

PARA♥MEDIC2

The Adrenaline Trial



**National Institute for
Health Research**

This project is funded by the National Institute for Health Research's Health Technology Assessment programme (project number 12/127/126). The views and opinions expressed therein are those of the authors and do not necessarily reflect those of the Health Technology Assessment Programme, NIHR, NHS or the Department of Health.



CARDIAC ARREST is a life-threatening emergency. It occurs when the heart suddenly stops beating. This is different to a heart attack, which is where the heart is damaged but continues to beat.

When the heart stops beating it cannot pump blood to the brain, lungs and other organs. Within seconds of a cardiac arrest, a person will become unconscious and unresponsive.



30,000

people are treated for cardiac arrest in the community each year in the UK



For every minute that passes without treatment, the chances of survival decrease by 10%



Less than 1 in 10 (10%) patients survive to go home from hospital after a cardiac arrest. This number is even lower for patients where initial treatments do not work.

In a community survey, 95% of survey respondents thought that long-term survival with good brain function was more important than just short-term survival (hours or days).



Where initial treatments do not work, adrenaline is sometimes given as a treatment. Adrenaline has been used for over 50 years, but it has never been properly tested to see whether it is beneficial or harmful.

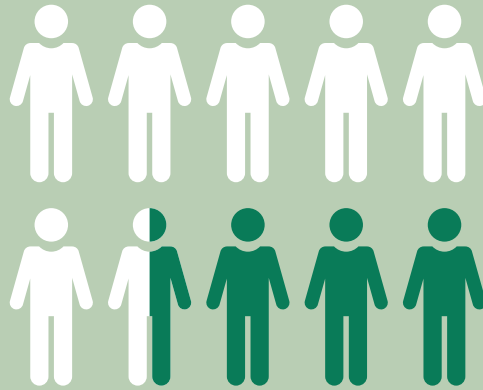
PARAMEDIC2 is the first large scale study to examine whether adrenaline is helpful or harmful as a treatment for cardiac arrest.

The study population



8,016

adult patients treated by NHS paramedics for out of hospital cardiac arrest



65%
male



6 out of **10**

people received CPR from bystanders or family members before the ambulance arrived

Average age

69
(years)



75%

had a cardiac arrest at home



1%

had a cardiac arrest in the workplace



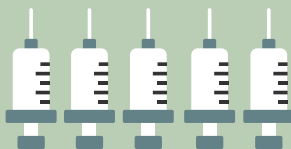
20%

had a cardiac arrest in a public place



4%

had a cardiac arrest in another location



On average, **5** doses of adrenaline were given

Overall

41%

were taken to hospital for further treatment



Overall

2.7%

survived to be discharged from hospital

The results









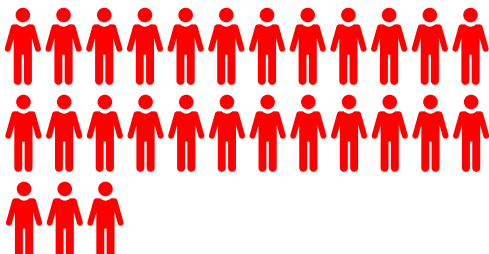

Adrenaline can restart the heart but it's no good for the brain

There was a small improvement in survival to 30 days after the cardiac arrest in patients who received adrenaline compared to those who did not. (0.8% difference)

Adrenaline made no difference to the number of patients who survived to go home from hospital with a good recovery...

...However, surviving patients who received adrenaline were nearly twice as likely to have severe brain damage following the cardiac arrest, meaning the patient was unable to walk or take care of themselves, or was in a coma. (31% versus 18%)

This diagram shows the number of patients who survived to be discharged from hospital, grouped by the severity of disability after the cardiac arrest*

	Adrenaline (n = 126)	No adrenaline (n = 90)
No disability No symptoms at all	 9.5%	 16.7%
No significant disability Some symptoms but able to carry out all usual duties and activities	 13.5%	 11.1%
Slight disability Unable to carry out all previous activities, but able to look after own affairs without assistance	 18.3%	 32.2%
Moderate disability Requiring some help, but able to walk without assistance	 27.8%	 22.2%
Moderately severe disability Unable to walk without assistance and unable to attend to own bodily needs without assistance	 9.5%	 8.9%
Severe disability Bedridden, incontinent and requiring constant nursing care and attention	 21.4%	 8.9%

Total **100%**

Total **100%**

*assessed using the modified Rankin Scale

Which treatments are the most effective?

The image here compares the effectiveness of adrenaline against other evidence-based treatments for cardiac arrest.



Early recognition of cardiac arrest and call for help is
10 TIMES MORE EFFECTIVE



Cardiopulmonary resuscitation (CPR) is
8 TIMES MORE EFFECTIVE



Defibrillation (electric shock) is
20 TIMES MORE EFFECTIVE



Adrenaline

Learn how to do CPR
www.life-saver.org.uk
www.bhf.org.uk/how-you-can-help/how-to-save-a-life/how-to-do-cpr

Will adrenaline continue to be used?



The Resuscitation Council (UK) and International Liaison Committee on Resuscitation (ILCOR) produce clinical guidelines which help paramedics decide how to treat patients.

The study provides definitive evidence about the effects of adrenaline in out-of-hospital cardiac arrest. The results will need to be evaluated by these organisations in the context of all available evidence and the values and preferences of patients and the wider community.

Clinicians and the public should continue to prioritise evidence based treatments - high quality CPR and prompt defibrillation.

The full results of the trial are available in the *New England Journal of Medicine* "A Randomised Trial of Epinephrine in Out-of-Hospital Cardiac Arrest"

www.nejm.org

We would like to thank paramedics, research and hospital teams and our patient and public partners for their help and support throughout the trial.

Contact the trial team

Email: paramedictrial@warwick.ac.uk

Website: www.warwick.ac.uk/paramedic2

Write to: PARAMEDIC2 Trial Office
Warwick Clinical Trials Unit
University of Warwick
Gibbet Hill Road
Coventry
CV4 7AL

