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#400WORDS: KNOWLEDGE + ACTION

## Neuroprotection of patients after an out-of-hospital cardiac arrest: a clinical audit project proposal

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### Background

Sudden out-of-hospital cardiac arrest (OHCA) is the third leading cause of death in Europe (Grasner *et al*, 2021). Survival rate to hospital discharge in the UK is low, 7-10% (Hassager *et al*, 2018), often with poor neurological outcomes. A key element to improve survival after OHCA is the enhancement of post-resuscitation therapy to avoid secondary brain injury. Neuroprotection is the only post return-of-spontaneous-circulation (ROSC) intervention that can improve survival with good neurological outcome (Hassager *et al*, 2018) and is advocated by the International Liaison Committee on Resuscitation (ILCOR) (Singletary *et al.*, 2020) for OHCA patients displaying abnormal neurological function post-ROSC. The key components of neuroprotection are maintaining normoxia/normocapnia, ensuring normoglycaemia, achieving seizure control, providing appropriate sedation and delivering targeted temperature management.

Nationally, the approach to neuroprotection has been found to be inconsistent and this is reflected locally. Our Critical Care Unit (CCU) admits on average four patients per month who have sustained an OHCA and achieved ROSC. A more streamlined approach is required to ensure this cohort of patients receive consistent post-ROSC care which may improve neurological recovery and survival rates. Since the implementation of the Intelli-Space Critical Care and Anaesthesia (ICCA) computerised system in 2018, all medical, nursing and allied health professional documents are recorded on this system. The computerised OHCA flowchart has targets aligned with European Resuscitation Council Neuroprotection Guidelines (ERC, 2025).

### Aim

1. To determine if the new computerised flowchart for OHCA patients is being correctly completed by critical care staff.

- To identify if the neuroprotection parameters are being correctly assessed according to the patient's condition and ERC guidelines.

## Method

Electronic ICCA patient records will be retrospectively audited using inclusion/exclusion criteria (Table 1) over a three-month period (December 2025-March 2026). Anonymous patient data will be obtained from the database co-ordinator. The following will be assessed:

- Is the OHCA flowchart being added to the patient's electronic record at time of CCU admission following ROSC?
- Are the neuroprotection parameters being adhered to and is a clinical justification documented if there is a deviation from parameters?
- Is the OHCA flowchart being completed daily during CCU admission – up to day three or discharge?

**Table 1: Inclusion/exclusion criteria**

Inclusion	Exclusion
Out of hospital cardiac arrest	In-hospital cardiac arrest
ROSC within 60 mins of cardiac arrest	Admission for EOL care only
GCS <9 on admission	Awake with GCS >10 following ROSC
	Died within 12 hours of admission
	Terminal illness
	Pregnancy
	Under 16 years of age

## Discussion

It is anticipated that the results of this audit will reveal if the computerised system is being completed for this cohort of patients. Further focus groups study will identify barriers and enablers to completing the computerised document. This will provide direction for further education needed to improve adherence with the aim to provide more streamlined neuroprotection and improved survival rates for OHCA patients who gain ROSC.

## References

European Resuscitation Council (2025) European Resuscitation Council Guidelines Available at: <https://www.erc.edu/science-research/guidelines/guidelines-2025/guidelines-2025-english/> (Accessed 12 November 2025)

Gräsner, J.T., Herlitz, J., Tjelmeland, I.B.M., Wnent, J., Masterson, S., Lilja, G., Bein, B., Böttiger, B. W., Rosell-Ortiz, F., Nolan, J. P., Bossaert, L., and Perkins, G. D. (2021) 'European Resuscitation Council Guidelines 2021: Epidemiology of cardiac arrest in Europe', *Resuscitation*, 161, pp. 61–79. DOI: <https://doi.org/10.1016/j.resuscitation.2021.02.007>

Hassager, C., Nagao, K. and Hildick-Smith, D. (2018) 'Out-of-hospital cardiac arrest: in-hospital intervention strategies.' *The Lancet*, 391, pp 989-998.

Singletery, E. M., Zideman, D. A., Bendall, J. C., Berry, D. A., Borra, V., Carlson, J. N., Cassan, P., Chang, W.-T., Charlton, N. P., Djärv, T., Douma, M. J., Epstein, J. L., Hood, N. A., Markenson, D., Meyran, D., Orkin, A., Sakamoto, T., Swain, J. M., Woodin, J. A., De Buck, E., De Brier, N., O'Brien, D., Picard, C., Goolsby, C., Oliver, E., Klaassen, B., Poole, K., Aves, T., Lin, S., Handley, A. J., Jensen, J., Allan, K. S. and Lee, C.-C. (2020) '2020 International Consensus on First Aid Science With Treatment Recommendations', *Resuscitation*, 156, pp. A240–A282. DOI: <http://doi.org/10.1016/j.resuscitation.2020.09.016> (Accessed: 30 September 2025).



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