

CATCH

Algorithm:

Canadian Assessment of Tomography for Childhood Head injury: the CATCH Rule

CT of the head is required only for children with minor head injury* and any one of the following findings:

High risk (need for neurosurgical intervention)

1. Glasgow Coma Scale score <15 at two hours after injury.
2. Suspected open or depressed skull fracture.
3. History of worsening headache.
4. Irritability on examination.

Medium risk (brain injury on CT scan)

5. Any sign of basal skull fracture (e.g. haemotympanum, "raccoon" eyes, otorrhea or rhinorrhea of the cerebrospinal fluid, Battle's sign).
6. Large, boggy haematoma of the scalp.
7. Dangerous mechanism of injury (e.g., motor vehicle crash, fall from elevation ≥ 3 ft [≥ 91 cm] or 5 stairs, fall from bicycle with no helmet).

Note:

CT = computed tomography.

*Minor head injury is defined as injury within the past 24 hours associated with witnessed loss of consciousness, definite amnesia, witnessed disorientation, persistent vomiting (more than one episode) or persistent irritability (in a child under two years of age) in a patient with a Glasgow Coma Scale score of 13-15.

Inclusion Criteria: (ALL must be satisfied for the CATCH rule to be applied)

- Blunt trauma to the head resulting in witnessed loss of consciousness, definite amnesia, witnessed disorientation, persistent vomiting (two or more distinct episodes 15 minutes apart), or persistent irritability in the ED (for children under two years of age)
- Initial GCS of at least 13
- Injury within the past 24 hours

Exclusions Criteria: (If ANY are present the CATCH rule cannot be applied)

- Obvious penetrating skull injury.
- Obvious depressed fracture.
- Acute focal neurological deficit.
- Chronic generalized developmental delay.
- Head injury secondary to suspected child abuse.
- Patients returning for reassessment of a previously treated head injury.
- Pregnancy

Summary Statement:

The CATCH clinical decision rule aims to determine which children with mild head injuries require a CT scan of the head.

The CATCH rule was developed for children with mild head injuries. The application of the CATCH rule requires two steps. First, it assesses if a patient has a mild head injury defined as GCS of 13-15, witnessed loss of consciousness, definite amnesia, witnessed disorientation, more than one vomit or persistent irritability (in a child under 2 years of age). If a patient has such a head injury, the actual CATCH rule can be applied. For patients who have a milder or more severe injury the CATCH rule does not apply.

The CATCH derivation study found 4 clinical findings that are highly sensitive for the need for neurosurgical intervention (primary outcome) and an additional 3 that are sensitive for predicting brain injury on CT. When the 7 findings are combined, an algorithm is created that can predict the need for CT scanning. The CATCH rule requires external validation.

Reference:

Osmond M, Klassen T, Wells G, Correll R, Jarvis A, Joubert G, et al. CATCH: A clinical decision rule for the use of computed tomography in children with minor head injury. *CMAJ*. 2010; 182(4): 341-8.

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