

# Epidemiology and outcomes of out-of-hospital cardiac arrests at sport and recreational events in England

Helen Winterburn<sup>1</sup>, Chen Ji<sup>1</sup>, Gavin D Perkins<sup>1</sup>, Scott Booth<sup>1</sup>,  
Adam de Paeztron<sup>1</sup>, Rachael Fothergill<sup>2</sup>, Terry Brown<sup>3\*</sup>

<sup>1</sup> Clinical Trials Unit (CTU), University of Warwick

<sup>2</sup> London Ambulance Service NHS Trust, UK

<sup>3</sup> Applied Research Collaboration West Midlands, Clinical Trials Unit, University of Warwick, UK

\*Corresponding author

**Background:** Few studies have examined the epidemiology of out-of-hospital cardiac arrests (OHCA) at sports and recreational events. This project aimed to report the characteristics and outcomes of OHCA at sports and recreational events in England.

**Methods:** Data on OHCA events that occurred between 2015 and 2020 at sport or recreational events were obtained from the OHCA Outcomes registry. Descriptive statistics were used to compare OHCA characteristics against outcomes (return of spontaneous circulation (ROSC) at hospital handover and survival to discharge (STD)). Logistic regression established which characteristics were affecting outcomes. P-values <0.05 were considered statistically significant.

**Results:** About 45% of patients achieved a ROSC at hospital handover and 27.4% survived to discharge. Patients were predominantly male and over 65-years. Outcomes were independently associated with: bystander witnessed, medical aetiology, initially in shockable rhythm, ambulance response time less than 7-minutes and emergency medical services used defibrillators. Achieving a ROSC at hospital handover improved STD. Logistic regression indicated initial shockable rhythm, witnessed OHCA, bystander CPR and public access defibrillator (PAD) improved ROSC chances, whereas increased age and ambulance response time reduced chances. A similar pattern was observed for STD with the addition that ROSC at any time increased STD. Increased age and ambulance response time increased the likelihood that resuscitation efforts were unsuccessful.

**Conclusion:** OHCA outcomes at sports and recreational events are significantly better compared to those occurring in the general population. Increased survival possibly due to higher proportion of cases being witnessed allowing for more bystander CPR, and potential PAD use. This highlights the importance of recognising what is happening, CPR training and being aware of the location of nearest PAD.

