

## The ripple effect of acute neurological injury following cardiac arrest: a reflection

Glenn M Eastwood

**TO THE EDITOR:** Recently, I found myself at the bedside of a young man in the intensive care unit. I saw a lot of myself in him. We are close in age. We are both husbands. We both are fathers of two young children, a boy and a girl. However, when he was admitted to the ICU at 7 pm the previous night, I was at home with my family. It was now the next morning.

He was admitted to the ICU after an out-of-hospital cardiac arrest. His heart had stopped beating for about 17 minutes. The progress notes described a familiar course of events: sudden collapse, bystander cardiopulmonary resuscitation, airway management, defibrillation and coronary angiography. However, recurring in my mind were thoughts of what now, what next; thoughts likely to be shared by his wife and family.

Cardiac arrest itself heralds the onset of cellular injury in the heart and brain. After the return of spontaneous circulation, the pathophysiological onslaught of ischaemia–reperfusion injury is set in motion. Initial therapeutic interventions are applied to restore haemodynamic and physiological normality and stability. However, to a large extent, successful restoration of cardiac function does not determine hospital discharge destination or the ensuing quality of life.<sup>1</sup> Typically, episodes of hypoxia–ischaemia result in acute neurological injury and such injury has the most profound effects on immediate, short-term and long-term quality-of-life outcomes.<sup>1,2</sup> Notably, cardiac arrest survivors exhibit dramatic fluctuations in mood, a loss of executive cognitive function, and often a lack of the ability to socialise independently.<sup>2</sup>

To date, the application of therapeutic hypothermia after cardiac arrest has not afforded the neurological protection or mortality benefits hoped for.<sup>3</sup> Furthermore,

despite our best efforts, over the past decade the Australian and New Zealand ICU mortality rate for cardiac arrest patients has essentially remained unchanged, at 46% in 2003 and 48% in 2012.<sup>4</sup> Therefore, in the pursuit of evidence to improve neurological and quality-of-life outcomes, we are obligated to continue to critically appraise our current interventions and to seek novel therapeutic interventions for cardiac arrest patients admitted to our ICUs.

Over the following 6 days, I went to work, I played with my children and I enjoyed family time. He did not. He remained in the ICU with an admission prolonged by agitated delirium. Today, he is convalescing on the ward. He appears calm and is somewhat circumspect but does not recall the past recent events. I suspect though that his wife does, and I do. While our paths may never again cross, the ripple effect of our brief interactions will be long-lasting.

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1 Polanowska KE, Sarzynska-Dlugosz IM, Paprot AE, et al. Neuropsychological and neurological sequelae of out-of-hospital cardiac arrest and estimated need for neurorehabilitation: a prospective pilot study. *Kardiol Pol* 2014; May 20 [Epub ahead of print]. doi 10.5603/KP.a2014.0087.

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3 Nielsen N, et al. Targeted temperature management at 33°C versus 36°C after cardiac arrest. *N Engl J Med* 2013; 369: 2197-206.

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## Informed consent for procedures in the intensive care unit: ethical and practical considerations

Steve J Philpot

**TO THE EDITOR:** I read with great interest Modra and colleagues' well written summary of the ethical and practical considerations of informed consent for procedures in the intensive care unit.<sup>1</sup> Two important argu-

ments against routine consent for procedures, and one further comment, are worthy of addition.

The first relates to the inability of the substitute decisionmaker — known in Victoria as “the person

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responsible” — to refuse treatment on behalf of an incompetent patient (unless the person responsible has been appointed by the patient under a medical enduring power of attorney). If we, as medical practitioners, think that a procedure is in the best interests of an incompetent patient, the person responsible (other than a person appointed under a medical enduring power of attorney) cannot refuse it. They can choose not to provide consent for that treatment, in which case we must seek consent via alternative means.

Of course, it is incumbent upon us to engage with the person responsible in order to understand the values of the patient, so that we can determine what constitutes the patient’s best interests. Given that the withholding of consent by the person responsible will cause us to obtain consent from another source, in cases where a treatment clearly is in the patient’s best interest, the informed consent process is unnecessary and serves instead as mandated provision of information to the person responsible. This process might be improved by not overwhelming the person responsible, and the patient’s family generally, with excessive detail. We should assume responsibility for the decision to perform a necessary procedure, and spend our time explaining to the person responsible why we have chosen it rather than focusing on seeking to obtain consent for it.

Second, it is understandable that the person responsible for giving consent may also feel responsible for any adverse consequences that arise from the procedure, including in some cases the death of his or her loved one. This is a strong argument against obtaining consent from the person responsible for procedures that are clearly required for critically ill patients. These feelings of guilt result from the person responsible’s perceived burden of choice, which may, as per my first point, not actually be a choice at all.

Finally it is worth remembering that it is only when a patient is incompetent that emergency treatment can be provided without consent. It is still necessary to obtain consent for emergency treatment when the patient is competent. The consent may well be implied or verbal rather than in writing but legally it must be obtained. As stated in Modra et al’s article, a universal consent protocol can be a pragmatic solution where multiple procedures are required.

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1 Modra LJ, Hilton A, Hart GK. Informed consent for procedures in the intensive care unit: ethical and practical considerations. *Crit Care Resusc* 2014; 16: 143-8. □