Head injury: assessment and early management

Consultation on draft scope
Stakeholder comments table

21/10/20 – 18/11/20

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Abbott Laboratories	009	024	We recommend adding the following question to the scope of the review: *What is the diagnostic accuracy of a mTBI test utilizing a combination of two complementary blood biomarkers of brain injury to aid in determining the need for CT in patients who are suspected of having mTBI?* **[This text was identified as confidential and has been removed].** Our recommendations are based on a wealth of currently available published evidence that blood biomarkers can effectively rule out the need for a CT head scan. Please see an additional non-exhaustive list of studies below: • Okonkwo, D. O., et al. (2013). "GFAP-BDP as an acute diagnostic marker in traumatic brain injury: results from the prospective transforming research and clinical knowledge in traumatic brain injury study." J Neurotrauma **30**(17): 1490-1497. • Papa, L., et al. (2014). "GFAP out-performs S100beta in detecting traumatic intracranial lesions on computed tomography in trauma patients with mild traumatic brain injury and those with extracranial lesions." J Neurotrauma **31**(22): 1815-1822. • McMahon, P. J., et al. (2015). "Measurement of the glial fibrillary acidic protein and its breakdown products GFAP-BDP biomarker for the detection of traumatic brain injury compared to computed tomography and magnetic resonance imaging." J Neurotrauma **32**(8): 527-533. • Papa, L., et al. (2016). "Time Course and Diagnostic Accuracy of Glial and Neuronal Blood Biomarkers GFAP and UCH-L1 in	Thank you for your comment. This can be covered by the existing question within the guideline scope – 'What is the clinical and cost effectiveness of biomarkers and/or MRI when each is followed by the appropriate treatment for post-concussion syndrome and other complications after brain injury to improve patient outcomes?'

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			a Large Cohort of Trauma Patients With and Without Mild Traumatic Brain Injury." JAMA Neurol **73**(5): 551-560. • Welch, R. D., et al. (2016). "Ability of Serum Glial Fibrillary Acidic Protein, Ubiquitin C-Terminal Hydrolase-L1, and S100B To Differentiate Normal and Abnormal Head Computed Tomography Findings in Patients with Suspected Mild or Moderate Traumatic Brain Injury." J Neurotrauma **33**(2): 203-214. • Okonkwo, D. O., et al. (2020). "Point-of-Care Platform Blood Biomarker Testing of GFAP versus S100B for Prediction of Traumatic Brain Injuries: a TRACK-TBI study." Journal of Neurotrauma Implementation of a blood test able to aid in ruling out the need for a CT scan for patients who would otherwise receive a CT scan can reduce the number of unnecessary CT scans performed in the emergency department (ED) (Unden, L., et al. (2015). "Validation of the Scandinavian guidelines for initial management of minimal, mild and moderate traumatic brain injury in adults." BMC Med **13**: 292.). Previous analyses of TBI care in England have shown that some TBI patients including those with severe TBI had to wait over 2.5 hours to have a head CT scan performed due to issues with CT scan access and radiology staff availability (National Confidential Enquiry into Patient Outcome and Death (2007) Trauma: who cares? (NCEPOD); National Audit Office (2010) Major trauma care in England report). Reducing overall number of CT scans conducted by means of pre-selection of patients with a blood test may improve CT access for those patients who urgently require it and reduce waiting times in the ED. In addition, implementation of a blood test in the TBI management pathway has the potential to reduce the cost of diagnostic assessment of TBI (Su, Y. S., et al. (2019). "Cost-Effectiveness of Biomarker Screening for Traumatic Brain Injury." J Neurotrauma **36**(13): 2083-2091).	

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			Moreover, NCEPOD 2007 and National Audit 2010 reports highlighted that neurosurgical consultation improves decision making in the ED care of TBI patients, however it is not always available at hours when trauma is most frequent (evenings, nights and weekends). Tandem blood biomarker measurements could provide an objective tool able to aid decision making for less specialised ED physicians (Anderson, T., et al. (2020). "Blood-based biomarkers for prediction of intracranial haemorrhage and outcome in patients with moderate or severe traumatic brain injury." Journal of Trauma and Acute Care Surgery).	
Association of Paediatric Emergency Medicine	General	General	We note that the draft scope mentions identification of post-concussion syndrome through brain injury markers and/or MRI, and the length of time of observation of a person with post-concussion after a normal MRI, however, we would like to see a greater emphasis placed on the assessment, management and follow-up (including back to school / sports advice) of concussion, particularly in children and young people. A separate section in the guidance would be ideal.	Thank you for your comment. The scope includes a draft review question on 'How long should people with post-concussion syndrome be observed after normal brain imaging?' and this could include follow up.
Association of Paediatric Emergency Medicine	General	General	We note there is some variation amongst the available clinical prediction rules and wonder if there is a plan to revisit the criteria for immediate CT scanning and mechanisms of injury significance with updated evidence.	Thank you for your comment. The guideline plans to review the indications for selecting people with head injury for CT or MRI head scan. The accuracy of individual indications, or clinical decision rules can be captured within this form of review. This will be discussed with the guideline committee at protocol development.
Brain Injury Matters (NI)	002	029 - 031	The current 'draft scope' of this guideline states: ***"Most people recover without specific or specialist intervention but some have long-term disability or even die from traumatic brain injury".*** We would suggest a more complex and realistic picture, such as: **Some people may recover from brain injury with no identifiable impairment in their physical, cognitive, emotional or social functioning either in the short or long-term. Others suffer impairments which may have not been evident at the time of their brain injury, only becoming apparent on returning home, to school or the workplace or in subsequent months and years. Some will require access to specific or specialist intervention at the time of injury, or later if problems are not evident at the time of injury.**	Thank you for your comment. The scope has been revised in line with your suggested edits.

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			Some have long-term disability or even die from traumatic brain injury. " From the published literature and our experience of working with children, young people, adults and their families we do not feel the current statement in the 'draft scope' sufficiently highlights the often complex, subtle and hidden effects of brain injury. While in an emergency department or other parts of acute care setting the priority is rightly with the preservation of life and minimising damage to the brain, so the more subtle and long-term impairments associated with brain injury may not be evident at this time. However, Holloway (2016) investigating the experiences of relatives of people with acquired brain injury reports negative comments in several repeating areas: *"…including the impact of the brain injury being missed entirely and neither assessed for, nor any services provided…"* A recent metasynthesis of ABI in children (Tyerman 2017) reported the findings of 10 separate papers (published between 1997 and 2013) that in addition to the: *"…considerable consequences for the child, resulting in impairments in physical, cognitive, emotional and social functioning",* *"…children with an ABI are more likely to exhibit behavioural problems and are at increased risk of mental health difficulties such as depression, anxiety and obsessive compulsive behaviours. They can also have problems with schoolwork, learning and friendships, probably due to impaired neurocognitive skills and reduced pragmatic skills and social problem solving. Coupled with physical impairments these difficulties lead to restricted social participation."* Some of these such problems caused by brain injury in children, young people and adults may only become evident in the months or years after someone has been discharged from acute or community statutory care with an apparent full recovery. We feel that it is important to emphasise this to health and social care professionals, families, patients and wider society, that even if there an apparently full recovery (especially if there are no physical impairments), this can mask, the significant and sometimes severe and lifelong hidden effects on cognitive, emotional and social functioning.	

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			Tyerman E, Eccles FJR, Gray V. The experiences of parenting a child with an acquired brain injury: A meta-synthesis of the qualitative literature. Brain Inj. 2017;31(12):1553-1563. Holloway, M. and Tasker, R. The Experiences of Relatives of People with Acquired Brain Injury (ABI) of the Condition and Associated Social and Health Care Services. Journal of Long-Term Care, 2019, pp.99–110	
Brain Injury Matters (NI)	006	004	In the 'draft scope' of this guideline regarding: **'Area of care: Information and support for families and carers | What NICE plans to do | No evidence review: [and] retain recommendations from existing guideline'** From the current literature and our experience in Brain Injury Matters (NI) of the providing information and support to patients and their families following brain injury **we would recommend the guideline for this area of care is updated**. The current guideline addresses the provision of information sheets detailing the nature of head injury (1.6.2) and having a board displaying leaflets or contact details for patient support organisations (1.6.5). We feel that these could be enhanced by including: • **Ensure that there is a whole family approach to providing information and support. Partners, spouses, parents, siblings and any dependent children of the person who has had a brain injury should be identified and offered appropriate information and support.** • **Each family member will have different levels of understanding, concerns and needs, so it is important that each should have the opportunity and be encouraged to ask questions. Furthermore telephone or video conferencing access may be provided to provide opportunities at a later date to ask questions once the information had been processed and including the whole family in these calls should be considered.** • **Families should be given the contact details of statutory and voluntary organisations which can offer support even at this**	Thank you for your comment. The surveillance review of the guideline did not identify this as a priority area for update and so will not be reviewed at this point. The evidence identified would not change the existing recommendations or the the recommendations in the NICE guideline on patient experience on information and support that the update in the guideline will cross-refer to.

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			very early stage, or in subsequent months and years. In recognition of the benefits of a whole family approach, providing the details of organisations which offer family support and /or family counselling can emphasise the impact brain injury can have on the whole family, its individual members and the dynamics of the whole family in the long term. However, if the NICE guideline development group reviews the key findings reported in the literature we have cited below, highlighting the key findings of relevance to this topic in the current guideline, they may of course consider other findings which would also be advisable to be included in the updated guideline. While the primary focus of the medical staff is rightly for the patient, it is vital to ensure the correct information and appropriate support is offered to the whole family. In the case of a child who has suffered a brain injury the impact on their siblings, parents, grandparents and wider family can be utterly devastating in both the short and long term. Tyerman (2017) reports the findings of 8 separate papers (published between 1997 and 2015) that: *"Parents experienced intense and prolonged emotional reactions to their child's injury both immediately and* ***years afterwards. This included depression, anxiety, stress, guilt, anger and post-traumatic responses****…* As well as supporting the: *"…****psychological wellbeing of any other children in the immediate family****."* Holloway (2019) asked participants if they were: *"…given the information you needed to understand brain injury and services?* *More than* ***twice as many individuals reported that they were not given information required to understand brain injury and relevant services as reported that they were****…*	

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			… *A few noted that they had **felt well supported by professionals** and family. **In these instances, the professionals concerned were identified as working with the whole family rather than simply the injured person…**"* Similarly in the case of a parent or grandparent suffering a brain injury, the impact on their siblings, children and grandchildren can be very significant in this: *"unending and complex grief"* (Holloway 2019) Tyermann (2017) reports on the findings of 11 separate papers (published between 1998 and 2015) that: *"…many parents stressed the need for information and understanding. This included information about **ABI, medical procedures, prognosis, support available, behaviour management, as well as practical issues such as car parking**. However, parents in one study recognised a conflict between receiving and not receiving information, as both could cause exasperation and fear: 'You want all the information. But you don't want to know either'. Knowing typical emotional responses was also seen as helpful: 'well it's like, your feelings change all the time, from day to day, even from minute to minute at the beginning. It would have helped to know that what we felt was normal not madness'. These information needs were particularly important as many parents had little or no prior knowledge of ABI beyond television shows, which led to confusion. **When these information needs were met, many parents reported feeling relief and reassurance, and were less frustrated, fearful and apprehensive.*** *It was essential that information was **accessible so parents could understand the language** and have the **opportunity to ask questions**. Unfortunately, many felt that the information provided was insufficient and **some believed staff felt they would not understand or did not require the information**. Increasingly the parents in one study described increasingly*	

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			independent sources of information accessing books, the internet and talking to other parents. *Parents also stressed the importance of when and how the information was delivered as heightened emotions made it difficult for parents to absorb information.* ***Written information was helpful for this reason and telephone access for opportunities to ask questions once the information had been processed. Many parents responded positively when information was given honestly, sensitively but frankly with empathy and compassion."*** Oyesanya (2017) in their systematic review identified 6 studies (published between 1991 and 2012) which discussed the theme of "**perceived need for information**." *"Throughout the patient's hospital stay, families reported an intense need for information, wanting to know about their loved one's injury and their prognosis. Families reported wanting* ***information that was consistent, easy to understand, specific to their relative*** *(not probabilities or statistics), with frequent updates. Many family members reported the following sub-themes: a) lack of understanding of information; b) wanting certain types of information; c) problems accessing staff and information; and d) wanting no assumptions.* ***Lack of understanding of information:*** *…Although family members could repeat information on the patient's status,* ***some reported that that they "had not grasped the meaning of the information****"* ***Wanting certain types of information: Many family caregivers were uncertain about the injury and what it meant for the patient and themselves****. Family members sought knowledge and understanding relating to the injury, including* ***verbal and written information*** *about diagnosis, prognosis, results of tests, prescribed medications, and possible interventions. Others wanted knowledge about expectations of the rehabilitation.* ***Problems accessing staff and information:*** *In regards to attempts to receive information,* ***some families felt that staff were***	

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			easily accessible, while other family members who were unavailable during business hours reported difficulty gaining access to information they desired from staff due to communication barriers**. Those who had difficulty communicating with staff had doubts about their own abilities to provide effective care to the patient after discharge. Sometimes, **when it was not easy to access desired information, family members used both subtle and explicit techniques to obtain information, such as asking direct questions, observing, or even eavesdropping on patient-staff interactions**. **Having to seek information in this manner made family members feel as if they were going it alone**. Finally, family members reported that **family meetings with staff were very helpful** in receiving information. However, families stated **more family meetings were necessary to make sure there was clear and consistent information being communicated. ***Wanting no assumptions:** Many family members reported being overwhelmed, even if they had prior experience visiting other sick family members in the hospital, or even if they had healthcare experience…. Family caregivers with healthcare experience reported that their healthcare experience was a barrier, **as staff made assumptions** about their levels of knowledge about ABI, thus limiting information provided to them. **Family caregivers reported that, regardless of healthcare experience, they wanted as much information as possible** to help them become knowledgeable about the patient's status and necessary future care".* Oyesanya, T The experience of patients with ABI and their families during the hospital stay: A systematic review of qualitative literature. Brain Inj. 2017 ; 31(2): 151–173 Tyerman E, Eccles FJR, Gray V. The experiences of parenting a child with an acquired brain injury: A meta-synthesis of the qualitative literature. Brain Inj. 2017;31(12):1553-1563. Holloway, M. and Tasker, R., 2019. The Experiences of Relatives of People with Acquired Brain Injury (ABI) of the Condition and Associated	

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			Social and Health Care Services. Journal of Long-Term Care, (2019), pp.99–110	
Cochrane Injuries Group	General	General	I write in advance of the deadline for comment on the abovenamed consultation, on behalf of the Cochrane Injuries Group. We confirm that have no comments on the draft at this time. We support and are grateful for your work.	Thank you.
Faculty of Forensic & Legal Medicine	006	004	**Re: Pre-hospital assessment and advice, and referral to hospital**. I note that those sought to advise on the updated guidelines do not include anyone with expertise in clinical forensic medicine or police custodial medicine (eg a Specialist in Forensic & Legal Medicine). These doctors (and other healthcare professionals) see patients in police custody many of whom are complex patients with a number of health issues which may include a) head injury, b) previous traumatic brain injury, c) drug and alcohol dependence, d) seizure activity (eg alcohol related or from previous traumatic brain injury), e) on anticoagulants (eg for previous drug-induced DVT, f) having been restrained – using means such as irritant spray, baton and Taser. Approximately 1 million detainees pass through police custody each year in the UK and unrecognised head injury is one of the causes of deaths and harm in custody (though rare). (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/655202/deaths-in-police-custody-review-international-evidence-horr95.pdf). Studies of the nature of police detainees emphasise their complexity (https://pubmed.ncbi.nlm.nih.gov/25287804/ ; https://pubmed.ncbi.nlm.nih.gov/20083045/ ; https://pubmed.ncbi.nlm.nih.gov/22539630/). The assessment of management of patients is undertaken by doctors, nurses and paramedics and the 40+ police services do not have any minimum standard requirement for the competences of those healthcare professionals. Specific recognition of this group providing guidance on the referral criteria (to ED) and management would be appropriate and enhance patient safety. These patients are, I believe a specific	Thank you for your comment. Existing guidance on assessment and referral to hospital applies to people in custody (recs 1.1.4 and 1.1.5). We will ask a specialist in forensic and legal medicine to peer review the guideline.

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			group that need consideration for these guidelines and would suggest that the membership be reflected to include specialists in forensic & legal medicine.	
Homerton University NHS Foundation Trust	003	024	It would be important to specify other vulnerable groups, such as those with learning disabilities and those under the influence of alcohol intoxication. Their attendance to ED following a head injury is common, particularly the latter, and they would be somewhat more challenging to assess then other groups mentioned.	Thank you for your comment. The indications for selecting people with pre-injury cognitive impairment with head injury for CT or MRI head scan, will be included in the guideline. People with learning disabilities have been added to the section on inequalities that will be addressed. People under the influence of alcohol intoxication are included in the section on 'groups that will be covered'.
Homerton University NHS Foundation Trust	005	003	Superficial is difficult to define in this context. A facial or eye injury can indeed triggered a post-concussion syndrome with a certain degree of energy transmitted during the impact, but it might be difficult to establish in practice. Excluding these patients with "superficial" injuries might be dangerous with use of such a subjective term. It is probably worth including patients with facial and eye injuries within the scope of these guidelines, and then they can be excluded further down in the algorithm once no other "red flags" have been identified.	Thank you for your comment. This term is widely understood by clinicians to mean minor damage to the skin and underlying soft tissue that is expected to fully resolve with simple wound management. The definition of this term will be added to the guideline glossary. In practice all people presenting to A & E would be assessed for signs of brain injury. For clarity, those without suspected head or brain injury has been added to the list of populations the guideline will not cover.
Homerton University NHS Foundation Trust	005	023	Apart from the use of tranexamic acid it would be worth including recommendations and criteria for anticoagulation reversal in those patients who were taking them prior to their injury.	Thank you for your comment. The NICE guideline on blood transfusion includes recommendations on anticoagulation reversal https://www.nice.org.uk/guidance/ng24/chapter/Recommendations#prothrombin-complex-concentrate-2. A cross reference to this guideline will be made if appropriate.
Homerton University NHS Foundation Trust	007	002	The draft states an update on pre hospital assessment and advice would not be covered. We feel post-concussion syndrome should be addressed if the patient is not conveyed to hospital for further assessment, in order to explain potential non-urgent symptoms that they could experience, which may be managed in primary care rather than self-presenting to a hospital ED.	Management of post-concussion syndrome is outside of the scope of this guideline which is on the acute management of head injury. It may be considered for inclusion on the NICE guideline on rehabilitation for chronic neurological disorders including traumatic brain injury: Project information | Rehabilitation for Chronic Neurological Disorders Including Traumatic Brain Injury | Guidance | NICE . For patients not referred to hospital, recs 1.1.4 and 1.1.5 would cover management in primary care. This was not identified as an area for review of new evidence, however the current guidance on discharge and follow up can be considered for an editorial update to consider patient who are not conveyed to hospital for further assessment.

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Homerton University NHS Foundation Trust	007	004	Consider recommending the establishment of new outpatient pathways to manage patients with persistent post-concussion symptoms, in-hospital or in the community, but not in the ED. We feel some patients would benefit from being seen by a clinician 2-3 weeks after the injury if their symptoms persevere. Occasionally, patients may feel a sinister condition has been missed and recurrent attendances to ED would occur; most of them would have been avoided given the lack of clinical red flags that could have been picked up in an outpatient consultation, preventing ED overcrowding and reducing distress in the patient's journey. Counselling should be highlighted as the key to discharge patients safely, explaining potential course of their symptoms. Low mood, mild-to-moderate headaches, sleep disturbance, relationship issues, inability to focus and irritability may be more common than expected and should be listed. They seem to be unpredictable and not necessarily link with the severity of the head injury itself.	Thank you for your comment. This can be considered when discussing the evidence and subsequent guidance on (a) the diagnostic accuracy and the clinical and cost effectiveness of biomarkers and/or MRI for post-concussion syndrome, and (b) how long people with post-concussion syndrome should be observed after normal brain imaging.
NanoDx Inc.	005	020	The draft of the scope here is to test for biomarkers. We would like to propose to add a specific indicator around near patient testing (Point of Care Testing POCT) versus central lab testing? Turnaround time (TAT) and actioning results will be valuable to include from a clinical -, operational -and economical perspective. These injuries occur outside secondary care and triage assessments can be made in the pre-hospital and ED settings that will influence pressure on patient flow as length of stay is already a factor in the 'main outcomes'.	Thank you for your comment. We have clarified that we are referring to laboratory and point of care testing.
NHS England & Improvement Patient Safety	004	015	Again, we welcome the inclusion of all age groups in the scope and would ask the guidance team to consider recent resources from NHS England and Improvement in response to clinician concerns about an increase in the number of reports of dropped babies. A search of the National Reporting and Learning System (NRLS) for a recent 12 month period identified182 babies who had been accidentally dropped in obstetric/ midwifery inpatient settings (eight with significant reported injuries, including fractured skulls and/or intracranial bleeds Resources as follows: **National Patient Safety Alert Assessment and management of babies who are accidentally dropped in hospital** https://www.england.nhs.uk/wp-	Thank you for your comment. The information from the resources you've provided can be considered alongside the evidence reviewed for this guideline update when considering recommendations. Babies who have been accidentally dropped are included in the scope of this guideline.

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			content/uploads/2019/12/Patient_Safety_Alert_-_Management_of_babies_accidentally_dropped_in_hospital.pdf **Creating a local guide for the assessment and management of babies who are accidentally dropped in hospital** https://www.england.nhs.uk/wp-content/uploads/2019/12/Supporting_information_-_management_of_babies_accidentally_dropped_in_a_hospital_FINAL.pdf British Association of Perinatal Medicine practice framework, The Prevention, Assessment and Management of in-Hospital Newborn Falls and Drops https://www.bapm.org/resources/161-the-prevention-assessment-and-management-of-in-hospital-newborn-falls-and-drops	
NHS England & Improvement Patient Safety	004 005	026 007	We welcome the broadening of the scope of the existing guideline to include specific consideration to people with cognitive impairments and older adults with frailty and care of people already in hospital and would encourage the review team to also consider the inclusion of older adults with head injury as a result of an inpatient fall as a cohort for special consideration. Falls are the most frequently reported incident affecting hospital inpatients, with 247,000 falls occurring in inpatient settings each year in England alone. Reported falls among older patients are more likely to result in some degree of harm and, where harm does occur, it is three times more likely to be severe (over 7000 a year). NHS Improvement. The incidence and costs of inpatient falls in hospitals. London: 2017; Available from: https://improvement.nhs.uk/documents/1471/Falls_report_July2017.v2.pdf The National Reporting and Learning System see considerable numbers of reports where these injuries are not managed in the same way as if they occurred as outpatient. There is a parallel with the 2000 older patients who sustain femoral fracture following inpatient fall and robust data from the National Audit of Inpatient Falls file:///C:/Users/Julie.Windsor/Downloads/NAIF%20audit%20report_202	Thank you for your comment. Guidance provided within this guideline update would include inpatient falls. Consideration for older adults with head injury as a result of an inpatient fall as a specific subgroup or review strata can be made at the point of protocol development.

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			0%20Draft%202%20_0%20(6).pdf illustrates that significant numbers of inpatients are less likely to receive prompt surgery have a longer length of stay, and whose 30-day mortality was double that of non-inpatient hip fracture patients. We would also ask that the guidance clearly encompasses head injury that presents to primary care or Minor injury units including video consultation and ambulance triage/decisions not to convey i.e. ensure it encompasses the right advice for when full works are not immediately at hand, and sets out any definitive needs for seeing patient face to face.	
Royal College of Nursing	004	015	We are pleased to see that the new NICE guidance will address: - young people and children (including babies under 1 year) who present with a suspected or confirmed head injury with or without other major trauma. - young people and children (including babies under 1 year) with a 19 suspected or confirmed head injury that may be overlooked, for example, because of very young age, intoxication or cognitive impairment. - young people and children (including babies under 1 year) with traumatic brain injury sustained through indirect energy transfer such as shearing forces (that is, no history or findings suggesting direct injury to the head). We also welcome that specific considerations will be given to the frail older person including those with cognitive impairment and care home settings.	Thank you.
Royal College of Nursing	006	004	In the table under Area of Care – "Pre-hospital assessment and advice and referral to hospital" - please add a second bullet point – 'Video assessment/triage' - as an area for review of the evidence.	Thank you for your comment. This was not identified as an area for review of new evidence, however the current guidance can be

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			During COVID-19 and prior to that, video assessment and triage has become more common. There is a lot of evidence around the benefits of this type of assessment and we consider that this needs to be looked at.	considered for an editorial update to include video assessment and referral. Current guidance (rec 1.1.4) in guideline remains relevant despite modality.
Royal College of Nursing	007	001	We think this should include a reference to video assessments	Thank you for your comment. This was not identified as an area for review of new evidence, however the current guidance can be considered for an editorial update to include video assessment.
Royal College of Nursing	007	009	We think this should include a reference to video assessments	Thank you for your comment. This was not identified as an area for review of new evidence, however the current guidance can be considered for an editorial update to include video assessment.
Royal College of Nursing	007	014	We think this should include a reference to video assessments	This was not identified as an area for review of new evidence, however the current guidance can be considered for an editorial update to include video assessment.
Royal College of Nursing	007	General	Video follow up is becoming more common and acceptable. We think this should be referenced in the 'admission and observation' section and the 'discharge and follow up'.	Thank you for your comment. This was not identified as an area for review of new evidence, however the current guidance can be considered for an editorial update to include video assessment at follow-up.
Royal College of Nursing	009	015	There should be a new section - '1.4 What is the clinical and cost effectiveness of providing video assessment and triage to prevent unnecessary and/or inappropriate emergency department attendance and admission?'	Thank you for your comment. This was not identified as an area for review of new evidence and so an evidence review on this topic will not be conducted, however the current guidance can be considered for an editorial update to include video assessment.
Royal College of Nursing	General	General	The Royal College of Nursing (RCN) welcomes proposals by NICE to develop Head Injury assessment and early management guidelines. RCN staff reviewed the draft scoping document and also invited members who have expertise and work in this clinical area to review the draft document on our behalf. The comments below reflect the views of our reviewers.	Thank you.

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Royal College of Nursing	General	General	The draft scope seems comprehensive.	Thank you.
Royal College of Occupational Therapists	005	018	**Assessment in the emergency department:** This section does not include any information or plan to review cognitive assessment evidence and the role of occupational therapy in this process. Early detection of cognitive symptoms related to mild Traumatic Brain Injury (TBI) should be examined to help inform rehabilitation input and impact on long term return to work and community participation. Guidelines should look at evidence relating to cognitive, somatic and emotional symptoms; for example: *Population-based cohort study of the impacts of mild traumatic brain injury in adults four years post-injury.* *The results indicate that whilst somatic and emotional symptoms resolve over time, cognitive symptoms can become persistent and that mild TBI can impact longer-term community participation. Early intervention is needed to reduce the longer-term impact of cognitive symptoms and facilitate participation.* https://doi.org/10.1371/journal.pone.0191655	Thank you for your comment. The indication for selecting people for CT or MRI will be reviewed in this guideline. The specific indications will be discussed by the guideline committee at protocol development. The role of occupational therapists is outside of the scope of this guideline. A neuropsychologist (co-optee) has been appointed to the committee. A separate NICE guideline on rehabilitation is currently under development Project information | Rehabilitation for Chronic Neurological Disorders Including Traumatic Brain Injury | Guidance | NICE.
Royal College of Occupational Therapists	010	031	**Quality of life (validated quality of life scores only).** Early Head Injury guidelines should consider impact on functional independence at point of injury, and the effect of early therapeutic input on future wellbeing. Quality of Life scores have been shown to be correlated to functional independence in similar populations; for example: *Higher scores for independence in ADL were correlated with higher scores for a disease-specific HRQL measure, the Quality of Life—Alzheimer's Disease Scale. Preliminary evidence suggests that FIM-assessed ADL is associated with HRQL for these residents. The*	Thank you for your comment. This will be considered when reviewing any evidence reporting quality of life.

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			associations of the dressing and toileting items with HRQL were particularly strong. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4939554/ + 13. Kim K., Kim Y., Kim E. Correlation between the activities of daily living of stroke patients in a community setting and their quality of life. J. Phys. Ther. Sci. 2014;26:417–419. doi: 10.1589/jpts.26.417. [PMC free article] [PubMed] [CrossRef] [Google Scholar] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4939554/	
Royal College of Occupational Therapists	General	General	The Scope does not include information or plan to review any change in activity performance threshold - there is consensus about the importance of an occupation based approach to this; for example: *Both expert opinions and the summative findings of multiple research studies inform the 2017 Concussion in Sport Group consensus guidelines. Current guidelines for rest and gradual return to activity are as follows: There is currently insufficient evidence that prescribing complete rest achieves these objectives. After a brief period of rest during the acute phase (24-48 hours) after injury, patients can be encouraged to become gradually and progressively more active while staying below their cognitive and physical symptom-exacerbation thresholds (i.e., activity level should not bring on or worsen their symptoms). (McCrory et al., 2017, p. 5)* *Finn, C. An Occupation-Based Approach to Management of Concussion: Guidelines for Practice. s.l. : The Open Journal of Occupational Therapy, 2019.* *https://scholarworks.wmich.edu/cgi/viewcontent.cgi?article=1550&context=ojot*	Thank you for your comment. This has not been highlighted as a priority area for review and so will not be covered in this update of the guideline.
Royal College of Paediatrics and Child Health	General	General	For head injuries in children there needs to continue to be clear cross referencing to child maltreatment guidance. The younger the child is, the higher the proportion of head injuries that will be inflicted and the holistic management also needs to reflect this. Otherwise the index child may survive the presenting incident but not the subsequent episode of trauma or siblings may be injured and die from inflicted trauma.	Thank you for your comment. A cross-reference will be considered, if appropriate, when drafting the recommendations.

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Royal College of Paediatrics and Child Health	General	General	It is important that clinicians are very aware of those patients (both adults and children) who, previous to sustaining a head injury, have hearing difficulties (especially those with a profound hearing loss) to ensure that assessments may be performed completely accurately when this is taken into consideration. They also need to be aware that a hearing loss may have been sustained as a result of the head injury which again may impinge on the accuracy of assessments. Clinicians also need to establish the best form of communication to use with these patients and in some situations a British sign language interpreter may be required.	Thank you for your comment. The issues that need to be taken into account when assessing people with hearing loss will be considered by the committee when making the recommendations. We have specified in the scope that the guideline will look at inequalities related to communication difficulties.
Royal College of Paediatrics and Child Health	General	General	The reviewer was happy with the scope.	Thank you.
Royal College of Speech and Language Therapists	004 but also general	011 but also general	The link to the equality considerations does not work. We would like to see **people with learning disabilities** and **people with communication difficulties** included in the statement 'The guideline will look at inequalities relating to cognitive impairment and older people with frailty'. These populations may have **difficulty communicating their experiences, pain levels** or other consequences from a head injury, and as such are at **great risk of inequalities in their care**. They are also particularly at risk since standard tests such as a GCS evaluation are not always appropriate, and so assessments may be made more informally or subjectively by clinicians, which may impact their care negatively. A definition of 'cognitive impairment' should be provided if use of this terminology persists. In particular, **head-banging can be a cause of traumatic head injury** in those who have learning disabilities (Chester & Alexander, 2018).	Thank you for your comment. We have added people with learning disabilities and communication difficulties to the equality considerations.

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			This population will require very specialist and specific input from services including being provided with fully accessible communication modes and information about their care and care options. Chester, V. & Alexander, R. (2018). Head banging as a form of self-harm among inpatients within forensic mental health and intellectual disability services. Journal of Forensic Psychiatry & Psychology, 29 (4), 557-573. Reference should be made to any populations identified in Line 11, throughout the guidance.	
Society of British Neurological Surgeons	General	General	The SBNS agrees with the scope document and objectives of the update.	Thank you.
St George's University Hospital NHS Foundation Trust	005	006	For patients admitted to hospital, there is a gap between the 'emergency department' setting of care, and 'tertiary care'. In between these (or as the primary setting of care) there should be intensive care units and general (medical/surgical) wards. It would be helpful if 'tertiary care' could also be defined. Other terms similar to 'tertiary care' used in the guideline include 'specialist care' and 'neuroscience unit' – are they being used interchangeably or to make subtle distinctions?	Thank you for your comment. We have removed the term 'tertiary care' from section 3.2. The recommendations on admission and observation would be relevant for patients admitted to wards and conscious patients admitted to ICU. Other aspects of management in ICU are outside of the scope of this guideline. We have now reworded as 'referral and transfer to a neuroscience unit'. We have also clarified in areas that will now be covered (2) that we are referring to transport from the scene of injury to a specialist neuroscience unit.
St George's University Hospital NHS Foundation Trust	005	024	The 'key areas' section omits one of the key areas: inpatient observation and care, be this on a ward (e.g. acute medical unit, general surgical ward, trauma ward) or an intensive care unit (general or specialist).	Thank you for your comment. The existing guideline includes recommendations on admission and observation (1.8) and we are aware of no new evidence that requires these to be updated. The focus of the guideline is on acute management and so ongoing management in the ICU – beyond observation in conscious patients - is outside of the scope of this guideline.
St George's University Hospital NHS Foundation Trust	006	004	The 'plans for each area in the current and updated guideline' doesn't cover care in inpatient wards and intensive care units, except loosely under 'Admission and observation' and Transfer from hospital to a neuroscience unit'. Against these, it states 'No evidence review: retain recommendations from existing guideline.'	Thank you for your comment. Guidance on the management on inpatient wards and intensive care units except for that covered by the recommendations on admission and observation is outside of the scope of this guideline.

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			It would be disappointing if NICE was happy to retain recommendations based on a literature review conducted at least 8 years ago, for a population (those for whom hospital admission is deemed necessary) who are most at risk of adverse outcomes from this condition. In the past 8 years, there have been advances in understanding in key areas in severe traumatic brain injury (TBI) care (e.g. temperature management, decompressive craniectomy, multimodal monitoring); in general areas that that have TBI-specific considerations (e.g. better understanding of the risks and benefits of inferior vena cava filter insertion); and substantial contextual changes to the practice and configuration of healthcare service for patients during the inpatient phase (e.g. consolidation of the major trauma centre model; a shift towards care in acute medical units rather than under surgical teams for non-severe TBI; access to advanced imaging; development [and in some cases limitations] of TBI neurorehabilitation services; etc). There has also been continued accumulation of data on prognosis, with still little clarity on how these data should inform decisions at the bedside. I would urge NICE to conduct up-to-date evidence reviews, and to make up-to-date recommendations for this population (patients admitted to hospital) who bear most of the morbidity and mortality associated with this condition, and for a period of in their care (inpatient/ICU phase) that can be pivotal in determining their outcome.	
St George's University Hospital NHS Foundation Trust	006	004	There is a contradiction between saying that 'transport directly to a specialist centre' will be covered, whereas 'transfer from hospital to a neuroscience unit' will not (the specialist centre is likely to be a neuroscience unit).	Thank you for your comment. The wording used is a direct reference from the previous guideline. The guidance and area to be covered is transport from the scene to a specialist neuroscience centre past a closer non specialist unit, and later secondary transfer from a general hospital to a specialist neuroscience unit. This has been clarified in the scope and will be made clear in any new evidence review or guidance produced.
St George's University Hospital NHS Foundation Trust	006	004	There is a contradiction between saying that 'selection of people with head injury for CT and MRI' and 'role of brain injury biomarkers' will be covered, but 'Investigating clinically important brain injuries' will not (the purpose of CT, MRI and biomarkers is to investigate clinically important brain injuries).	Thank you for your comment. In the table we have moved the selection of people with head injury for CT and MRI and role of brain injury blood biomarkers to the section on 'clinically important brain injuries'.

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St George's University Hospital NHS Foundation Trust	006	004	There is a contradiction between saying that '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' will be covered, and but 'admission and observation' will not (the observation and investigations required for the groups identified here may well be that they need admission for observation and investigations)	Thank you for your comment. We have edited the table so that there is now one section on admission, observation, discharge and follow-up.
St George's University Hospital NHS Foundation Trust	General	General	The term 'early management' in the guideline title is too vague. If defined temporally, it could mean anything from the first few hours to the first few weeks (noting that for patients with greatest need, this is a condition with life-long implications). It generates contradictions with the content of the draft scope, since this excludes most elements of prehospital care (which is unambiguously part of the early phase) and involvement of the neurosurgical team (who may be key early decision-makers). It may be better to describe the elements/settings of care that will be covered, rather than use an ambiguous time-frame descriptor.	Thank you for your comment. The term 'early management' is used to distinguish the areas included in the scope from longer terms aspects of care such as rehabilitation which is being covered in a separate guideline https://www.nice.org.uk/guidance/indevelopment/gid-ng10105. Early management does not preclude prehospital care. The inclusions of section 3 of the scope provides further detail of what is included in the scope.
The Pituitary Foundation	005	024 - 025	Discharge and follow up, including follow up of people with normal scans for deterioration- person may deteriorate slowly over a period of weeks/months if developing hypopituitarism.	Thank you. This will be considered when reviewing the evidence on (a) which patients should be investigated for hypopituitarism after head injury, and (b) when should people with head injury be investigated for hypopituitarism.
The Pituitary Foundation	005	029	Identification of hypopituitarism- Endocrinologist should be responsible for this diagnosis- as part of wider multi-disciplinary team if appropriate	Thank you for your comment. Service delivery (who is responsible for the diagnosis) is beyond the scope of this guideline.
The Pituitary Foundation	007	004	Discharge and follow up- may not be possible to identify hypopituitarism if discharge is within shorter time frame i.e few days/weeks. Hypopituitarism symptoms may not manifest immediately.	Thank you for your comment. This can be considered during the development of the protocol for identification of hypopituitarism (with consideration for the timing of investigation).
The Pituitary Foundation	010	017 - 018	Which people should be investigated? - People presenting with low BP, who are pale/clammy, nauseous, fatigued. Also, people presenting with excessive and acute thirst, with changes in fluid output and sodium levels.	Thank you for your comment. This can be considered during the protocol development phase for this evidence review and review of the subsequent evidence-base.
The Pituitary Foundation	010	019 - 020	When should people be investigated? - As hypopituitarism symptoms may not be immediate, importance of advising of follow up visit to GP with related head injury/pituitary symptoms, and recording this clearly on medical records.	Thank you for your comment. This can be considered following review of available evidence and subsequent consideration for guidance.

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The Society and College of Radiographers	004	027	It will be useful to define the term frailty in this context. The point refers to cognitive impairment, which is well defined in the Mental Capacity Act 2005, but the term frailty is applied in a somewhat ambiguous manner in some settings. A definition of frailty and how that can be assessed in clinical practice will be necessary for clarity of the guideline.	Thank you for your comment. A definition of frailty will be provided in the guideline glossary and will be included in any reviews with a specific focus on older adults with frailty.
The Society and College of Radiographers	005	017	The term direct 'imaging' is used here but this is a reductive notion – direct access to what type of clinical imaging – plain X-ray / projection imaging, PET-CT, CT, MR, Ultrasound ? Please note that direct community access to imaging will need to take into account the availability of modalities, staff to perform and staff to review and report the resultant images, and the various types of appointment systems with associated economic impact for services and local healthcare organisations. Where a positive result / pathology is determined, a clear pathway of onward referral will be required – for example, will the person be returned directly to the community, to accident and emergency, to a neuro consultation? Will that be to a specific timescale?	Thank you for your comment. In the section 'key areas that will be covered' we have clarified that we are referring to CT and MR imaging. The draft review question is on the clinical and cost effectiveness of providing direct access from the community to imaging. How these services are implemented is outside of the scope of this guideline.
The Society and College of Radiographers	005	021	Regarding the *Diagnosis of cervical spine injury in people with head injury, using CT,* SoR supports the use of CT in the diagnosis of cervical spine injury providing a thorough clinical assessment of the patient has been undertaken prior to the exposure being justified, the person justifying the exposure and the person undertaking the exposure are adequately trained and entitled in line with the requirements of The Ionising Radiations (Medical Exposures) Regulations 2017 https://www.legislation.gov.uk/uksi/2017/1322/contents/made SoR consider it good practice for CT radiographers to have completed or be undertaking post registration study in CT. All CT exposures must be optimised, with the involvement of a Medical Physics Expert (MPE) where appropriate https://www.legislation.gov.uk/uksi/2017/1322/contents/made. The thyroid gland is identified as an organ at risk from the harmful effects of ionising radiation during head and neck CT ***Guidance on***	Thank you for your comment. It is beyond the scope of this guideline to cover service delivery. NICE guidance assumes that assessment and care recommended is provided by adequately qualified healthcare professionals. The ionizing risks of radiographic imaging will be considered when discussing the indication for CT or MRI investigation in people with head injury. The specific imaging technology used can be considered during protocol development and review of evidence for the diagnostic accuracy of CT and MRI of the cervical spine.

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			using shielding on patients for diagnostic radiology applications https://www.sor.org/learning/document-library. Anyone involved in any practical aspect of an ionising radiation exposure has a duty to ensure the exposure is as low as reasonably practicable (ALARP). This is particularly so in children and young adult exposures. Children have a higher chance of developing cancer compared to adults receiving the same dose ***ICRP Publication 121 Radiological Protection in Paediatric Diagnostic and Interventional Radiology*** https://journals.sagepub.com/doi/pdf/10.1177/ANIB_42_2 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3365850/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4495661/ SoR would advise that scanner technical specification is considered, including a requirement for these scans to be performed preferentially where there is capacity for iterative reconstruction rather than filtered back projection to achieve doses that are As Low As Reasonably Practicable (ALARP). Filters for modifying the x-ray beam and the use of organ based dose modulation should also be considered. National Diagnostic Reference Levels (DRL) https://www.gov.uk/government/publications/diagnostic-radiology-national-diagnostic-reference-levels-ndrls/national-diagnostic-reference-levels-ndrls#national-drls-for-ct-examinations should be available for reference and where none exist, e.g. paediatric cervical spine NDRL, local DRLs should be developed in collaboration with the MPE. SoR recommend new procedures and protocols are audited to ensure any use of ionising radiation is appropriate and provides a net benefit to the patient. Local referral guidelines may need to be reviewed in line with any change to the guideline. Referrals should be audited against local referral guidelines for compliance assurance.	

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