

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline scope

Head injury: assessment and early management (update)

This guideline will update the [NICE guideline on head injury: assessment and early management](#) (CG176).

The guideline will be developed using the methods and processes outlined in [developing NICE guidelines: the manual](#).

This guideline will also be used to update the [NICE quality standard for head injury](#).

1 Why the update is needed

The NICE surveillance process identified new evidence that could affect recommendations. Topic experts, including those who helped to develop the existing guideline, advised NICE whether areas should be updated or new areas added. Full details are in the [surveillance review decision](#).

Areas to be updated include care for people with a head injury who are taking anticoagulants, including DOACs (direct-acting oral anticoagulants).

Recommendations need updating on the timing of head CT scan in this group.

Managing significant head injuries in specialised care is also an increasingly recognised clinical issue, and is not currently covered by any NICE guidance.

Identifying post-head injury hypopituitarism is included as a new area for the guideline. NICE received concerns about guidance on managing indirect brain injuries (not caused by direct trauma to the head) in older adults and other groups. The existing guideline covers head injuries caused by direct or indirect trauma, but the inclusion of indirect trauma will be clarified in the update. Recent evidence, not included in the surveillance report, has been published on tranexamic acid and; this will also be an area for the update.

1 A GP reference panel also considered key areas for update and highlighted
2 the length of observation for any red flag signs. They queried whether
3 separate advice was needed for scanning people who present late with red
4 flag signs, and whether MRI or CT is needed. The time limits after clinical
5 assessment for imaging need to be reviewed as do those for repeat imaging
6 when the first scans are normal but symptoms persist.

7 ***Key facts and figures***

8 In this guideline, 'head injury' is defined as any trauma to the head, other than
9 superficial injuries to the face. This includes indirect brain injuries caused by
10 indirect trauma mechanisms.

11 Evidence suggests that about 5 significant brain injuries occurred through
12 indirect brain injury rather than direct head trauma among 65,000 people with
13 head injury attended by the ambulance service. Although quite rare, it is an
14 important group, which would include whiplash and non-accidental intracranial
15 injury. Symptomatic chronic subdural haematomas are found mostly in older
16 people, with an incidence of 8.2/100,000 per year in the over 70s. This will
17 continue to increase as the population ages. Around 1,600 people per year
18 need neurosurgical assessment.

19 Each year, 1.4 million people attend hospitals in England and Wales with a
20 recent head injury. Between 33 and 50% of these are children under 15 years.
21 Most, around 90%, are diagnosed with 'mild' head injury and do not need
22 hospital admission.

23 Annually, around 70,000 people are admitted to hospital with head injury. Of
24 these, one-fifth have features suggesting that their injury may have been
25 sufficient to cause a skull fracture, or have evidence of intracranial bleeding or
26 traumatic brain injury. Approximately 2% of children with head injuries and 7%
27 of adults with head injuries experience impaired consciousness, and around
28 1,359 people each year have neurosurgery for an acute intracranial injury.
29 Most people recover without specific or specialist intervention but some have
30 long-term disability or even die from traumatic brain injury. This could be
31 minimised or avoided with early detection and appropriate treatment.

1 ***Current practice***

2 Hospital Episode Statistics data for 2018/2019 indicate that 393 people in
3 England had an operation to drain the extradural space (OPCS code A40) and
4 3,774 people to drain the subdural space (OPCS code A41). These figures do
5 not include a small number of other neurosurgical procedures possible after
6 head injury, and include some people without a diagnosis of head injury.

7 Although the incidence of head injury is high, the incidence of death from
8 head injury is low (6 to 10 per 100,000 population per year). As few as 0.2%
9 of people attending emergency departments with a head injury die as a result
10 of their injury. Ninety-five per cent of all people with a head injury present with
11 a minor or mild injury (Glasgow Coma Scale [GCS] greater than 12) but most
12 fatal outcomes are in the moderate (GCS of 9 to 12) or severe (GCS less than
13 or equal to 8) groups, which account for only 5% of people. Therefore
14 emergency departments see a large number of people with a minor or mild
15 head injury, and need to identify the very small proportion of these who go on
16 to have serious acute intracranial injuries.

17 Since the publication of the NICE guideline on head injury, CT has replaced
18 skull radiography as the primary imaging modality for assessing head injury,
19 and an increasing proportion of people with head injury receive care in
20 specialist centres. This has been associated with fewer deaths in people with
21 severe head injury.

22 Uncertainty remains about the early care of certain groups with head injury,
23 such as those on anticoagulants/antiplatelets, older people, people with pre-
24 injury cognitive impairment and athletes at risk of repetitive head injury. The
25 role of brain injury biomarkers and MRI in the early management of head
26 injury remains uncertain. There is concern surrounding pre-hospital triage and
27 applying new evidence concerning tranexamic acid within the evolving NHS
28 trauma systems.

29 **2 Who the guideline is for**

30 This guideline is for:

- 1 • people using services, their families and carers
- 2 • health professionals in all NHS settings

3 NICE guidelines cover health and care in England. Decisions on how they
4 apply in other UK countries are made by ministers in the [Welsh Government](#),
5 [Scottish Government](#), and [Northern Ireland Executive](#).

6 ***Equality considerations***

7 NICE has carried out [an equality impact assessment](#) during scoping. The
8 assessment:

- 9 • lists equality issues identified, and how they have been addressed
- 10 • explains why any groups are excluded from the scope.

11 The guideline will look at inequalities relating to cognitive impairment and
12 older people with frailty.

13 **3 What the updated guideline will cover**

14 **3.1 Who is the focus?**

15 **Groups that will be covered**

- 16 • All adults, young people and children (including babies under 1 year) who
17 present with a suspected or confirmed head injury with or without other
18 major trauma.
- 19 • All adults, young people and children (including babies under 1 year) with a
20 suspected or confirmed head injury that may be overlooked, for example,
21 because of very young age, intoxication or cognitive impairment.
- 22 • All adults, young people and children (including babies under 1 year) with
23 traumatic brain injury sustained through indirect energy transfer such as
24 shearing forces (that is, no history or findings suggesting direct injury to the
25 head).

26 Specific consideration will be given to people with cognitive impairments and
27 older adults with frailty.

1 **Groups that will not be covered**

- 2 • Adults, young people and children (including babies under 1 year) with
3 superficial injuries to the eye or face.

4 **3.2 Settings**

5 **Settings that will be covered**

- 6 • Primary care, pre-hospital, emergency departments (or similar units),
7 tertiary care, care of people already in hospital or those in residential care
8 homes where NHS care is delivered.

9 **3.3 Activities, services or aspects of care**

10 **Key areas that will be covered**

11 We will look at evidence in the areas below when developing the guideline,
12 but it may not be possible to make recommendations in all the areas.

- 13 1 Pre-hospital interventions.
 - 14 – Tranexamic acid.
 - 15 – Transport directly to a specialist centre past a closer non-specialist
16 unit.
 - 17 – Direct access from the community to imaging.
- 18 2 Assessment in the emergency department.
 - 19 – Selection of people with head injury for CT and MRI
 - 20 – Role of brain injury biomarkers.
 - 21 – Diagnosis of cervical spine injury in people with head injury, using CT
22 and MRI, including timing of imaging.
 - 23 – Administering tranexamic acid.
- 24 3 Discharge and follow up, including follow up of people with normal scans
25 for deterioration.
 - 26 – Observation of people on anticoagulation, people with post-
27 concussion syndrome and people with asymptomatic small
28 intracranial injuries after imaging.
 - 29 – Identification of hypopituitarism (timing and who to investigate).

1 **Proposed outline for the guideline**

2 The table below outlines all the areas that will be included in the guideline. It
3 sets out what NICE plans to do for each area in this update.

4 **Plans for each area in the current and updated guideline**

Area of care	What NICE plans to do
Pre-hospital assessment and advice, and referral to hospital	Review evidence: new area in the guideline for: <ul style="list-style-type: none"> • direct access from the community to imaging Retain other recommendations from existing guideline
Immediate management at the scene and transport to hospital	Review evidence: new area in the guideline for: <ul style="list-style-type: none"> • tranexamic acid Review evidence: update existing recommendations as needed for: <ul style="list-style-type: none"> • transport directly to a specialist centre Retain other recommendations from existing guideline
Assessment in the emergency department	Review evidence: new area in the guideline for: <ul style="list-style-type: none"> • administering tranexamic acid Review evidence: update existing recommendations as needed for: <ul style="list-style-type: none"> • selection of people with head injury for CT and MRI • role of brain injury biomarkers. Retain other recommendations from existing guideline
Investigating clinically important brain injuries	<ul style="list-style-type: none"> • No evidence review: retain recommendations from existing guideline
Investigating injuries to the cervical spine	Review evidence: update existing recommendations as needed for: <ul style="list-style-type: none"> diagnosis of cervical spine injury in people with head injury, using CT and MRI, including timing of imaging
Information and support for families and carers	No evidence review: retain recommendations from existing guideline

Transfer from hospital to a neuroscience unit	No evidence review: retain recommendations from existing guideline
Admission and observation	No evidence review: retain recommendations from existing guideline.
Discharge and follow-up	<p>Review evidence: new area in the guideline for:</p> <ul style="list-style-type: none"> • observation of people on anticoagulation including DOACs and antiplatelets • observation of people with post-concussion syndrome and people with asymptomatic small intracranial injuries after imaging • identifying hypopituitarism. <p>Retain other recommendations from existing guideline.</p>

1 Areas that will not be covered

- 2 1 Pre-hospital assessment, advice and referral to hospital (except for,
3 direct access from the community to imaging, which will be an area for
4 the update).
- 5 2 Immediate management at the scene and transport to hospital (except
6 for tranexamic acid and transport directly to a specialist unit, which will
7 be areas for the update).
- 8 3 Involvement of the neurosurgical department.
- 9 4 Discharge and follow up (except for observation of people on
10 anticoagulation, including DOACs or antiplatelet therapy, people with
11 post-concussion syndrome and people with asymptomatic small
12 intracranial injuries after imaging, identifying hypopituitarism, which will
13 be areas for the update).
- 14 5 Admission and observation.

15 Related NICE guidance

16 *Published*

- 17 • [Child abuse and neglect. NICE guideline NG76](#) (2017).
- 18 • [Major trauma: assessment and initial management. NICE guideline NG39](#)
19 (2016).

- 1 • [Major trauma: service delivery. NICE guideline NG40](#) (2016).
- 2 • [Spinal injury: assessment and initial management. NICE guideline NG41](#)
- 3 (2016).
- 4 • [Falls in older people: assessing risk and prevention. NICE guideline CG161](#)
- 5 (2013).
- 6 • [Alcohol-use disorders: diagnosis, assessment and management of harmful](#)
- 7 [drinking and alcohol dependence. NICE guideline CG115](#) (2011).
- 8 • [Delirium: diagnosis, prevention and management. NICE guideline CG103](#)
- 9 (2010).
- 10 • [Transient loss of consciousness \('blackouts'\) in over 16s. NICE guideline](#)
- 11 [CG109](#) (2010).
- 12 • [Sedation in under 19s: using sedation for diagnostic and therapeutic](#)
- 13 [procedures. NICE guideline CG112](#) (2010).
- 14 • [Unintentional injuries: prevention strategies for under 15s. NICE public](#)
- 15 [health guidance PH29](#) (2010).
- 16 • [Child maltreatment: when to suspect child maltreatment in under 18s. NICE](#)
- 17 [guideline CG89](#). (2009)
- 18 • [Acutely ill adults in hospital: recognising and responding to deterioration.](#)
- 19 [NICE guideline CG50](#) (2007).
- 20 • [Pre-hospital initiation of fluid replacement therapy in trauma. NICE](#)
- 21 [technology appraisal guidance 74](#) (2004).

22 ***In development***

- 23 • Epilepsies in children, young people and adults. Publication date to be
- 24 confirmed

25 ***NICE guidance that will be updated by this guideline***

- 26 • Head injury: assessment and early management (2014) NICE guideline
- 27 CG176

28 **NICE guidance about the experience of people using NHS services**

29 NICE has produced the following guidance on the experience of people using
30 the NHS. This guideline will not include additional recommendations on these
31 topics unless there are specific issues related to head injury:

- 1 • [Medicines optimisation](#) (2015) NICE guideline NG5
- 2 • [Patient experience in adult NHS services](#) (2012) NICE guideline CG138
- 3 • [Service user experience in adult mental health](#) (2011) NICE guideline
- 4 CG136
- 5 • [Medicines adherence](#) (2009) NICE guideline CG76

6 **3.4 Economic aspects**

7 We will take economic aspects into account when making recommendations.
8 We will develop an economic plan that states for each review question (or key
9 area in the scope) whether economic considerations are relevant, and if so
10 whether this is an area that should be prioritised for economic modelling and
11 analysis. We will review the economic evidence and carry out economic
12 analyses, using an NHS and personal social services perspective, as
13 appropriate.

14 **3.5 Key issues and draft questions**

- 15 1 Pre-hospital interventions.
- 16 1.1 What is the clinical and cost effectiveness of tranexamic acid for
17 managing suspected or confirmed traumatic head injury pre-hospital and
18 in hospital?
- 19 1.2 What is the clinical and cost effectiveness of pre-hospital strategies
20 to convey people with head injury to a distant specialist neuroscience
21 centre past a closer non-specialist hospital?
- 22 1.3 What is the clinical and cost effectiveness of providing direct access
23 from the community to imaging?
- 24 2 Assessment in the emergency department.
- 25 2.1 What are the indications for selecting adults, young people, children
26 and babies with head injury for CT or MRI head scan, including:
- 27 - people on anticoagulant or antiplatelet therapy, including those with no
28 history of amnesia or loss of consciousness
- 29 - people with pre-injury cognitive impairment sustaining injury through
30 low level falls
- 31 - people sustaining recurrent head injuries through sport
- 32 - people presenting more than 24 hours after injury?

1 2.2 What is the diagnostic accuracy of brain injury biomarkers and/or
2 MRI for predicting post-concussion syndrome and other post-brain injury
3 complications?

4 2.3 What is the clinical and cost effectiveness of biomarkers and/or MRI
5 when each is followed by the appropriate treatment for post-concussion
6 syndrome and other complications after brain injury to improve patient
7 outcomes?

8 2.4 What is the diagnostic accuracy of CT and MRI of the cervical spine
9 in people with head injury?

10 3 Discharge and follow up

11 3.1 How long should people who are on anticoagulant therapy be
12 observed after normal brain imaging?

13 3.2 How long should people with post-concussion syndrome be
14 observed after normal brain imaging?

15 3.3 How long should people with small intracranial injuries be observed if
16 they have no symptoms?

17 3.4 Which patients should be investigated for hypopituitarism after head
18 injury?

19 3.5 When should people with head injury be investigated for
20 hypopituitarism?

21 **3.6 Main outcomes**

22 The main outcomes that may be considered when searching for and
23 assessing the evidence are:

24 1 Diagnostic accuracy.

25 2 Mortality from head injury at 30 days.

26 3 All-cause mortality at 30 days.

27 4 Objective measures of disability (including Glasgow Outcome Scale,
28 King's Outcome Scale for Childhood Head Injury and Cerebral
29 Performance Category scale, Rivermead Post-Concussion Syndrome
30 Questionnaire).

31 5 Quality of life (validated quality of life scores only).

32 6 Length of hospital stay.

1 **4 NICE quality standards and NICE Pathways**

2 **4.1 NICE quality standards**

3 **NICE quality standards that may need to be revised or updated when**
4 **this guideline is published**

- 5 • [Head injury. NICE quality standard 74](#) (2014)

6 **4.2 NICE Pathways**

7 When this guideline is published, we will update the existing [NICE Pathway on](#)
8 [head injury](#). NICE Pathways bring together everything we have said on a topic
9 in an interactive flowchart.

10 **5 Further information**

This is the draft scope for consultation with registered stakeholders. The consultation dates are 21 October 2020 to 18 November 2020.

You can follow progress of the [guideline](#).

Our website has information about how [NICE guidelines](#) are developed.

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