
WARWICK

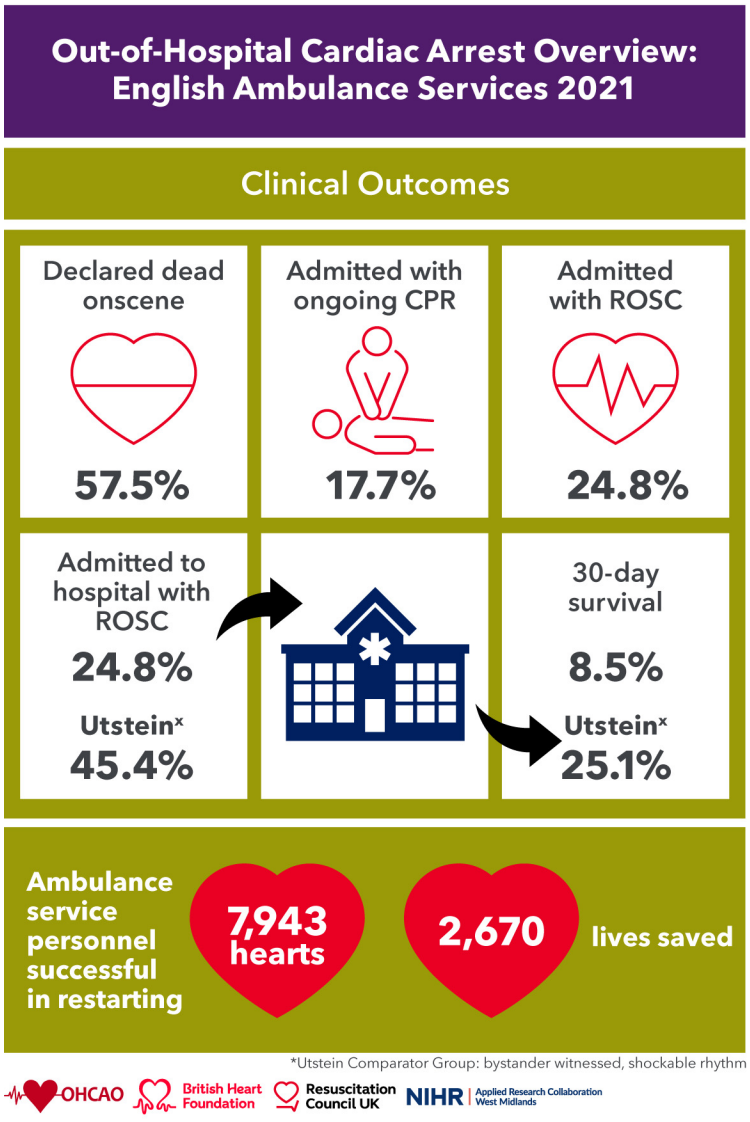
# Out-of-hospital cardiac arrest outcomes (OHCAO) registry

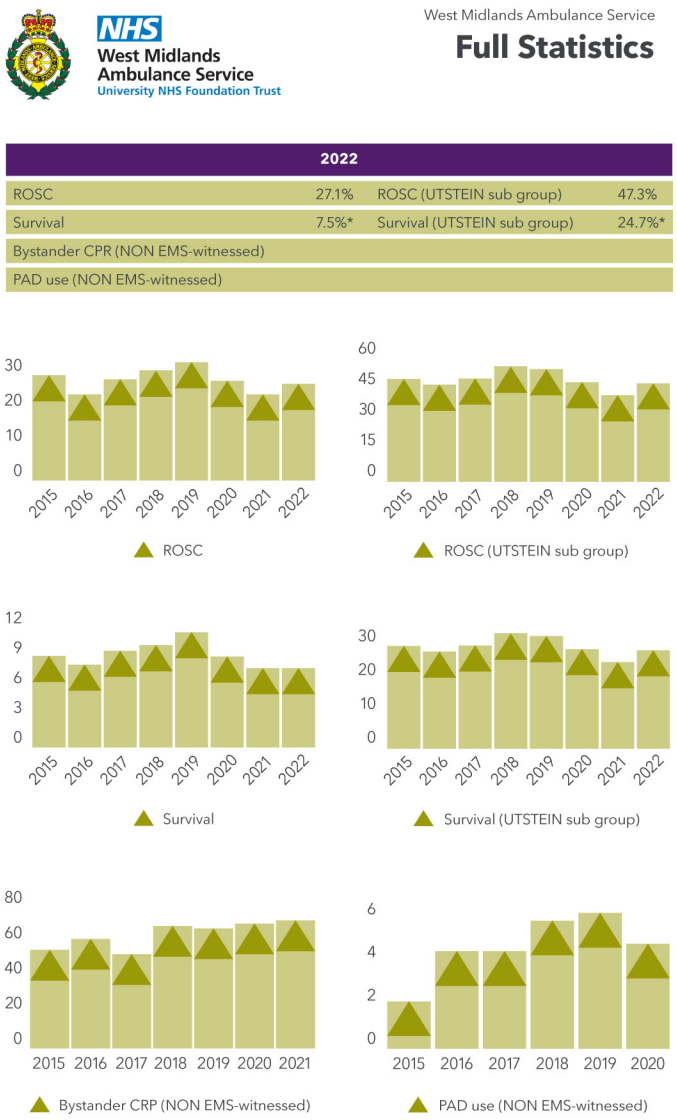
Data driven insights improving outcomes from cardiac arrest (2018 to 2023)

# Key impacts

- Helping the NHS to measure and improve performance
- Highlighting health inequalities
- Data driven community CPR campaigns
- Improving access to defibrillators
- GoodSAM collaboration improving community response
- National and international research collaborations

# Working with the NHS to measure and improve performance



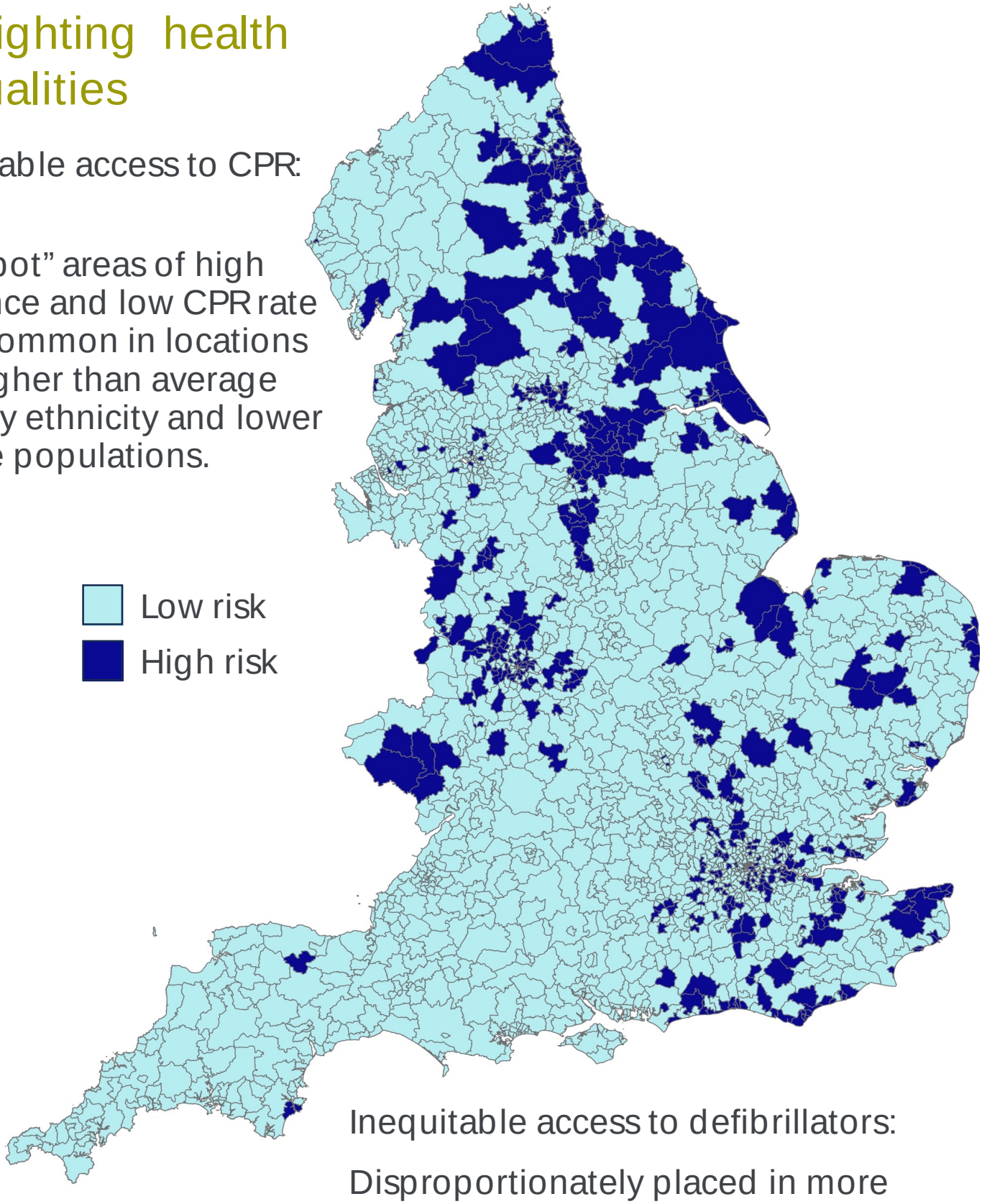

## Since April 2018 OHCAO has been the data source for NHS England's Ambulance Quality Indicators

https://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/

# Highlighting health inequalities

Inequitable access to CPR:

"Hot-Spot" areas of high incidence and low CPR rate more common in locations with higher than average minority ethnicity and lower income populations.




Inequitable access to defibrillators:

Disproportionately placed in more affluent areas with a lower population density

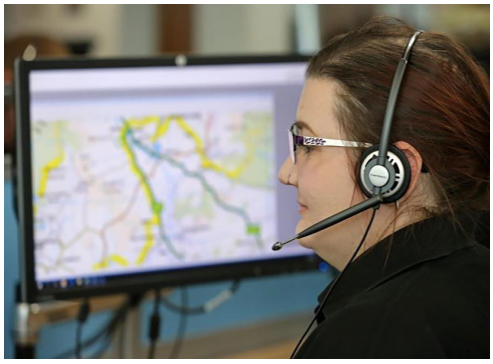
# Data driven community CPR campaigns

OHCAO data used for targeted community CPR events

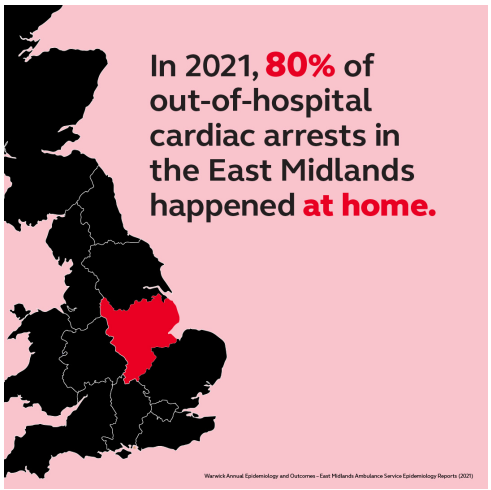
OHCAO data used by Resuscitation Council UK (RCUK) for online awareness campaigns and lobbying activities


World Restart a Heart (WRAH)

- 291,000 trained in the UK in 2018
- Our data helps identify communities who need the most help



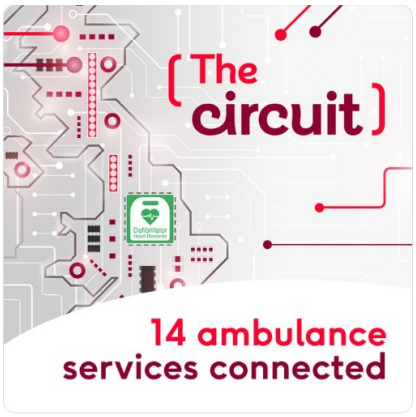
"Hot-Spot" location data shared with St John Ambulance to inform their CPR Community Network




An RCUK out-of-hospital cardiac arrest awareness campaign reached over:

- 75,000 people via Twitter
- 35,000 via LinkedIn
- 30,000 via Facebook
- 3,000 on Instagram

# Using data to improve access to defibrillators




OHCAO research informed the design of The Circuit
- The national defibrillator network
- Now used by all UK ambulance services

NatWest

OHCAO helped NatWest place 100 defibrillators in the community

Department for Education

OHCAO worked with the Department for Education to help develop the Defibrillators in Schools Plan leading to the deployment of defibrillators at almost 18,000 schools

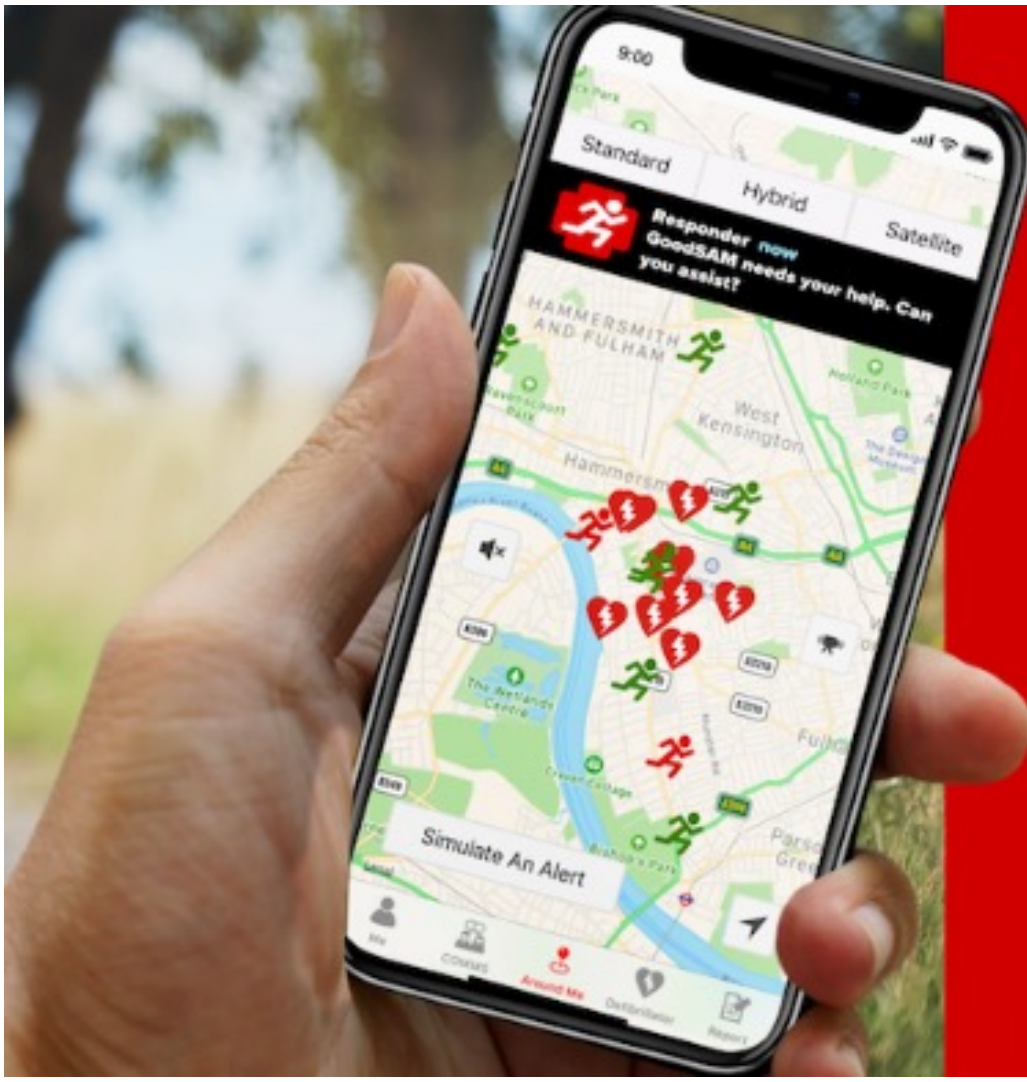
Department of Health & Social Care

OHCAO helped the Department of Health & Social Care to place defibrillators in areas of most need

# GoodSAM collaboration: Improving the community response to cardiac arrest

GoodSAM

Quietly powering the NHS Volunteer Responder Network




## Research using OHCAO data

- Demonstrated the life-saving potential of the GoodSAM app
- Helped to refine the optimal alerting radius and system configuration

# National and international collaboration

- OHCAO data used by researchers in the UK and around the world to learn about cardiac arrest
- OHCAO has supported the training of 13 new researchers, helping secure the next generation of resuscitation scientists
- OHCAO research findings have informed resuscitation guidelines around the world

EuReCa ONE European Registry of Cardiac arrest

EuReCa TWO European Registry of Cardiac arrest

EuReCa THREE European Registry of Cardiac arrest

**EPIDEMIOLOGY 2021**

## 5 TOP MESSAGES

EUROPEAN RESUSCITATION COUNCIL

### 1. REGISTRIES

- Health systems should have population-based registries which monitor the incidence, case mix, treatment and outcomes for cardiac arrest
- Registries should adhere to the Utstein recommendations

### 2. OUT OF HOSPITAL CARDIAC ARREST

- Data from registries should inform health system planning and responses to cardiac arrest
- All European countries are encouraged to participate in the European Registry of Cardiac Arrest (EuReCa) collaboration

### 3. IN HOSPITAL CARDIAC ARREST

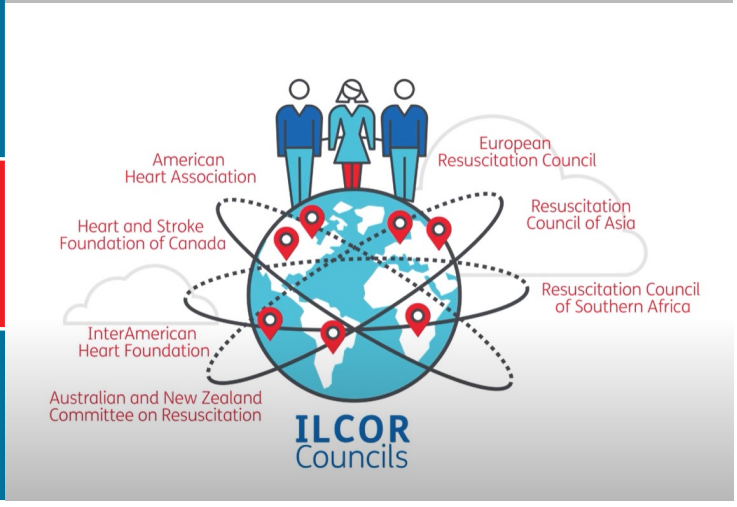
- Data from registries should inform health system planning and responses to cardiac arrest

### 4. LONG TERM OUTCOMES

- Clinicians should be alert to longer term consequences of cardiac arrest and refer for specialist support where required

### 5. POST CARDIAC ARREST REHABILITATION

- There is a need for more research and greater provision of post resuscitation rehabilitation services

# Together we make a difference

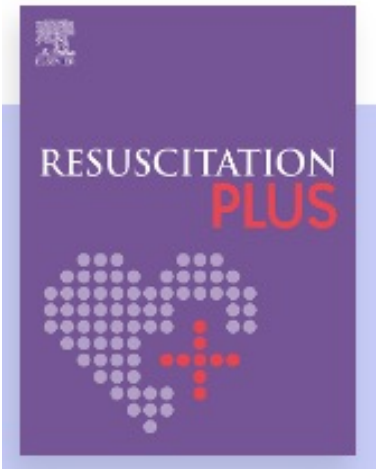
- More people helping to save a life with CPR
- More defibrillators available and being used
- More hearts restarted
- More lives saved

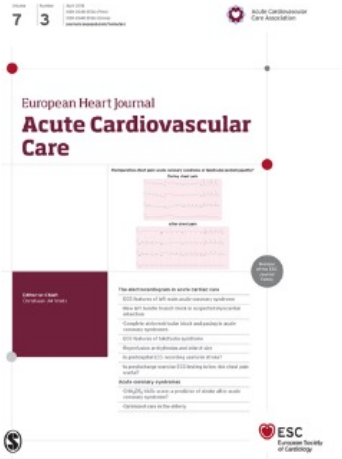
- Bystander CPR has increased from 65% in 2017 to 78% in 2021
- Annual CPR surveys show increased confidence in performing CPR


- Public Access Defibrillator (PAD) use has increased from 4.7% in 2017 to 5.5% in 2021
- Annual CPR surveys show an increase in the proportion of individuals trained in PAD use from 25% in 2018 to 31% in 2022
- Annual CPR surveys show that the proportion of individuals reporting they would be likely to use a PAD has risen from 41.2% in 2018 to 50.8% in 2022


- The number of lives saved has improved from 2350 in 2017 to 2670 in 2021
- Survival has increased from 8.1% in 2017 to 8.5 in 2021

# Publications






Benson M, Brown TP, Booth S, Achana F, Smith CM, Price G, Ward M, Hawkes C, Perkins GD. Location of out-of-hospital cardiac arrests and automated external defibrillators in relation to schools in an English ambulance service region. Resusc Plus. 2022;11:100279.

Hawkes CA, Kander I, Contreras A, Ji C, Brown TP, Booth S, Siriwardena AN, Fothergill RT, Williams J, Rees N, Stephenson E. Impact of the COVID-19 pandemic on public attitudes to cardiopulmonary resuscitation and publicly accessible defibrillator use in the UK. Resusc Plus. 2022;10:100256.

Albargi H, Mallett S, Berhane S, Booth S, Hawkes C, Perkins GD, Norton M, Foster T, Scholefield B. Bystander cardiopulmonary resuscitation for paediatric out-of-hospital cardiac arrest in England: An observational registry cohort study. Resuscitation. 2022;170:17-25.

Brown TP, Perkins GD, Smith CM, Deakin CD, Fothergill R. Are there disparities in the location of automated external defibrillators in England? Resuscitation. 2022;170:28-35.

Smith CM, Lall R, Fothergill RT, Spaight R, Perkins GD. The effect of the GoodSAM volunteer first responder app on survival to hospital discharge following out-of-hospital cardiac arrest. Eur Heart J Acute Cardiovasc Care. 2022 Jan;11:20-31.

Ji C, Brown TP, Booth SJ, Hawkes C, Nolan JP, Mapstone J, Fothergill RT, Spaight R, Black S, Perkins GD, Foster T. Risk prediction models for out-of-hospital cardiac arrest outcomes in England. Eur Heart J Qual Clin Outcomes. 2021;7:198-207.

Hawkes CA, Brown T, Noor U, Carlyon J, Davidson N, Soar J, Perkins GD, Smyth MA, Lockey A. Characteristics of Restart a Heart 2019 event locations in the UK. Resusc Plus. 2021;6:100132.

Smith CM, Lall R, Spaight R, Fothergill RT, Brown T, Perkins GD. Calculating real-world travel routes instead of straight-line distance in the community response to out-of-hospital cardiac arrest. Resusc Plus. 2021;8:100176.

Gräsner J-T, Wnent J, Herlitz J, et al. Survival after out-of-hospital cardiac arrest in Europe-results of the EuReCa TWO study. Resuscitation. 2020;148:218-226.

von Vopelius-Feldt J, Morris RW, Benger J. The effect of prehospital critical care on survival following out-of-hospital cardiac arrest: A prospective observational study. Resuscitation. 2020;146:178-187.

Kiguchi T, Okubo M, Nishiyama C, Maconochie I, Ong ME, Kern KB, Wyckoff MH, McNally B, Christensen EF, Tjelmeland I, Herlitz J. Out-of-hospital cardiac arrest across the World: First report from the International Liaison Committee on Resuscitation (ILCOR). Resuscitation. 2020;152:39-49.

Brown TP, Booth S, Hawkes CA, et al. Characteristics of neighbourhoods with high incidence of out-of-hospital cardiac arrest and low bystander cardiopulmonary resuscitation rates in England. Eur Heart J Qual Care Clin Outcomes. 2019;5:51-62.

Hawkes CA, Brown TP, Booth S, Fothergill RT, Siriwardena N, Zakaria S, Askew S, Williams J, Rees N, Ji C, Perkins GD. Attitudes to cardiopulmonary resuscitation and defibrillator use: a survey of UK adults in 2017. J Am Heart Assoc. 2019;8:e008267.

Couper K, Kimani P. K, Gale C, et al. Patient, health service factors and variation in mortality following resuscitated out-of-hospital cardiac arrest in acute coronary syndrome: Analysis of the Myocardial Ischaemia National Audit Project. Resuscitation. 2018;124;49-57.

Ji C, Quinn T, Gavalova L, Lall R, Scomparin C, Horton J, Deakin CD, Pocock H, Smyth MA, Rees N, Brace-McDonnell SJ, Gates S, Perkins GD. Feasibility of data linkage in the PARAMEDIC trial: a cluster randomised trial of mechanical chest compression in out-of-hospital cardiac arrest. BMJ Open. 2018;8:e021519.

Masterson S, McNally B, Cullinan J, et al. Out-of-hospital cardiac arrest survival in international airports. Resuscitation. 2018;127:58-62.

Smith CM, Perkins GD. Improving bystander defibrillation for out-of-hospital cardiac arrest: Capability, opportunity and motivation. Resuscitation. 2018;124;A15-A16.