NICE National Institute for Health and Care Excellence

NICE Pathways

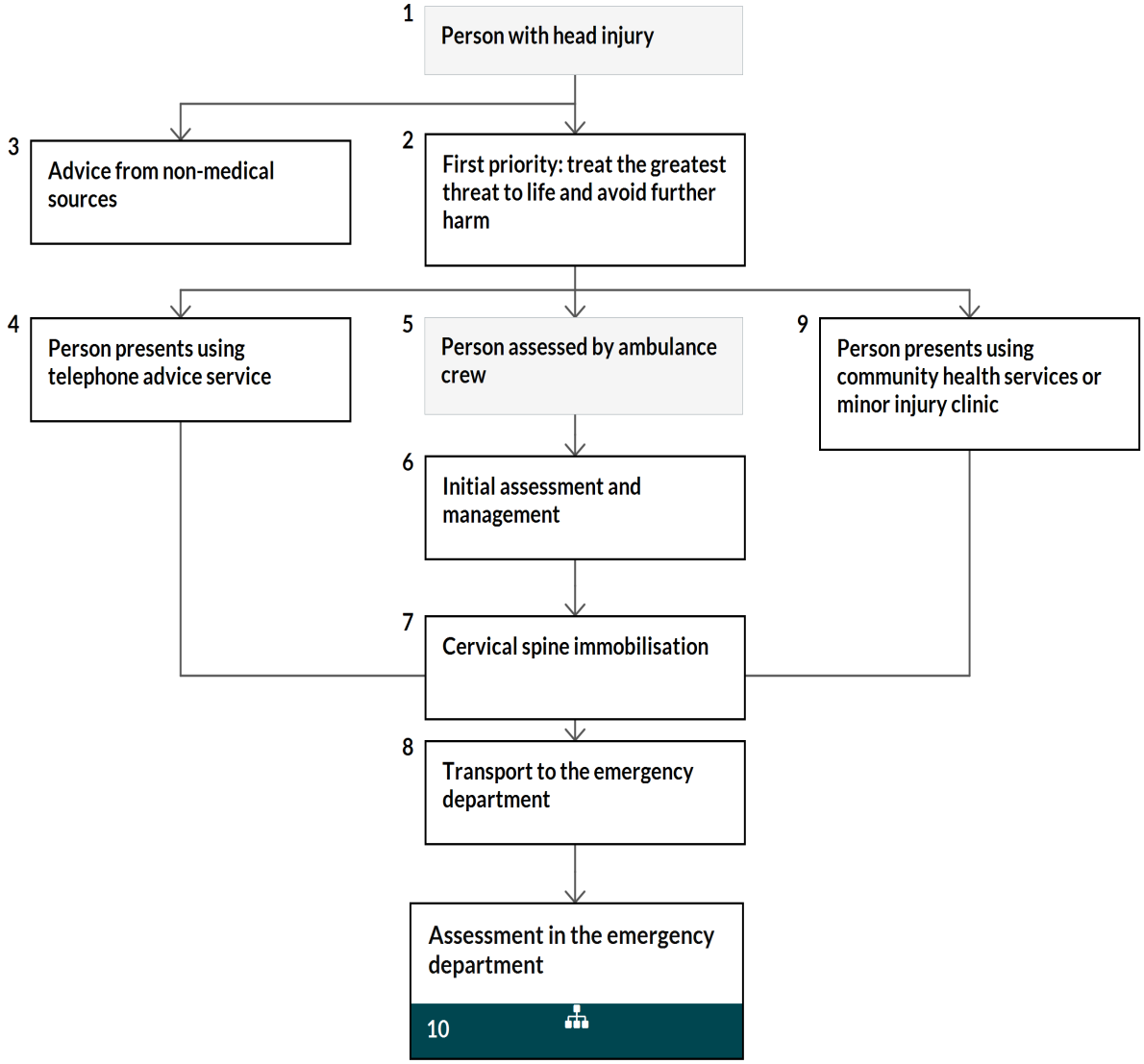
Pre-hospital management for patients with head injury

NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

http://pathways.nice.org.uk/pathways/head-injury
NICE Pathway last updated: 14 October 2019

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



1 Person with head injury

No additional information

2 First priority: treat the greatest threat to life and avoid further harm

When administering immediate care, treat first the greatest threat to life and avoid further harm. For advice on volume resuscitation in people with traumatic brain injury and haemorrhagic shock, see what NICE says on trauma.

3 Advice from non-medical sources

Public health literature and other non-medical sources of advice (for example, St John Ambulance, police officers) should encourage people who have any concerns following a head injury to themselves or to another person, regardless of the injury severity, to seek immediate medical advice.

4 Person presents using telephone advice service

Telephone advice services (for example, NHS 111, emergency department helplines) should refer patients who have sustained a head injury to the emergency ambulance services (that is, 999) for emergency transport to the emergency department if they have experienced any of the following:

- Unconsciousness or lack of full consciousness (for example, problems keeping eyes open).
- Any focal neurological deficit since the injury.
- Any suspicion of a skull fracture or penetrating head injury.
- Any seizure ('convulsion' or 'fit') since the injury.
- A high-energy head injury.
- The injured person or their carer is incapable of transporting the injured person safely to the hospital emergency department without the use of ambulance services (providing any other risk factor indicating emergency department referral is present; see recommendation below).

Telephone advice services (for example, NHS 111 or emergency department helplines) should

refer patients who have sustained a head injury to a hospital emergency department if they have any of the following risk factors:

- Any loss of consciousness ('knocked out') as a result of the injury, from which the person has now recovered.
- Amnesia for events before or after the injury ('problems with memory') (assessment of amnesia will not be possible in preverbal children and is unlikely to be possible in children aged under 5 years).
- Persistent headache since the injury.
- Any vomiting episodes since the injury.
- Any previous brain surgery.
- Any history of bleeding or clotting disorders.
- Current anticoagulant therapy.
- Current drug or alcohol intoxication.
- There are any safeguarding concerns (for example, possible non-accidental injury or a vulnerable person is affected).
- Irritability or altered behaviour ('easily distracted', 'not themselves', 'no concentration', 'no interest in things around them'), particularly in infants and children aged under 5 years.
- Continuing concern by helpline staff about the diagnosis.

5 Person assessed by ambulance crew

No additional information

6 Initial assessment and management

Initially assess adults who have sustained a head injury and manage their care according to clear principles and standard practice, as embodied in the:

- Advanced Trauma Life Support (ATLS) course/European Trauma course.
- International Trauma Life Support (ITLS) course.
- Pre-hospital Trauma Life Support (PHTLS) course.
- Advanced Trauma Nurse Course (ATNC).
- Trauma Nursing Core Course (TNCC).
- Joint Royal Colleges Ambulance Service Liaison Committee (JRCALC) Clinical Practice Guidelines for Head Trauma.

Initially assess children who have sustained a head injury and manage their care according to clear principles outlined in the:

- Advanced Paediatric Life Support (APLS)/European Paediatric Life Support (EPLS) course.
- Pre-hospital Paediatric Life Support (PHPLS) course.
- Paediatric Education for Pre-hospital Professionals (PEPP) course.

Make standby calls to the destination emergency department for all patients with GCS 8 or less (see below) to ensure appropriately experienced professionals are available for their treatment and to prepare for imaging.

Manage pain effectively because it can lead to a rise in intracranial pressure. Provide reassurance, splintage of limb fractures and catheterisation of a full bladder, where needed.

Follow at all times best practice in paediatric coma observation and recording as detailed by the National Paediatric Neuroscience Benchmarking Group.

Glasgow Coma Score

Base monitoring and exchange of information about individual patients on the three separate responses on the GCS (for example, a patient scoring 13 based on scores of 4 on eye-opening, 4 on verbal response and 5 on motor response should be communicated as E4, V4, M5).

If a total score is recorded or communicated, base it on a sum of 15, and to avoid confusion specify this denominator (for example, 13/15).

Describe the individual components of the GCS in all communications and every note and ensure that they always accompany the total score.

In the paediatric version of the GCS, include a 'grimace' alternative to the verbal score to facilitate scoring in preverbal children.

In some patients (for example, patients with dementia, underlying chronic neurological disorders or learning disabilities) the pre-injury baseline GCS may be less than 15. Establish this where possible, and take it into account during assessment.

7 Cervical spine immobilisation

Attempt full cervical spine immobilisation for patients who have sustained a head injury and

present with any of the following risk factors unless other factors prevent this:

- GCS [See page 8] less than 15 on initial assessment by the healthcare professional.
- Neck pain or tenderness.
- Focal neurological deficit.
- Paraesthesia in the extremities.
- Any other clinical suspicion of cervical spine injury.

Maintain cervical spine immobilisation until full risk assessment including clinical assessment (and imaging if deemed necessary) indicates it is safe to remove the immobilisation device.

8 Transport to the emergency department

Transport patients who have sustained a head injury directly to a hospital that has the resources to further resuscitate them and to investigate and initially manage multiple injuries. All acute hospitals receiving patients with head injury directly from an incident should have these resources, which should be appropriate for a patient's age[1].

Transport from community health services and NHS minor injury clinics

Patients referred from community health services and NHS minor injury clinics should be accompanied by a competent adult during transport to the emergency department.

The referring professional should determine if an ambulance is required, based on the patient's clinical condition. If an ambulance is deemed not required, public transport and car are appropriate means of transport providing the patient is accompanied.

The referring professional should inform the destination hospital (by phone) of the impending transfer and in non-emergencies a letter summarising signs and symptoms should be sent with the patient.

9 Person presents using community health services or minor injury clinic

Community health services (GPs, ambulance crews, NHS walk-in centres, dental practitioners) and NHS minor injury clinics should refer patients who have sustained a head injury to a hospital emergency department, using the ambulance service if deemed necessary, if any of the following are present:

- GCS score of less than 15 on initial assessment (see recommendations on GCS [See page 8]).
- Any loss of consciousness as a result of the injury.
- Any focal neurological deficit since the injury.
- Any suspicion of a skull fracture or penetrating head injury since the injury.
- Amnesia for events before or after the injury (assessment of amnesia will not be possible in preverbal children and is unlikely to be possible in children aged under 5 years).
- Persistent headache since the injury.
- Any vomiting episodes since the injury (clinical judgement should be used regarding the cause of vomiting in those aged 12 years or younger and the need for referral).
- Any seizure since the injury.
- Any previous brain surgery.
- A high-energy head injury.
- Any history of bleeding or clotting disorders.
- Current anticoagulant therapy.
- Current drug or alcohol intoxication.
- There are any safeguarding concerns (for example, possible non-accidental injury or a vulnerable person is affected).
- Continuing concern by the professional about the diagnosis.

In the absence of any of the risk factors above, consider referral to an emergency department if any of the following factors are present, depending on judgement of severity:

- Irritability or altered behaviour, particularly in infants and children aged under 5 years.
- Visible trauma to the head not covered above but still of concern to the healthcare professional.
- No one is able to observe the injured person at home.
- Continuing concern by the injured person or their family or carer about the diagnosis.

10 Assessment in the emergency department

See Head injury / Assessment in the emergency department for patients with head injury

[1] In the NHS in England these hospitals would be trauma units or major trauma centres. In the NHS in Wales this should be a hospital with equivalent capabilities.

Glasgow Coma Score

Base monitoring and exchange of information about individual patients on the three separate responses on the GCS (for example, a patient scoring 13 based on scores of 4 on eye-opening, 4 on verbal response and 5 on motor response should be communicated as E4, V4, M5).

If a total score is recorded or communicated, base it on a sum of 15, and to avoid confusion specify this denominator (for example, 13/15).

Describe the individual components of the GCS in all communications and every note and ensure that they always accompany the total score.

In the paediatric version of the GCS, include a 'grimace' alternative to the verbal score to facilitate scoring in preverbal children.

In some patients (for example, patients with dementia, underlying chronic neurological disorders or learning disabilities) the pre-injury baseline GCS may be less than 15. Establish this where possible, and take it into account during assessment.

Glossary

Focal neurological deficit

(problems restricted to a particular part of the body or a particular activity, for example, difficulties with understanding, speaking, reading or writing; decreased sensation; loss of balance; general weakness; visual changes; abnormal reflexes; and problems walking)

High-energy head injury

(for example, pedestrian struck by motor vehicle, occupant ejected from motor vehicle, fall from a height of greater than 1 metre or more than 5 stairs, diving accident, high-speed motor vehicle collision, rollover motor accident, accident involving motorised recreational vehicles, bicycle collision, or any other potentially high-energy mechanism)

Skull fracture or penetrating head injury

(signs include clear fluid running from the ears or nose, black eye with no associated damage around the eyes, bleeding from one or both ears, bruising behind one or both ears, penetrating injury signs, visible trauma to the scalp or skull of concern to the professional)

Sources

Head injury: assessment and early management (2014 updated 2019) NICE guideline CG176

Your responsibility

Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and

their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.