

Management of perceived devastating brain injury after hospital admission: a consensus statement from stakeholder professional organizations

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Abstract

Patients with severe grades of life-threatening brain injury are commonly characterized as having devastating brain injury (DBI), which we have defined as: 'any neurological condition that is assessed at the time of hospital admission as an immediate threat to life or incompatible with good functional recovery AND where early limitation or withdrawal of therapy is being considered'. The outcome in patients with DBI is often death or severe disability, and as a consequence rapid withdrawal of life sustaining therapies is commonly contemplated or undertaken. However, accurate prognostication in life-threatening brain injury is difficult, particularly at an early stage. Evidence from controlled studies to guide decision-making is limited, and there is a risk of a 'self-fulfilling prophecy', with early prognostication leading to early withdrawal of life sustaining therapies and death. The Joint Professional Standards committee of the Faculty of Intensive Care Medicine and the Intensive Care Society convened a consensus group with representation from stakeholder professional organizations to develop clear professional guidance in this area. It recognized that the weak evidence base makes GRADE guidelines difficult to justify. We have made 12 practical, pragmatic recommendations to help clinicians deliver safe, effective, equitable, and justifiable care within resource constrained healthcare systems. In the situation where patient-centred outcomes are recognized to be unacceptable, regardless of the extent of neurological improvement, then early transition to palliative care is appropriate. These recommendations are intended to apply where the primary pathology is DBI, rather than where DBI has compounded a progressive and irreversible deterioration in other life-threatening comorbidities.

Keywords: brain injuries; clinical decision making; practise guideline

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Accurate prognostication in life threatening brain injury is difficult, particularly at an early stage. The eventual outcome for such patients is often death or survival with severe disability. Many consider that admitting such patients to the critical care unit (or intensive care unit: ICU) has little to offer in the absence of a therapeutic option, or that admission is inappropriate because it prolongs the dying process and is wasteful of precious resources. Therefore, in these circumstances withdrawal of life sustaining treatments (WLST) is common practice and considered justifiable.

A UK neurosciences ICU that sought to change current practice by admitting this patient cohort for observation, primarily to aid prognostication, has recently published their experience.¹ This has confirmed in a UK context what many intensivists, neurologists, and neurosurgeons already accept: that occasionally patients go on to make a good recovery despite very poor early prognostic signs.²

Without controlled studies the evidence to guide decision making will be weak when compared with other interventions in critical care. Such studies are unlikely and the risk of a self-fulfilling prophecy, with early prognostication leading to early WLST and death, continues to exist. Case series and the development of appropriate registries can be helpful in increasing the evidence base. Evidence based guidelines as constructed by agreed GRADE criteria in such circumstances will often lead to weak recommendations. Nonetheless the Neurocritical Care Society in the USA has recently undertaken a systematic review and made several recommendations³ that have helped inform this consensus statement. The Joint Professional Standards Committee of Faculty of Intensive Care Medicine (FICM) and the Intensive Care Society (ICS) recognizes that the weak evidence base makes the development of guidelines and protocols difficult to justify, but believes that guidance in this area would help practicing clinicians deliver safe, effective, equitable, and justifiable care within a resource-constrained UK National Health Service (NHS). The Joint Professional Standards committee therefore convened a consensus group with representation from stakeholder professional organizations to produce this guidance.

This statement is intended to help consultants when making decisions on the management of patients admitted with a perceived devastating brain injury (DBI), and should not replace their clinical judgment.

Definition of devastating brain injury

For the purpose of this statement, devastating brain injury (DBI) is defined as:

Any neurological condition that is assessed at the time of hospital admission as an immediate threat to life or incompatible with good functional recovery AND where early limitation or withdrawal of therapy is being considered.

This definition emphasizes both the importance of an early clinical assessment of the mortality risk and the likely functional outcomes and the proposed clinical course of action. It is derived from the recommendations of the Neurocritical Care Society³ and from UK experience in admitting such patients from the emergency department (ED) to the ICU.^{1,4} Many patients admitted with neurological conditions that are an immediate threat to life or considered as incompatible with a good functional recovery are still treated actively and aggressively. The definition is only met when a treatment limitation

or withdrawal decision is also being considered at this early stage. This definition of DBI is not dependent on the underlying diagnosis. It can be used in patients with any primarily neurological diagnosis, most commonly traumatic brain injury, subarachnoid haemorrhage, intracerebral haemorrhage, stroke, and hypoxic brain injury from a range of causes. The early limitation or WLST is usually considered in DBI because the presenting neurological insult is not thought to be compatible with survival and not amenable to active intervention. In practice this usually means that a short period of organ and airway support is provided in the ED followed quickly by a transition to palliative care and terminal extubation.

Although many patients with hypoxic brain injury following the return of spontaneous circulation after a cardiac arrest may have met the criteria for DBI in the past, currently only a minority of these patients have an early treatment limitation decision applied since current international post resuscitation guidelines⁵ recommend the admission of such patients to ICU and delayed prognostication.

In the situation where patient-centred outcomes are recognized to be unacceptable, regardless of the extent of neurological improvement, then early transition to palliative care without admission to ICU would be appropriate. This consensus statement is intended to apply where the primary pathology is DBI, rather than to the situation where DBI has compounded a progressive and irreversible deterioration in other life-threatening comorbidities.

Recommendations

1. Patients who present with severe brain injury often require time sensitive interventions. Where these are potentially meaningful in the overall clinical context, such interventions should be undertaken without delay.
2. There are patients in whom severe brain injury is perceived to be devastating and active intervention not thought to be appropriate. However, prognostication at this stage can be inaccurate, and a period of physiological stabilization and observation is recommended to improve the quality of decision making.
3. Patients who are intubated will require admission to critical care for this period of observation, unless the extent of comorbidity makes continued organ support of no overall benefit regardless of the extent of potential neurological recovery. Patients not requiring stabilization with airway, ventilatory, or circulatory support can be observed on a medical ward.
4. During the period of observation, the therapeutic aim is to provide cardiorespiratory stability in order to facilitate accurate neurological prognostication. If the patient's neurological function continues to deteriorate despite cardiorespiratory stability the multidisciplinary team (MDI) may consider this to be an appropriate trigger for a decision to WLST. If the patient shows signs of improvement the MDI should reconsider the treatment limitation decision.
5. Communication of the aims and goals of treatment should be consistent and made clear to the family and members of the MDI from the outset. Admission to ICU may raise unrealistic expectations. The patient's family should be informed of the expectation of continued deterioration with death the most likely outcome, but that additional time will increase the certainty of this prognosis.

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