

# PARA♥EDIC2

## The Adrenaline Trial



**National Institute for  
Health Research**

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# 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.

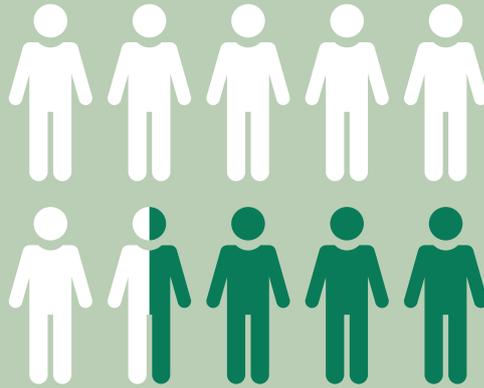
**PARAMEDIC2 is the first large scale study to examine whether adrenaline is helpful or harmful as a treatment for cardiac arrest.**

# 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

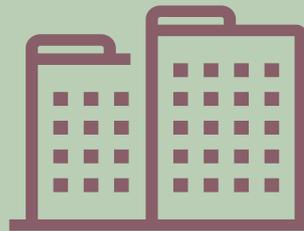
Average age

**69**  
(years)



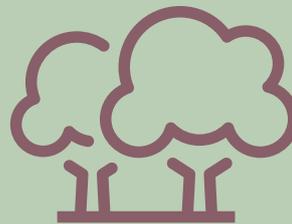
**75%**

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

# Key findings

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



Adrenaline  
(Epinephrine)

1-10mg  
N = 4,012

Placebo

N = 3,995

**3.2%**  
(n = 130/4012)

Survival to 30 days  
post cardiac arrest  
favouring adrenaline

**2.4%**  
(n = 94/3995)

**2.2%**  
(n = 87/4007)

No difference in survival to  
discharge with  
favourable neurological  
outcomes

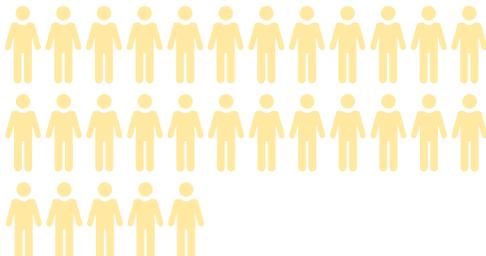
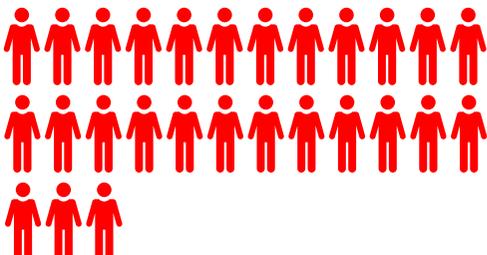
**1.9%**  
(n = 74/3994)

**31.0%**  
(n = 39/126)

Among survivors, those  
given adrenaline were  
twice as likely to  
have severe neurological  
impairment  
at discharge  
(mRS score of 4 or 5)

**17.8%**  
(n = 16/90)

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)
<b>No disability</b> No symptoms at all	 9.5%	 16.7%
<b>No significant disability</b> Some symptoms but able to carry out all usual duties and activities	 13.5%	 11.1%
<b>Slight disability</b> Unable to carry out all previous activities, but able to look after own affairs without assistance	 18.3%	 32.2%
<b>Moderate disability</b> Requiring some help, but able to walk without assistance	 27.8%	 22.2%
<b>Moderately severe disability</b> Unable to walk without assistance and unable to attend to own bodily needs without assistance	 9.5%	 8.9%
<b>Severe disability</b> 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  
**REFERENCE**

Learn how to do CPR  
[www.life-saver.org.uk](http://www.life-saver.org.uk)  
[www.bhf.org.uk/how-you-can-help/how-to-save-a-life/how-to-do-cpr](http://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](http://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.

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