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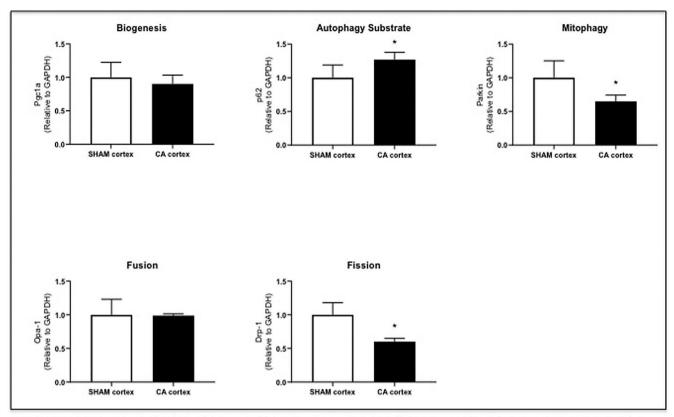


Figure 2. Western Blot detection of biogenesis, autophagy, mitophagy, fusion and fission markers in brain cortex of rats 72 hours after CA/CPR. Data are shown as mean ± SD, n=4 sham, n=4 CA. Student T test, \* p<0.05.

Figure 2: (abstract: OR25)

CPR, no difference was observed between the groups Wet-to-dry ratio didnot differ between the 2 groups.

**Conclusion:** These results indicate that the development of CRALE is characterized by derangement of mechanical properties of the respiratory system mainly represented by a reduction of lung compliance. The presence of no-flow time did not aggravate the development of CRALE.

## **OR27**

## The COVID-19 pandemic's impact on out-of-hospital cardiac arrest incidence and survival outcomes: a systematic review

A. Almazrua<sup>1,2</sup>, T. Brown<sup>1</sup>, M. Aljanoubi<sup>1,2</sup>, J. Fisher<sup>1</sup>, C. Hawkes<sup>1</sup>

<sup>1</sup>Warwick Clinical Trials Unit - University of Warwick, Coventry, United Kingdom;

<sup>2</sup>Prince Sultan College for EMS - King Saud University, Riyadh, Saudi Arabia

**Background:** The COVID-19 pandemic has overwhelmed healthcare systems, strained ambulance services and, directly or indirectly, affected community responses to patients who experience cardiac arrests outside hospitals. Previous observational studies have shown a notable rise in Out-of-Hospital Cardiac Arrest (OHCA) cases during the pandemic in different parts of the world compared to the same period in 2019, including the United Kingdom and the United States 1, 2. This systematic review's intention is to shed light on the incidence and survival outcomes of adult OHCA patients.

Methods: A comprehensive review of MEDLINE, EMBASE, the Cochrane Library, Web of Science, WHO's Global Index Medicus, WHO's Global Research Literature on Coronavirus 2019 and medRxiv up to 8 September 2021 was conducted to identify articles and preprints that reported OHCA figures before and during the COVID-19 pandemic. Primary outcomes were OHCA incidence, Return of Spontaneous Circulation (ROSC) and survival to hospital discharge.

**Results:** Twenty-one studies were included in the final analysis, out of 2877 potentially eligible records. There were 12,619 OHCA cases during the COVID-19 pandemic, compared with 8353 OHCA cases in the same period of 2019, representing a 51.1% increase in OHCA incidence during the pandemic. In terms of survival outcomes, ROSC and survival to hospital discharge rates were substantially reduced during the pandemic compared to the pre-pandemic period.

**Conclusion:** The pandemic has had an impact on the incidence and survival outcomes among adult OHCA patients compared to the prepandemic period. Moreover, the pandemic has delayed ambulance care processes and disrupted community responses to OHCA.

- 1. Fothergill RT *et al.* Out-of-hospital cardiac arrest in London during the COVID-19 pandemic. *Resusc Plus.* 2021;5:100066.
- 2. Lai PH *et al.* Characteristics associated with out-of-hospital cardiac arrests and resuscitations during the Novel Coronavirus Disease 2019 pandemic in New York City. *JAMA Cardiol.* 2020;5(10):1154–63.

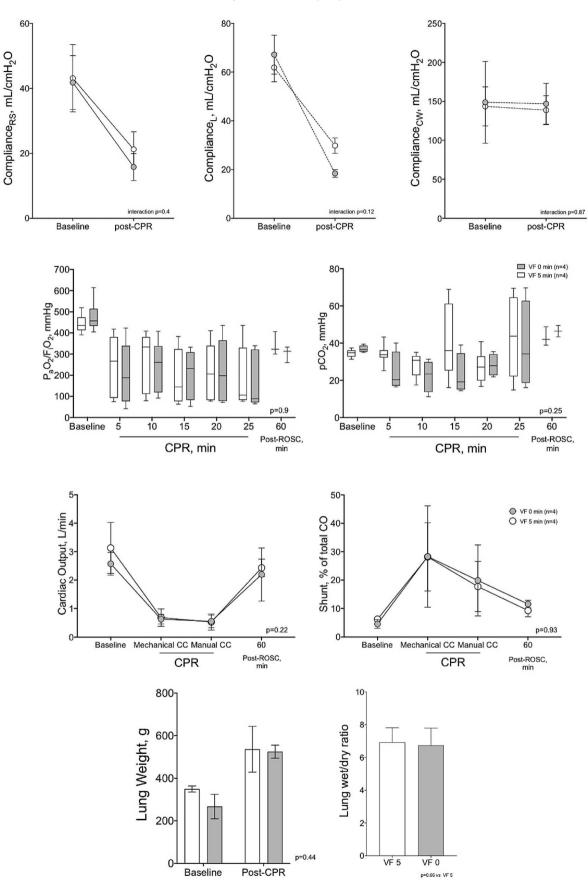


Figure: (abstract: OR26)

Before COVID-19 period		COVID-19 pandemic period		Odds Ratio	Odds Ratio		
Events	Total	Events	Total	M-H, Random, 95% CI	M-H, Random, 95% CI		
64	322	33	175	1.07 [0.67, 1.70]			
310	930	297	1016	1.21 [1.00, 1.47]	<u> </u>		
360	1218	91	380	1.33 [1.02, 1.74]			
95	231	95	278	1.35 [0.94, 1.93]	+		
409	1616		999	1.40 [1.15, 1.69]	<del></del>		
	529				+		
29	180		291	1.55 [0.90, 2.67]			
525	1723		1446	1.75 [1.48, 2.06]			
61	210		145	1.79 [1.07, 2.99]			
978	3386	365	2017	1.84 [1.61, 2.11]			
224			1135	2.11 [1.70, 2.63]			
15							
44	222		314	2.63 [1.57, 4.39]			
337	1336	423	3989	2.84 [2.42, 3.34]			
				0.2	0.5 1 2 5		
					Higher during COVID-19 Higher before COVID-19		
	Events 64 310 360 95 409 65 29 525 61 978 224 15 44	Events Total   64 322   310 930   360 1218   95 231   409 1616   65 529   29 180   525 1723   61 210   978 3386   224 683   15 158   44 222	Events Total Events   64 322 33   310 930 297   360 1218 91   95 231 95   409 1616 195   65 529 43   29 180 32   525 1723 290   61 210 27   978 3386 365   224 663 213   15 158 8   44 222 27	Events Total Events Total   64 322 33 175   310 930 297 1016   360 1218 91 380   95 231 95 278   409 1616 195 999   65 529 43 493   29 180 32 291   525 1723 290 1446   61 210 27 145   978 3386 365 2017   224 683 213 1135   15 158 8 171   44 222 27 314	Events Total Events Total M-H, Random, 95% Cl   64 322 33 175 1.07 [0.67, 1.70]   310 930 297 1016 1.21 [1.00, 1.47]   360 1218 91 380 1.33 [1.02, 1.74]   95 231 95 278 1.35 [0.94, 1.93]   409 1616 195 999 1.40 [1.15, 1.69]   65 529 43 493 1.47 [0.98, 2.20]   29 180 32 291 1.55 [0.90, 2.67]   525 1723 290 1446 1.75 [1.48, 2.06]   61 210 27 145 1.79 [1.07, 2.99]   978 3386 365 2017 1.84 [1.61, 2.11]   224 683 213 1135 2.11 [1.70, 2.63]   15 158 8 171 2.14 [0.88, 5.19]   44 222 27 314 2.63 [1.57, 4.39]   337 1336 423 3989 2		

Figure 1. Forest plot of comparison: Return of Spontaneous Circulation (ROSC), outcome: ROSC.

Figure 1: (abstract: OR27)

	Before COVID-19 period		COVID-19 pandemic Period		Odds Ratio		Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	M-H, Random, 95% CI		M-H, Random, 95% Cl		
Grobl, 2021	16	149	22	175	0.8366 [0.4219, 1.6591]				
Sultanian, 2021	65	167	17	51	1.2745 [0.6587, 2.4661]			+	
Orttz, 2020	168	1723	42	623	1.4945 [1.0518, 2.1236]		-		
Marijon, 2020	164	3052	16	517	1.7781 [1.0550, 2.9969]		-		
Baldi, 2020	21	222	16	314	1.9459 [0.9912, 3.8201]				_
Cho, 2020	14	158	8	171	1.9809 [0.8077, 4.8582]				
Uy-Evanado, 2021	34	231	22	278	2.0083 [1.1385, 3.5425]				
Ball, 2020	142	1218	22	380	2.1475 [1.3493, 3.4179]				-
Pascual, 2021	18	306	4	314	4.8438 [1.6201, 14.4821]			-	
						0.2	0.5 1	ź	5
							Higher during COVID-19 Higher before COVID-19		

Figure 2. Forest plot of comparison: 2 Survival to Hospital Discharge, outcome: 2.1 Survival to Hospital Discharge.

Figure 2: (abstract: OR27)

## **OR28**

## The impact of COVID-19 on emergency medical service led out of hospital cardiac arrest resuscitation: A qualitative study

Alison Coppola<sup>1</sup>, Kim Kirby<sup>2,3</sup>, Sarah Black<sup>4</sup>

<sup>1</sup>Southwestern Ambulance Service NHS Foundation Trust, Plymouth, United Kingdom;

<sup>2</sup>Southwestern Ambulance Service NHS Foundation Trust, Bristol, United Kingdom;

<sup>3</sup>University West of England, Bristol, United Kingdom;

<sup>4</sup>Southwestern Ambulance Service NHS Foundation Trust, Exeter, United Kingdom

**Background:** Following the emergence of COVID-19 there have been national changes in the way emergency medical service (EMS) staff respond to and treat patients in out-of-hospital cardiac arrest (OHCA). The views of EMS staff on the impact of COVID-19 and management of OHCA have not previously been explored. This study aimed to explore staff views on communication during resuscitation, resuscitation procedures and perception of risk.

**Methods:** A qualitative phenomenological enquiry was conducted. A purposive sample of n = 20 participants of various clinical grades were selected from National Health Service EMS providers in the United Kingdom. Data was collected using semi-structured interviews, transcribed verbatim and inductive thematic analysis was applied. **Results:** Three main themes emerged which varied according to clinical grade and location.

- 1. Service pressures: Availability of operational staff and inhospital capacity were reduced. Staff felt pressure and disconnect from the continuous updates to clinical guidelines which resulted in organisational change fatigue.
- 2. Decision-making: Staff generally felt supported to make best interest decisions when resuscitation was ineffective or inappropriate. Staff made informed decisions to compromise recommended levels of personal protective equipment, felt impractical to the pre-hospital context, to improve communication and reduce delays to care.
- 3. Moral injury: The emotional impacts of prolonged and frequent exposure to patient death caused many staff to take time away from work to recover.

**Conclusion:** This qualitative study is the first known to explore the impacts of COVID-19 on OHCA which found positive outcomes, but also negative impacts important to inform EMS systems. COVID-19 created delays to performing resuscitation which were multifaceted. Staff developed new ways of working to overcome the barriers of impractical personal protective equipment. There was little impact on resuscitation procedures. Moving forwards EMS should consider how to limit organisational change and better support the ongoing emotional impacts on staff.