RESCUEicp trial

- Decompressive craniectomy for traumatic brain injury: a review of recent landmark trials
- Prolonged course of brain edema and neurological recovery in a translational model of decompressive craniectomy after closed head injury in mice
- Decompressive craniectomy as a second/third-tier intervention in traumatic brain injury: A multicenter observational study
- Decompressive Craniectomy and Shunt-Amenable Post-Traumatic Hydrocephalus: A Single-Center Experience
- Evaluation of Outcomes Among Patients With Traumatic Intracranial Hypertension Treated With Decompressive Craniectomy vs Standard Medical Care at 24 Months: A Secondary Analysis of the RESCUEicp Randomized Clinical Trial
- Decompressive Craniectomy Practice following Traumatic Brain Injury in Comparison with Randomized Trials: Harmonized, Multi-Center Cohort Studies in Europe, the United Kingdom, and Australia
- Decompressive Craniectomy After Traumatic Brain Injury: Incorporating Patient Preferences into Decision-Making
- Contemporary Review on Craniectomy and Cranioplasty; Part 1: Decompressive Craniectomy

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When the fourth edition of the Brain Trauma Foundation's Guidelines for the Management of Severe Traumatic Brain Injury was finalized in late 2016, it was known that the results of the RESCUEicp (Trial of Decompressive Craniectomy for Traumatic Intracranial Hypertension) randomized controlled trial of decompressive craniectomy would be public after the guidelines were released. The guideline authors decided to proceed with publication but to update the decompressive craniectomy recommendations later in the spirit of “living guidelines,” whereby topics are updated more frequently, and between new editions, when important new evidence is published. The update to the decompressive craniectomy chapter presented here integrates the findings of the RESCUEicp study as well as the recently published 12-mo outcome data from the DECRA (Decompressive Craniectomy in Patients With Severe Traumatic Brain Injury) trial. Incorporation of these publications into the body of evidence led to the generation of 3 new level-IIA recommendations; a fourth previously presented level-IIA recommendation remains valid and has been restated. To increase the utility of the recommendations, Hawryluk et al. added a new section entitled Incorporating the Evidence into Practice. This summary of expert opinion provides important context and addresses key issues for practitioners, which are intended to help the clinician utilize the available evidence and these recommendations. The full guideline can be found at: https://braintrauma.org/guidelines/guidelines-for-the-management-of-severe-tbi-4th-ed#/ [1].

RESCUEicp study is an international multicentre trial, coordinated by the University of Cambridge Academic Neurosurgery Unit and the European Brain Injury Consortium (EBIC).

The Brain Trauma Foundation (The committee) is aware that the results of the RESCUEicp trial may be released soon after the publication of Guidelines.

From 2004 through 2014, we randomly assigned 408 patients, 10 to 65 years of age, with traumatic brain injury and refractory elevated intracranial pressure (>25 mm Hg) to undergo decompressive

craniectomy or receive ongoing medical care. The primary outcome was the rating on the Extended Glasgow Outcome Scale (GOS-E) (an 8-point scale, ranging from death to “upper good recovery” [no injury-related problems]) at 6 months. The primary-outcome measure was analyzed with an ordinal method based on the proportional-odds model. If the model was rejected, that would indicate a significant difference in the GOS-E distribution, and results would be reported descriptively.

The GOS-E distribution differed between the two groups (P<0.001). The proportional-odds assumption was rejected, and therefore results are reported descriptively. At 6 months, the GOS-E distributions were as follows: death, 26.9% among 201 patients in the surgical group versus 48.9% among 188 patients in the medical group; vegetative state, 8.5% versus 2.1%; lower severe disability (dependent on others for care), 21.9% versus 14.4%; upper severe disability (independent at home), 15.4% versus 8.0%; moderate disability, 23.4% versus 19.7%; and good recovery, 4.0% versus 6.9%. At 12 months, the GOS-E distributions were as follows: death, 30.4% among 194 surgical patients versus 52.0% among 179 medical patients; vegetative state, 6.2% versus 1.7%; lower severe disability, 18.0% versus 14.0%; upper severe disability, 13.4% versus 3.9%; moderate disability, 22.2% versus 20.1%; and good recovery, 9.8% versus 8.4%. Surgical patients had fewer hours than medical patients with intracranial pressure above 25 mm Hg after randomization (median, 5.0 vs. 17.0 hours; P<0.001) but had a higher rate of adverse events (16.3% vs. 9.2%, P=0.03).

At 6 months, decompressive craniectomy in patients with traumatic brain injury and refractory intracranial hypertension resulted in lower mortality and higher rates of vegetative state, lower severe disability, and upper severe disability than medical care. The rates of moderate disability and good recovery were similar in the two groups. (Funded by the Medical Research Council and others; RESCUEicp Current Controlled Trials number, ISRCTN66202560 .) [2)].

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Hawryluk GWJ, Rubiano AM, Totten AM, O'Reilly C, Ullman JS, Bratton SL, Chesnut R, Harris OA, Kissoon N, Shutter L, Tasker RC, Vavilala MS, Wilberger J, Wright DW, Lumba-Brown A, Ghajar J. Guidelines for the Management of Severe Traumatic Brain Injury: 2020 Update of the Decompressive Craniectomy Recommendations. Neurosurgery. 2020 Sep 1;87(3):427-434. doi: 10.1093/neuros/nyaa278. PMID: 32761068; PMCID: PMC7426189.

2)
Hutchinson PJ, Kolias AG, Timofeev IS, Corteen EA, Czosnyka M, Timothy J, Anderson I, Bulters DO, Belli A, Eynon CA, Wadley J, Mendelow AD, Mitchell PM, Wilson MH, Critchley G, Sahuquillo J, Unterberg A, Servadei F, Teasdale GM, Pickard JD, Menon DK, Murray GD, Kirkpatrick PJ; RESCUEicp Trial Collaborators. Trial of Decompressive Craniectomy for Traumatic Intracranial Hypertension. N Engl J Med. 2016 Sep 22;375(12):1119-30. doi: 10.1056/NEJMoa1605215. Epub 2016 Sep 7. PubMed PMID: 27602507.