

## **Epidemiology of cardiac arrest Guidelines**

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## **Introduction**

### **Key points**

- Epidemiology is a new section for the RCUK Guidelines.

### **Introduction**

The European Resuscitation Council Guidelines cover the epidemiology and outcomes of cardiac arrest across Europe. This section presents equivalent data drawn from UK studies of the epidemiology of cardiac arrest in the in-hospital and out of hospital settings.

## **Out of hospital cardiac arrest (OHCA) in the UK**

- NHS Ambulance Services attempt resuscitation in approximately 30,000 people each year.
- The annual incidence of out-of-hospital cardiac arrest (OHCA) is approximately 55 per 100,000 inhabitants.

- Most cardiac arrests (72%) occur in the home or a workplace (15%).
- Half of all OHCA are witnessed by a bystander.
- Most cardiac arrests occur in adults (98%), amongst whom one third (33%) were aged 15-64 years.
- 8 out of 10 OHCA are due to a cardiac cause.
- Bystander CPR is attempted in 7 out of 10 OHCA.
- Public access defibrillator use is reported as being used in less than 1 in 10 OHCA.
- There is evidence of health inequalities in the incidence of cardiac arrest, bystander CPR and distribution of public access defibrillators. Deprived areas and areas with a greater proportion of residents from minority ethnic backgrounds have a higher incidence of cardiac arrest, lower incidence of bystander CPR and less access to public access defibrillators.
- The average ambulance response time is 6.9 minutes.
- The initial rhythm is shockable in approximately 1 in 4 OHCA (22-25%).
- A return of spontaneous circulation (ROSC) is achieved in approximately 30% of attempted resuscitations. In the Utstein comparator group (presumed cardiac origin, bystander witnessed, initially shockable rhythm) the rate of ROSC is 54%.
- When resuscitation is attempted, just fewer than one in ten (9%) people survive to hospital discharge following OHCA. In the Utstein comparator group the rate of survival to discharge is 29%.
- Information on the epidemiology and outcomes of out of hospital cardiac arrest is collected by the Out of Hospital Cardiac Arrest Outcomes registry ([www.warwick.ac.uk/go/ohcao](http://www.warwick.ac.uk/go/ohcao)). The registry, which is funded by Resuscitation Council UK and the British Heart Foundation, works closely with the Association of Ambulance Chief Executives National Ambulance Medical Directors Group and National Ambulance Research Steering Group. The Registry receives data from NHS Ambulance Services in England and Wales.

## **In-hospital cardiac arrest (IHCA) in the UK**

- The annual incidence of in hospital cardiac arrest (IHCA) is 1 to 1.5 per 1,000 hospital admissions.
- The average age of those sustaining an IHCA is 70 years. A quarter (26.7%) are aged 16-64 years.
- Most cardiac arrests (85%) occur on wards and in patients admitted to hospital for medical reasons.

- The initial rhythm is shockable in 17% of cardiac arrests, pulseless electrical activity 52%, asystole 20% and the remainder are unknown or undetermined.
- ROSC is achieved in half (53%) of those who are treated by a hospital's resuscitation team for IHCA.
- A quarter (23.6%) of those who are treated by a hospital's resuscitation team for IHCA survive to hospital discharge.
- More than four out of five (83%) who survive to hospital discharge have a favourable neurological outcome (Cerebral Performance Category 1 or 2).
- Information on the epidemiology and outcomes of IHCA are provided by the [National Cardiac Arrest Audit \(NCAA\)](#). This is a joint initiative between Resuscitation Council UK and the Intensive Care National Audit and Research Centre. NCAA receive data from 197 hospitals across England, Wales, Scotland and Northern Ireland (Correct as of February 2021).

## **Post-resuscitation care**

- One in ten patients admitted to critical care and requiring invasive mechanical ventilation had sustained a cardiac arrest prior to admission.
- The average length of stay in critical care is 4-6 days and in hospital 14-21 days.
- One in ten (OHCA) and one in 25 (IHCA) of those admitted to critical care go on to gift organs for transplantation.
- Approximately half of those admitted to critical care following OHCA survive to hospital discharge whilst one third of those admitted to critical care following IHCA survive to hospital discharge.
- Two thirds of patients who survive are discharged home.

## **Post-cardiac arrest rehabilitation**

- There is wide variation in the provision of rehabilitation services and psychological support following cardiac arrest.
- Many patients do not have access to post-cardiac arrest rehabilitation.

## **CPR training**

- In 2018, 59% of members of the public reported having received training in CPR and 19% in how to use an automated external defibrillator (AED).
- In 2019, over 291,000 people in the UK were trained in CPR as part of World Restart a Heart.

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