A new model for nurse lead neuro-prognostication services in out of hospital cardiac arrest in a tertiary cardiac centre

To the Editor,

Out of hospital cardiac arrest (OHCA) is a major healthcare challenge. In 2020, in England, the ambulance service attended 93,920 calls for OHCA, with just 8.3% of patients conveyed to hospital surviving to discharge.[1] Many patients suffer poor outcomes due to hypoxic-ischaemic brain injury occurring prior to admission.[2] The International Liaison Committee on Resuscitation (ILCOR) suggests a multi-modality approach to neurological prognostication, including clinical examination, neurophysiology, biomarkers and neuro-imaging to be performed no earlier than 72 hours when targeted temperature management and sedation have been safely discontinued.[3] However, utilization is poor; one study from Denmark suggests that just 32% of OHCA patients underwent an electroencephalogram (EEG) and 14% somatosensory evoked potential test (SSEP).[4]

The Essex Cardiothoracic Centre, in the South East of the United Kingdom delivers cardiac care to a population of 1.7 million people. Typically, we see over 100 OHCA admissions per annum. One of the many challenges has been how to deliver guideline directed neuro-prognostication in a stand-alone cardiac centre, whilst not having access to the diagnostics and specialist staff essential for neurological-prognostication available to centres that exist within larger hospitals.

We have a unique nurse lead approach that ensures our patients receive cutting edge neurological prognostication. We have previously shown the feasibility of setting up a neurophysiology service in standalone cardiac centre[5] and we now employ a highly specialist cardiac nurse specifically for this purpose. Following acute treatment, OHCA patients are admitted to intensive care or the coronary care unit. Our OHCA nurse then takes a clinical history and documents and a MIRACLE-2 score.[6] They are responsible for a detailed neurological assessment, including quantitative pupillometry and brainstem reflexes. In addition, the nurse ensures that blood is drawn at 72 hours for Neuronal Specific Enolase (NSE) levels. For patients remaining comatose at 72 hours the nurse performs an SSEP and EEG as well as ensuring a CT head has been done. The clinical picture, neuro-physiology tests, and CT imaging are live-screened via tele-conferencing software to a neurologist with a special interest in neurological-prognostication, based off site. The results are verified and discussed in a twice weekly neuro-prognostication MDT with attending cardiologist and ICU consultant. Early neurological-prognostication may signal: poor outcomes instigating a palliative strategy, indeterminate results requiring continued supportive therapies and re-assessment, or a good neurological prognosis that places great emphasis on correcting non neurological factors.

When patients are suitable for de-escalation of care the nurse co-ordinates this and pre-emptively refers to the relevant therapy teams, including neuro-rehab. The nurse acts as a constant point of contact throughout the patients admission, contributing to family meetings and providing updates. When discharged, patients are followed up in a dedicated post OHCA Care After Resuscitation clinic (CARE) to undergo multi-dimensional assessment of post arrest sequelae.[7]

Our specialist nurse lead model allows:

• Specialist neurological-prognostication to be carried out at a stand-alone Cardiothoracic centre

• Vital, early, information on prognosis allowing for accurate, multi-disciplinary decision making

• Continuity of patient care throughout intensive care, cardiology and allied teams

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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