

Canadian CT Head Rule (CCHR)

see also [Scandinavian guidelines for initial management of minimal, mild, and moderate head injuries](#).

There is much controversy about the use of [computed tomography](#) (CT) for patients with [minor head injury](#).

Stiell et al. aimed to develop a highly sensitive clinical decision rule for use of CT in patients with minor head injuries.

They carried out a [prospective cohort](#) study in the [emergency departments](#) of ten large [Hospitals](#) in [Canada](#) and included consecutive adults who presented with a Glasgow Coma Scale (GCS) score of 13-15 after head injury. They did standardised clinical assessments before the CT scan. The main outcome measures were need for neurological intervention and clinically important brain injury on CT.

The 3121 patients had the following characteristics: mean age 38.7 years; GCS scores of 13 (3.5%), 14 (16.7%), 15 (79.8%); 8% had clinically important brain injury; and 1% required neurological intervention. We derived a CT head rule which consists of five high-risk factors (failure to reach GCS of 15 within 2 h, suspected open skull fracture, any sign of basal skull fracture, vomiting >2 episodes, or age >65 years) and two additional medium-risk factors (amnesia before impact >30 min and dangerous mechanism of injury). The high-risk factors were 100% sensitive (95% CI 92-100%) for predicting need for neurological intervention, and would require only 32% of patients to undergo CT. The medium-risk factors were 98.4% sensitive (95% CI 96-99%) and 49.6% specific for predicting clinically important brain injury, and would require only 54% of patients to undergo CT.

They have developed the Canadian CT Head Rule, a highly sensitive decision rule for use of CT. This rule has the potential to significantly standardise and improve the emergency management of patients with minor head injury ¹⁾.

Overuse of [computed tomography](#) (CT) for [minor head injury](#) continues despite developed and rigorously validated clinical decision rules like the [Canadian CT Head Rule](#) (CCHR). Adherence to this sensitive and specific rule could decrease the number of CT scans performed in minor head injury by 35%. But in practice, the CCHR has failed to reduce testing, despite its accurate performance.

Despite high-quality evidence informing use of CT in minor head injury, multiple factors influence the decision to obtain CT in practice. Identifying and disseminating approaches and designing systems that help clinicians establish trust and manage uncertainty within the emergency department (ED) context could optimize CT use in minor head injury ²⁾.

Calculation

<http://www.mdcalc.com/canadian-ct-head-injury-trauma-rule/>

http://www.emottawa.ca/assets/documents/research/cdr_cthead_poster.pdf

The level of education regarding the CCHR was found to be optimal among emergency physicians using a case-based scenario survey in Saudi Arabia. The CCHR was found to have a poor compliance potential in the busy ED of our trauma centre and the prevalence of unjustified cranial CT scans remained high ³⁾.

The Canadian [Head CT](#) Rule (CCHR) is widely validated and cost-effective for adults. Decision rules for children appear cost-effective, but need further validation. Hospital admission is cost-effective for patients with abnormal, but not normal, CT. The main research priorities are to (1) validate decision rules for children; (2) determine the prognosis and treatment benefit for non-neurosurgical injuries; (3) evaluate the use of S100B alongside a validated decision rule; (4) evaluate the diagnosis and outcomes of anticoagulated patients with MHI; and (5) evaluate the implementation of guidelines, clinical decision rules and diagnostic strategies. Formal expected value of sample information analysis would be recommended to appraise the cost-effectiveness of future studies ⁴⁾.

References

1)

Stiell IG, Wells GA, Vandemheen K, Clement C, Lesiuk H, Laupacis A, McKnight RD, Verbeek R, Brison R, Cass D, Eisenhauer ME, Greenberg G, Worthington J. The Canadian CT Head Rule for patients with minor head injury. *Lancet*. 2001 May 5;357(9266):1391-6. PubMed PMID: 11356436.

2)

Melnick ER, Shafer K, Rodulfo N, Shi J, Hess EP, Wears RL, Qureshi RA, Post LA. Understanding Overuse of Computed Tomography for Minor Head Injury in the Emergency Department: A Triangulated Qualitative Study. *Acad Emerg Med*. 2015 Nov 14. doi: 10.1111/acem.12824. [Epub ahead of print] PubMed PMID: 26568523.

3)

Arab AF, Ahmed ME, Ahmed AE, Hussein MA, Khankan AA, Alokaili RN. Accuracy of Canadian CT head rule in predicting positive findings on CT of the head of patients after mild head injury in a large trauma centre in Saudi Arabia. *Neuroradiol J*. 2015 Dec;28(6):591-7. doi: 10.1177/1971400915610699. Epub 2015 Oct 15. PubMed PMID: 26471399.

4)

Pandor A, Goodacre S, Harnan S, Holmes M, Pickering A, Fitzgerald P, Rees A, Stevenson M. Diagnostic management strategies for adults and children with minor head injury: a systematic review and an economic evaluation. *Health Technol Assess*. 2011 Aug;15(27):1-202. doi: 10.3310/hta15270. Review. PubMed PMID: 21806873.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=canadian_ct_head_rule

Last update: **2024/06/07 02:49**

