

Pupil reaction

Pupil reaction to light (direct and [consensual response](#)).

The [Glasgow Coma Scale](#), together with information about [pupil](#) reaction, conveys to the physician most of the clinical predictive information in [head injury](#) ^{1) 2) 3)}.

Findings demonstrate that combining these features yields more informative data than using either alone, and that a simple arithmetical score, the GCS-P, performs almost as well as more complex methods of integration.

Brennan et al., used the two largest databases on head-injured patients, the [CRASH](#) and [IMPACT](#), in which information on early GCS score, pupil findings, and late patient outcome are available for individual patients. The total numbers of patients are similar in the two databases, but there are variations in their composition. The IMPACT database is skewed toward patients with severe head injuries (81%) compared with the CRASH database (39%), yet in the CRASH database there are few people with GCS score 15.

Brennan et al., used a [pooled data](#) set to compensate for these differences and to increase the generalizability of the findings ⁴⁾.

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Braakman R, Gelpke GJ, Habbema JD, Maas AI, Minderhoud JM: Systematic selection of prognostic features in patients with severe head injury. *Neurosurgery* 6:362-370, 1980

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Marmarou A, Lu J, Butcher I, McHugh GS, Mushkudiani NA, Murray GD, et al: IMPACT database of traumatic brain injury: design and description. *J Neurotrauma* 24:239-250, 2007

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Steyerberg EW, Mushkudiani N, Perel P, Butcher I, Lu J, McHugh GS, et al: Predicting outcome after traumatic brain injury: development and international validation of prognostic scores based on admission characteristics. *PLoS Med* 5:e165, 2008

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Brennan PM, Murray GD, Teasdale GM. Simplifying the use of prognostic information in traumatic brain injury. Part 1: The GCS-Pupils score: an extended index of clinical severity. *J Neurosurg*. 2018 Jun;128(6):1612-1620. doi: 10.3171/2017.12.JNS172780. Epub 2018 Apr 10. PubMed PMID: 29631516.

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