

Suggested CT Algorithm for Mild Traumatic Head Injury (GCS 14 or 15)

Age 2-17 Years

GCS=14

Or

Other signs of altered mental status

(any of the following):

- Agitation
- Somnolence
- Repetitive questioning
- Slow response to verbal communication

Or

Signs of basilar skull fracture

YES

CT Recommended

**4.3% risk
of clinically
important TBI**



NO

History of LOC

Or

History of vomiting

Or

Severe mechanism of injury (any of the following):

- Motor vehicle crash (MVC) with patient ejection
- MVC with death of another passenger
- MVC with rollover
- Pedestrian or bicyclist without helmet struck by a motorized vehicle
- Falls of more than 1.5 m (5 feet)
- Head struck by a high-impact object

Or

Severe headache

YES

**0.9% risk
of clinically
important TBI**

NO

**< 0.05% risk of
clinically important TBI**

CT generally not recommended

The risk of clinically important TBI for these patients is exceedingly low, generally lower than the risk of CT-induced malignancies.

Observation versus CT on the basis of other clinical factors including:

- Physician experience
- Multiple versus isolated findings (Patients with certain isolated findings such as isolated LOC, isolated headache, isolated vomiting, and certain types of isolated scalp hematomas in infants older than 3 months have a substantially lower than 1% risk of clinically important TBI)
- Worsening symptoms or signs during or after emergency department observation
- Parental preference



Based on Figure 3 of Kuppermann, et al, Identification of children at very low risk of clinically important brain injuries after head trauma: a prospective cohort study, Lancet, 2009 Oct 3;374(9696): 1160-70.
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**FLIP FOR
AGE 0-23 MONTHS**

Suggested CT Algorithm for Mild Traumatic Head Injury (GCS 14 or 15)

Age 0-23 Months

GCS=14

Or

Other signs of altered mental status

(any of the following):

- Agitation
- Somnolence
- Repetitive questioning
- Slow response to verbal communication

Or

Palpable skull fracture

YES

CT Recommended

**4.4% risk
of clinically
important TBI**



NO

Occipital or parietal or temporal scalp hematoma

Or

History of LOC \geq 5 seconds

Or

Severe mechanism of injury (any of the following):

- Motor vehicle crash (MVC) with patient ejection
- MVC with death of another passenger
- MVC with rollover
- Pedestrian or bicyclist without helmet struck by a motorized vehicle
- Falls of more than 0.9 m (3 feet)
- Head struck by a high-impact object

Or

Not acting normally per parent

YES

**0.9% risk
of clinically
important TBI**

NO

**< 0.02% risk of
clinically important TBI**

CT generally not recommended

The risk of clinically important TBI for these patients is exceedingly low, generally lower than the risk of CT-induced malignancies.

Observation versus CT on the basis of other clinical factors including:

- Physician experience
- Multiple versus isolated findings (Patients with certain isolated findings such as isolated LOC, isolated headache, isolated vomiting, and certain types of isolated scalp hematomas in infants older than 3 months have a substantially lower than 1% risk of clinically important TBI)
- Worsening symptoms or signs during or after emergency department observation
- Age \leq 3 months higher risk
- Parental preference



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**FLIP FOR
AGE 2-17 YEARS**