End of Life Matters in Neurosurgery

Dr Stephen Santoreneos
Director, Department of Neurosurgery
Royal Adelaide Hospital
Predicting neurological outcome

- Severe head injuries, high grade aneurysmal subarachnoid haemorrhage, malignant MCA stroke...
- Long term neurological outcome and independent survival difficult to predict
- Neurosurgical intervention may reduce the mortality but at the expense of increased numbers of dependent survivors
- Ethical decisions regarding withholding life-preserving treatment
Case study

- Young male
- Industrial accident Difficult airway, MEDSTAR intubation and retrieval to RAH. Hypoxic and hypotensive, short period of CPR
- GCS 3/15 on arrival, pinpoint pupils unreactive
- CT scan on arrival:
Predicting outcome: calculators

- **CRASH**
  - 14 day mortality **60.7%** (95% C.I. 46.4-73.3)
  - 6 month unfavourable outcome **83.1%** (95% C.I. 73.6-89.7)

- **IMPACT**
  - 6 month mortality (core + CT + Lab) = **83%**
  - 6 month unfavourable outcome = **92%**

1. [http://www.trialscoordinatingcentre.lshtm.ac.uk/Risk%20calculator/index.html](http://www.trialscoordinatingcentre.lshtm.ac.uk/Risk%20calculator/index.html)
Decompressive craniectomy

- DECRA (Australia)
  - Cooper et al., NEJM 2011; 155 patients in 15 centres, 3 countries
  - Early decompressive craniectomy vs best medical management
  - At 6 months, decompression was associated with higher rates of unfavourable outcome (70% vs 51%, odds ratio 2.21, 95% C.I. 1.14-4.26, P=0.02)

- RESCUEicp (UK)
  - Hutchinson et al., NEJM 2016; 408 patients in 52 centres, 20 countries
  - Decompressive craniectomy vs best medical management
  - At 6 months, decompression resulted in lower mortality, higher rates of vegetative state and dependence

- Life saving surgery may not predictably result in good functional survival
Case study

- Decision to proceed to decompressive craniectomy
- Telephone consent with family
- Bifrontal decompression: extremely swollen brain, ICP=80mmHg (normal 5-15)
- Extremely difficult wound closure due to swollen brain
Case study (continued)

- To ICU: persistently elevated ICP
- Discussion with family: non-survivable injury
- Nuclear medicine cerebral perfusion scan following day consistent with radiological brain death
- Organ retrieval same day
Issues

- Uncertainty of predicting neurological outcome following a severe brain insult
- Use of prediction calculators: “the prediction rule can only complement, never replace, clinical judgement...”
- Uncertainty of medical evidence: DECRA, RESCUEicp; better study design?
- Third party consent for life-preserving therapy where the patient cannot participate: good quality of life means different things to different people, the disability paradox

Issues: conflicts

Decisions are frequently guided by:
- Neurosurgeon knowledge and experience
- Patient’s wishes as described by family
- Advanced care directive

Conflicts of opinion
- Medical (should be unbiased)
- Life preservation vs patient dignity?
- Family (can be driven by emotion or other reasons)