DECRA trial

- Decompressive craniectomy for traumatic brain injury: a review of recent landmark trials
- Diet, Activity and Sleep Clusters Associated With Obesity Markers of Children in the US-Affiliated Pacific
- The Readability Study: A Randomised Trial of Health Information Written at Different Grade Reading Levels
- Randomized effectiveness-implementation trial of dialectical behavior therapy interventions for young people with borderline personality disorder symptoms
- Pragmatic controlled trial of a school-based emotion literacy program for 8- to 10-year-old children: study protocol
- Prolonged course of brain edema and neurological recovery in a translational model of decompressive craniectomy after closed head injury in mice
- Broad immunity to SARS-CoV-2 variants of concern mediated by a SARS-CoV-2 receptor-binding domain protein vaccine
- The feasibility, validity, and reliability of strain measures in the iliotibial band during isolated muscular contractions

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In March 2011, investigators from Australia and several other countries published the results of the DECRA trial in the New England Journal of Medicine. This was a randomized trial comparing decompressive craniectomy to best medical therapy run between 2002 and 2010 to assess the optimal management of patients with medically refractory ICP following diffuse non-penetrating head injury. The study investigators found that decompressive craniectomy was associated with worse functional outcomes, as measured by a standard metric, than best medical care. There were no differences in deaths between groups [1)].

However, the results of the DECRA trial have been rejected or at least questioned by many practicing neurosurgeons, and a concurrently published editorial raises several study weaknesses.

First, the threshold for defining increased ICP, and the time allowed before declaring ICP medically refractory, are not what many practicing physicians would consider increased or refractory. Second, out of almost 3500 potentially eligible patients, only 155 patients were enrolled, showing that the study cannot be generalized to all patients with severe non-penetrating brain injury. Lastly, despite being randomized, more patients in the craniectomy arm had unreactive pupils (after randomization but before surgery) than patients in the medical therapy arm, a potential confounding factor [2)].

The DECRA trial, an RCT that compared bifrontotemporoparietal decompressive craniectomy to initial medical management for refractory raised ICP, recruited patients in 15 tertiary care hospitals in Australia, New Zealand, and Saudi Arabia between December 2002 and April 2010.

This study found poorer GOS-E scores for patients in the DC group than those in standard care at 6 months post- injury, and lower ICP and fewer ICU days for patients in the DC group. Despite randomization, the proportion of patients in the DC group with reactivity in neither pupil on admission was higher (27% vs. 12%, p=0.04) than in controls. Planned baseline covariate adjustment did not change the results, but post hoc adjustment for this difference in pupil reactivity at admission

resulted in outcome differences that were no longer significant. Based on this, the authors reported that "...the overall effect size did not change, although the harmful effect of craniectomy was no longer significant. A beneficial effect of craniectomy was excluded."

The claim that decompressive craniectomy increases unfavourable outcome is overstated and not supported by the data presented in DECRA trial.

Sahuquillo et al. believe it premature to change clinical practice. Given the dismal outcome in these patients, it is reasonable to include this technique as a last resort in any type of protocol-driven management when conventional therapeutic measures have failed to control ICP, the presence of operable masses has been ruled out and the patient may still have a chance of a functional outcome. The main lesson to be learned from this study is that an upper threshold for ICP must be used as a cut-off for selecting decompressive craniectomy candidates [3].

RESCUEicp trial

see RESCUEicp trial.

[1] , [2]
Cooper DJ, Rosenfeld JV, Murray L, Arabi YM, Davies AR, D'Urso P, Kossmann T, Ponsford J, Seppelt I, Reilly P, Wolfe R; DECRA Trial Investigators; Australian and New Zealand Intensive Care Society Clinical Trials Group. Decompressive craniectomy in diffuse traumatic brain injury. N Engl J Med. 2011 Apr 21;364(16):1493-502. doi: 10.1056/NEJMoa1102077. Epub 2011 Mar 25. Erratum in: N Engl J Med. 2011 Nov 24;365(21):2040. PubMed PMID: 21434843.

[3]
Sahuquillo J, Martínez-Ricarte F, Poca MA. Decompressive craniectomy in traumatic brain injury after the DECRA trial. Where do we stand? Curr Opin Crit Care. 2013 Apr;19(2):101-6. doi: 10.1097/MCC.0b013e32835eba1a. Review. PubMed PMID: 23422159.