedly compressing the chest. Maintaining high-quality CPR is very difficult, as people performing it tire and become less effective. Mechanical devices may be more effective than people at providing chest compression, as they do not tire, ensure that every compression is of the required depth and frequency and can operate in difficult conditions, such as in a moving ambulance.

In this study, we evaluated a mechanical chest compression device called LUCAS-2 (Lund University Cardiopulmonary Assistance System-2; Jolife AB, Lund, Sweden); this was introduced into ambulance services in the UK several years ago, but it is not yet known whether or not it improves survival. Four UK ambulance services took part in the study.

Vehicles were randomly allocated to carry a LUCAS-2 device or no LUCAS-2 device. If the vehicle carried a LUCAS-2 device it was used to provide chest compressions for all cardiac arrests for which resuscitation was attempted. If there was no LUCAS-2 device, manual chest compression was used. A total of 418 vehicles were included in the study and 4471 cardiac arrest patients were recruited. We recorded how many patients survived to 30 days after their cardiac arrest and how many survived without significant disability.

We found that there was no clear advantage of using the LUCAS-2 device. Survival was not improved and slightly more survivors who were treated with the LUCAS-2 device had significant disability. An economic analysis of the costs and benefits found that using the LUCAS-2 device was not as cost-effective as standard cardiac arrest treatment.

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