

1 **NATIONAL INSTITUTE FOR HEALTH AND CARE**
2 **EXCELLENCE**

3 **Guideline scope**

4 **Head injury: assessment and early**
5 **management (update)**

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

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

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

12 **1 Why the update is needed**

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

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

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

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

22 Identifying post-head injury hypopituitarism is included as a new area for the
23 guideline. NICE received concerns about guidance on managing indirect brain
24 injuries (not caused by direct trauma to the head) in older adults and other
25 groups. The existing guideline covers head injuries caused by direct or
26 indirect trauma, but the inclusion of indirect trauma will be clarified in the
27 update. Recent evidence, not included in the surveillance report, has been
28 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 intracranial injury
15 sustained through whiplash and non-accidental injury. Symptomatic chronic
16 subdural haematomas are found mostly in older people, with an incidence of
17 8.2/100,000 per year in the over 70s. This will continue to increase as the
18 population ages. Around 1,600 people per year need neurosurgical
19 assessment.

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

24 Annually, around 70,000 people are admitted to hospital with head injury. Of
25 these, one-fifth have features suggesting that their injury may have been
26 sufficient to cause a skull fracture, or have evidence of intracranial bleeding or
27 traumatic brain injury. Approximately 2% of children with head injuries and 7%
28 of adults with head injuries experience impaired consciousness, and around
29 1,359 people each year have neurosurgery for an acute intracranial injury.
30 Some people may recover from brain injury with no identifiable short- or long-
31 term physical, cognitive, emotional or social impairment. Others have

1 impairments which may only become apparent on returning home, to school
2 or the workplace, or in subsequent months and years. Some will need specific
3 or specialist intervention either at the time of injury or later. Some people have
4 long-term disability or even die from traumatic brain injury. This could be
5 minimised or avoided with early detection and appropriate treatment.

6 ***Current practice***

7 Hospital Episode Statistics data for 2018/2019 indicate that 393 people in
8 England had an operation to drain the extradural space (OPCS code A40) and
9 3,774 people to drain the subdural space (OPCS code A41). These figures do
10 not include a small number of other neurosurgical procedures possible after
11 head injury, and include some people without a diagnosis of head injury.

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

22 Since the publication of the NICE guideline on head injury, CT has replaced
23 skull radiography as the primary imaging modality for assessing head injury,
24 and an increasing proportion of people with head injury receive care in
25 specialist centres. This has been associated with fewer deaths in people with
26 severe head injury.

27 Uncertainty remains about the early care of certain groups with head injury,
28 such as those on anticoagulants/antiplatelets, older people, people with pre-
29 injury cognitive impairment and athletes at risk of repetitive head injury. The
30 role of brain injury biomarkers and MRI in the early management of head
31 injury remains uncertain. There is concern surrounding pre-hospital triage and

1 applying new evidence concerning tranexamic acid within the evolving NHS
2 trauma systems.

3 **2 Who the guideline is for**

4 This guideline is for:

- 5 • people using services, their families and carers
- 6 • health professionals in all NHS settings.

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

10 ***Equality considerations***

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

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

15 The guideline will look at inequalities relating to cognitive impairment
16 (including learning disabilities and communication difficulties), older people
17 with frailty and people in custody.

18 **3 What the updated guideline will cover**

19 **3.1 Who is the focus?**

20 **Groups that will be covered**

- 21 • All adults, young people and children (including babies under 1 year) who
22 present with a suspected or confirmed head injury with or without other
23 major trauma.
- 24 • All adults, young people and children (including babies under 1 year) with a
25 suspected or confirmed head injury that may be overlooked, for example,
26 because of very young age, intoxication or cognitive impairment.

- 1 • All adults, young people and children (including babies under 1 year) with
2 traumatic brain injury sustained through indirect energy transfer such as
3 shearing forces (that is, no history or findings suggesting direct injury to the
4 head).

5 Specific consideration will be given to people with cognitive impairments
6 (including learning disabilities and communication difficulties) and older adults
7 with frailty.

8 **Groups that will not be covered**

- 9 • Adults, young people and children (including babies under 1 year) with
10 superficial injuries to the eye or face without suspected or confirmed head
11 or brain injury.

12 **3.2 Settings**

13 **Settings that will be covered**

- 14 • Primary care, pre-hospital, emergency departments (or similar units),
15 referral and transfer to a neuroscience centre, care of people already in
16 hospital or those in residential care homes where NHS care is delivered,
17 referral from and discharge to custodial settings.

18 **3.3 Activities, services or aspects of care**

19 **Key areas that will be covered**

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

- 22 1 Pre-hospital interventions.
- 23 – Tranexamic acid.
 - 24 – Transport directly to a neuroscience centre past a closer non-
25 specialist unit.
 - 26 – Direct access from the community to imaging (CT and MRI).
- 27 2 Assessment and management in the emergency department.
- 28 – Selection of people with head injury for CT and MRI

- 1 – Role of brain injury biomarkers (laboratory and point of care
2 measurements).
- 3 – Diagnosis of cervical spine injury in people with head injury, using CT
4 and MRI, including timing of imaging.
- 5 – Administering tranexamic acid.
- 6 3 Discharge and follow up, including follow up of people with normal scans
7 for deterioration.
- 8 – Observation of people on anticoagulation and antiplatelet therapy,
9 people with post-concussion syndrome and people with asymptomatic
10 small intracranial injuries after imaging.
- 11 – Identification of hypopituitarism (timing and who to investigate).

12 **Proposed outline for the guideline**

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

15 **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 with editorial changes to clarify that: <ul style="list-style-type: none"> • pre-hospital assessment may include video assessment • community health services and NHS minor injury clinics including forensic medical officers. (no new evidence review will be conducted for these recommendations)

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

<p>Admission and observation and Discharge and follow-up</p>	<p>Review evidence: new area in the guideline for:</p> <ul style="list-style-type: none"> • observation of people on anticoagulation, including DOACs, and antiplatelet therapy • 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 with editorial changes to account for:</p> <ul style="list-style-type: none"> • discharge and follow up for people discharged to custodial settings • follow up for people never admitted to hospital • follow up conducted via video. <p>(no new evidence review will be conducted for these recommendations)</p>
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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 neurosurgical centre,
7 which will 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.

1 **Related NICE guidance**

2 ***Published***

- 3 • [Child abuse and neglect. NICE guideline NG76](#) (2017).
- 4 • [Major trauma: assessment and initial management. NICE guideline NG39](#)
5 (2016).
- 6 • [Major trauma: service delivery. NICE guideline NG40](#) (2016).
- 7 • [Spinal injury: assessment and initial management. NICE guideline NG41](#)
8 (2016).
- 9 • [Falls in older people: assessing risk and prevention. NICE guideline CG161](#)
10 (2013).
- 11 • [Alcohol-use disorders: diagnosis, assessment and management of harmful
12 drinking and alcohol dependence. NICE guideline CG115](#) (2011).
- 13 • [Delirium: diagnosis, prevention and management. NICE guideline CG103](#)
14 (2010).
- 15 • [Transient loss of consciousness \('blackouts'\) in over 16s. NICE guideline
16 CG109](#) (2010).
- 17 • [Sedation in under 19s: using sedation for diagnostic and therapeutic
18 procedures. NICE guideline CG112](#) (2010).
- 19 • [Unintentional injuries: prevention strategies for under 15s. NICE public
20 health guidance PH29](#) (2010).
- 21 • [Child maltreatment: when to suspect child maltreatment in under 18s. NICE
22 guideline CG89](#). (2009)
- 23 • [Acutely ill adults in hospital: recognising and responding to deterioration.
24 NICE guideline CG50](#) (2007).
- 25 • [Pre-hospital initiation of fluid replacement therapy in trauma. NICE
26 technology appraisal guidance 74](#) (2004).

27 ***In development***

- 28 • Epilepsies in children, young people and adults. Publication date to be
29 confirmed
- 30 • Rehabilitation for chronic neurological disorders. Publication date to be
31 confirmed

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

- 2 • Head injury: assessment and early management (2014) NICE guideline
3 CG176

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

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

- 8 • [Medicines optimisation](#) (2015) NICE guideline NG5
9 • [Patient experience in adult NHS services](#) (2012) NICE guideline CG138
10 • [Service user experience in adult mental health](#) (2011) NICE guideline
11 CG136
12 • [Medicines adherence](#) (2009) NICE guideline CG76

13 **3.4 *Economic aspects***

14 We will take economic aspects into account when making recommendations.
15 We will develop an economic plan that states for each review question (or key
16 area in the scope) whether economic considerations are relevant, and if so
17 whether this is an area that should be prioritised for economic modelling and
18 analysis. We will review the economic evidence and carry out economic
19 analyses, using an NHS and personal social services perspective, as
20 appropriate.

21 **3.5 *Key issues and draft questions***

- 22 1 Pre-hospital interventions.
- 23 1.1 What is the clinical and cost effectiveness of tranexamic acid for
24 managing suspected or confirmed traumatic head injury pre-hospital and
25 in hospital?
- 26 1.2 What is the clinical and cost effectiveness of pre-hospital strategies
27 to convey people with head injury to a distant specialist neuroscience
28 centre past a closer non-specialist unit?
- 29 1.3 What is the clinical and cost effectiveness of providing direct access
30 from the community to imaging?

- 1 2 Assessment and management in the emergency department.
- 2 2.1 What are the indications for selecting adults, young people, children
- 3 and babies with head injury for CT or MRI head scan, including:
- 4 - people on anticoagulant or antiplatelet therapy, including those with no
- 5 history of amnesia or loss of consciousness
- 6 - people with pre-injury cognitive impairment sustaining injury through
- 7 low level falls
- 8 - people sustaining recurrent head injuries through sport
- 9 - people presenting more than 24 hours after injury?

10 2.2 What is the diagnostic accuracy of brain injury biomarkers and/or

11 MRI for predicting post-concussion syndrome and other post-brain injury

12 complications?

13 2.3 What is the clinical and cost effectiveness of biomarkers and/or MRI

14 when each is followed by the appropriate treatment for post-concussion

15 syndrome and other complications after brain injury to improve patient

16 outcomes?

17 2.4 What is the diagnostic accuracy of CT and MRI of the cervical spine

18 in people with head injury?

19 3 Discharge and follow up

20 3.1 How long should people who are on anticoagulant or antiplatelet

21 therapy be observed after normal brain imaging?

22 3.2 How long should people with post-concussion syndrome be

23 observed after normal brain imaging?

24 3.3 How long should people with small intracranial injuries be observed if

25 they have no symptoms?

26 3.4 Which patients should be investigated for hypopituitarism after head

27 injury?

28 3.5 When should people with head injury be investigated for

29 hypopituitarism?

30 **3.6 Main outcomes**

31 The main outcomes that may be considered when searching for and

32 assessing the evidence are:

- 1 1 Diagnostic accuracy.
- 2 2 Mortality from head injury at 30 days.
- 3 3 All-cause mortality at 30 days.
- 4 4 Objective measures of disability (including Glasgow Outcome Scale,
5 King's Outcome Scale for Childhood Head Injury and Cerebral
6 Performance Category scale, Rivermead Post-Concussion Syndrome
7 Questionnaire).
- 8 5 Quality of life (validated quality of life scores only).
- 9 6 Length of hospital stay.

10 **4 NICE quality standards and NICE Pathways**

11 **4.1 NICE quality standards**

12 **NICE quality standards that may need to be revised or updated when** 13 **this guideline is published**

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

15 **4.2 NICE Pathways**

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

19 **5 Further information**

This is the final scope, incorporating comments from registered stakeholders during consultation.

The guideline is expected to be published in May 2022.

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

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

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