INDICATIONS FOR ADMISSION TO A HOSPITAL WARD

D **An adult patient should be admitted to hospital if:**

- **the level of consciousness is impaired** *(GCS < 15/15)*
- **the patient is fully conscious** *(GCS 15/15)* **but has any indication for a CT scan** *(if the scan is normal and there are no other reasons for admission, then the patient may be considered for discharge)*
- **the patient has significant medical problems, eg anticoagulant use**
- **the patient has social problems or cannot be supervised by a responsible adult.**

INDICATIONS FOR DISCHARGE

C **A patient can be discharged from the ED for observation at home if fully conscious** *(GCS 15/15)* **with no additional risk factors or other relevant adverse medical and social factors.**

☑ The following criteria must be met prior to discharge:

- a responsible adult is available and willing to observe the patient for at least 24 hours
- verbal and written instructions about observations to be made and action to be taken are given to and discussed with that adult
- there is easy access to a telephone
- the patient is within reasonable access of medical care
- transport home is available.

REFERRAL TO NEUROSURGICAL UNIT

D **Features suggesting that specialist neuroscience assessment, monitoring, or management are appropriate include:**

- **persisting coma** *(GCS score 8/15 or less)* **after initial resuscitation**
- **confusion which persists for more than four hours**
- **deterioration in level of consciousness after admission** *(a sustained drop of one point on the motor or verbal subscales, or two points on the eye opening subscale of the GCS)*
- **focal neurological signs**
- **a seizure without full recovery**
- **compound depressed skull fracture**
- **definite or suspected penetrating injury**
- **a CSF leak or other sign of a basal fracture.**

DISCHARGE PLANNING AND ADVICE

D **Patients and carers should be given advice and information in a variety of formats tailored to their needs.**

☑ Patients and carers should be encouraged to seek prompt advice from their general practitioner or hospital emergency department by telephone about any worrying symptoms or other concerns.

☑ Before discharge from the ward a patient with a head injury must be assessed by an experienced doctor, who must establish that all the following criteria have been met:

- consciousness has recovered fully and is sustained at the pre-injury state
- the patient is eating and drinking normally and not vomiting
- neurological symptoms/signs have either resolved, or are minor and resolving or are amenable to simple advice/ treatment, *(eg headache relieved by simple analgesia, or momentary positional vertigo due to vestibular disturbance)*
- the patient is either mobile and self caring or returning to a safe environment with suitable social support
- the results of imaging and other investigations have been reviewed and no further investigation is required
- extracranial injury has been excluded or treated.

FOLLOW UP

B

- **Patients admitted with mild head injury** *(GCS 13-15)* **benefit from brief, routine follow up consisting of advice, education and reassurance that they are likely to recover.**
- **Follow up can be delivered by telephone.**
- **Telephone contact may be used to identify those who need to be seen in person to provide follow up in greater depth.**

A **Patients with severe head injury admitted for up to 72 hours should be assessed for intensive rehabilitation.**

☑

- A discharge letter should be sent to the general practitioner of every patient, whether or not admitted to hospital indicating whether or not follow up has been arranged.
- If no follow up has been offered, the letter should indicate that good recovery is likely within a few weeks.
- The letter should indicate how follow up can be arranged if unforeseen or persisting difficulties arise.

This Quick Reference Guide provides a summary of the main recommendations relating to adults in **SIGN guideline 110: Early management of patients with a head injury.**

Recommendations are graded A B C D to indicate the strength of the supporting evidence. Good practice points ☑ are provided where the guideline development group wishes to highlight specific aspects of accepted clinical practice.

Details of the evidence supporting these recommendations can be found in the full guideline, available on the SIGN website: **www.sign.ac.uk**

SIGN
Scottish Intercollegiate Guidelines Network
Part of NHS Quality Improvement Scotland

NHS Quality Improvement Scotland

110 Early management of adult patients with a head injury

Quick Reference Guide

May 2009

COPIES OF ALL SIGN GUIDELINES ARE AVAILABLE ONLINE AT WWW.SIGN.AC.UK

ASSESSMENT AND CLASSIFICATION

D **The management of patients with a head injury should be guided by clinical assessments and protocols based on the Glasgow Coma Scale and Score.**

FEATURE	SCALE RESPONSES	SCORE
Eye opening	Spontaneous	4
	To speech	3
	To pain	2
	None	1
Verbal response	Orientated	5
	Confused conversation	4
	Words (inappropriate)	3
	Sounds (incomprehensible)	2
	None	1
Best motor response	Obey commands	6
	Localise pain	5
	Flexion - normal	4
	- abnormal	3
	Extend	2
	None	1
TOTAL COMA 'SCORE'		3/15–15/15

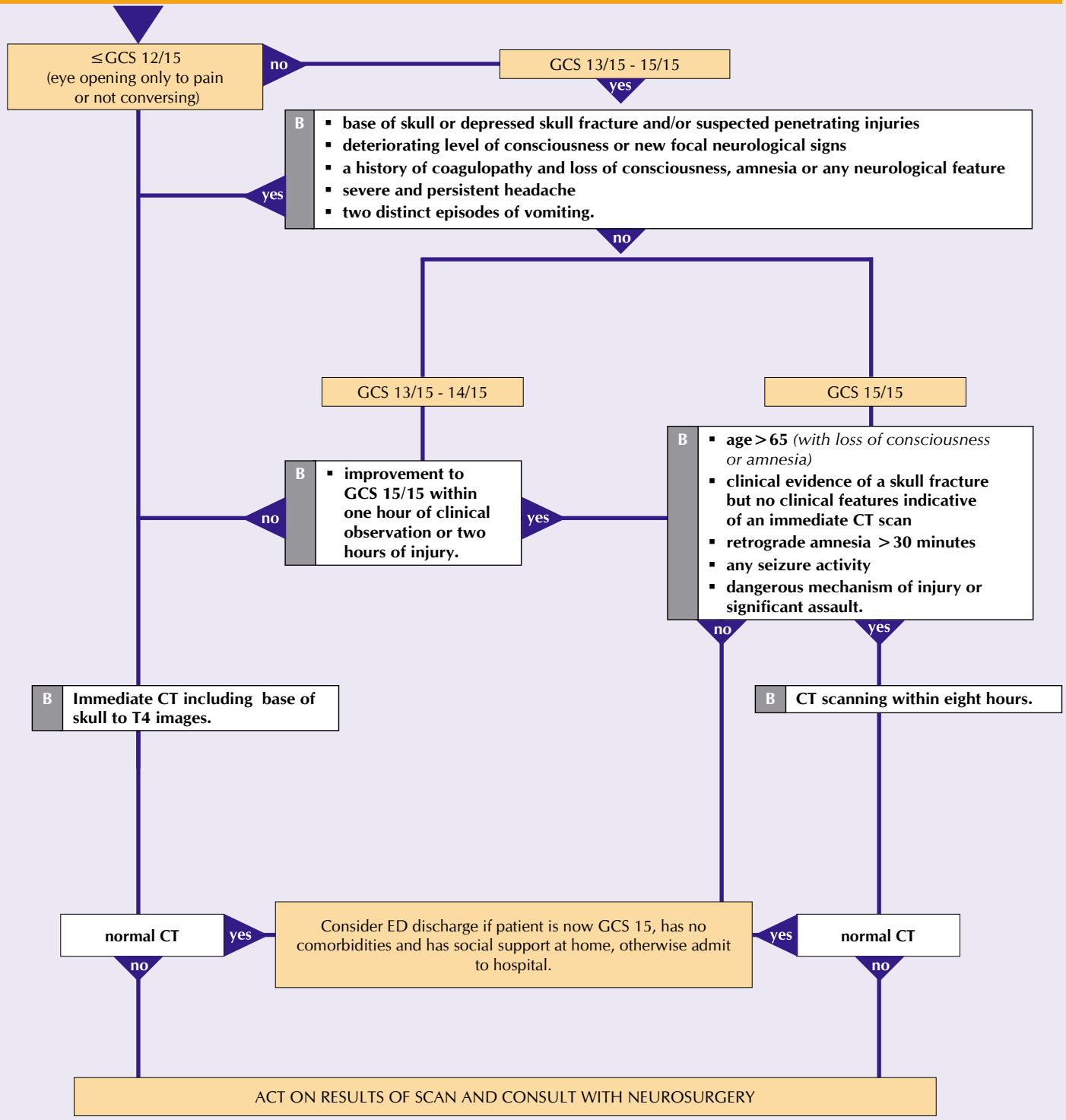
INDICATIONS FOR REFERRAL TO THE ED

B **Adult patients with any of the following signs and symptoms should be referred to an appropriate hospital for further investigation of potential brain injury:**

- **GCS < 15 at initial assessment** *(if this is thought to be alcohol-related, observe for two hours, and refer if GCS score remains < 15 after this time)*
- **post-traumatic seizure** *(generalised or focal)*
- **focal neurological signs**
- **signs of a skull fracture** *(including CSF from nose or ears, haemotympanum, boggy haematoma, post-auricular or periorbital bruising)*
- **loss of consciousness**
- **severe and persistent headache**
- **repeated vomiting** *(two or more occasions)*
- **post-traumatic amnesia > 5 minutes**
- **retrograde amnesia > 30 minutes**
- **high risk mechanism of injury** *(road traffic accident, significant fall)*
- **coagulopathy, whether drug-induced or otherwise**

☑
- significant medical comorbidity *(eg learning difficulties, autism, metabolic disorders)*
- social problems or cannot be supervised by a responsible adult
- a mild head injury and taking antiplatelet medication *(eg aspirin, clopidogrel)*
- re-presenting with ongoing or new symptoms *(headache not relieved by simple analgesia, vomiting, seizure, drowsiness, limb weakness)*.

INDICATIONS FOR HEAD CT



INDICATIONS FOR ADMISSION TO A HOSPITAL WARD

☑ Children who have sustained a head injury should be admitted to hospital if any of the following risk factors apply:

- any indication for a CT scan
- suspicion of non-accidental injury
- significant medical comorbidity
- difficulty making a full assessment
- child not accompanied by a responsible adult
- social circumstances considered unsuitable.

☑ In injured children, especially the very young, the possibility of non-accidental injury must be considered:

- when findings are not consistent with the explanation given
- if the history changes, or
- if the child is known to be on the Child Protection Register.

In such cases a specialist paediatrician with responsibility for child protection should be involved. Child protection procedures should be followed.

☑ Primary and secondary care information systems should identify children on the Child Protection Register and frequent attenders.

INDICATIONS FOR DISCHARGE

☑ Children can be discharged from the ED if no additional risk factors apply.

REFERRAL TO NEUROSURGICAL UNIT

D **Features suggesting that specialist neuroscience assessment, monitoring, or management are appropriate include:**

- **persisting coma** *(GCS score 8/15 or less)* **after initial resuscitation**
- **confusion which persists for more than four hours**
- **deterioration in level of consciousness after admission** *(a sustained drop of one point on the motor or verbal subscales, or two points on the eye opening subscale of the GCS)*
- **focal neurological signs**
- **a seizure without full recovery**
- **compound depressed skull fracture**
- **definite or suspected penetrating injury**
- **a CSF leak or other sign of a basal fracture.**

TRANSFER TO A NEUROSURGICAL UNIT

☑

- Transfer of a child to a specialist neurosurgical unit should be undertaken by staff experienced in the transfer of ill children, such as the Scottish Paediatric Retrieval Service.
- Consultation on the best method of transfer of an individual patient should be with referring healthcare professionals, transfer clinicians and receiving neurosurgeon. It should take into account the clinical circumstances, skill of available staff, imaging, mode of transfer and timing issues.

DISCHARGE PLANNING AND ADVICE

☑ Before discharge from the ward a patient with a head injury must be assessed by an experienced doctor, who must establish that all the following criteria have been met:

- consciousness has recovered fully and is sustained at the pre-injury state
- the patient is eating and drinking normally and not vomiting
- neurological symptoms/signs have either resolved, or are minor and resolving or are amenable to simple advice/ treatment, *(eg headache relieved by simple analgesia, or momentary positional vertigo due to vestibular disturbance)*
- the patient is either mobile and self caring or returning to a safe environment with suitable social support
- the results of imaging and other investigations have been reviewed and no further investigation is required
- extracranial injury has been excluded or treated.

☑ Clear written instruction should be given to and discussed with parents or carers before a child is discharged.

FOLLOW UP

☑

- Children suffering from moderate/severe head injury should be followed up by a specialist multidisciplinary team to assess rehabilitation needs.
- Parents should be given information and advice about the possible short/longer term difficulties that their child may have.
- The primary healthcare team, school health team and teachers should be notified of all children with head injury regardless of severity.

This Quick Reference Guide provides a summary of the main recommendations relating to children in **SIGN guideline 110: Early management of patients with a head injury.**

Recommendations are graded A B C D to indicate the strength of the supporting evidence. Good practice points ☑ are provided where the guideline development group wishes to highlight specific aspects of accepted clinical practice.

Details of the evidence supporting these recommendations can be found in the full guideline, available on the SIGN website: **www.sign.ac.uk**

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Early management of children with a head injury

Quick Reference Guide

May 2009

ASSESSMENT AND CLASSIFICATION

D **The management of patients with a head injury should be guided by clinical assessments and protocols based on the Glasgow Coma Scale and Score.**

☑ Great care should be taken when interpreting the Glasgow Coma Scale in the under fives and this should be done by those with experience in the management of the young child.

THE PAEDIATRIC COMA SCALE AND SCORE

FEATURE	SCALE RESPONSES	SCORE
Eye opening	Spontaneous	4
	To voice	3
	To pain	2
	None	1
Verbal response	Orientated/interacts/follows objects/ smiles/alert/coos/babbles words to usual ability	5
	Confused /consolable	4
	Inappropriate words/ moaning	3
	Incomprehensible sounds/irritable/ inconsolable	2
	None	1
Best motor response	Obeys commands/ normal movement	6
	Localise pain/ withdraws to touch	5
	Withdrawal to pain	4
	Flexion to pain	3
	Extension to pain	2
	None	1
TOTAL COMA 'SCORE'		**3/15 – 15/15**

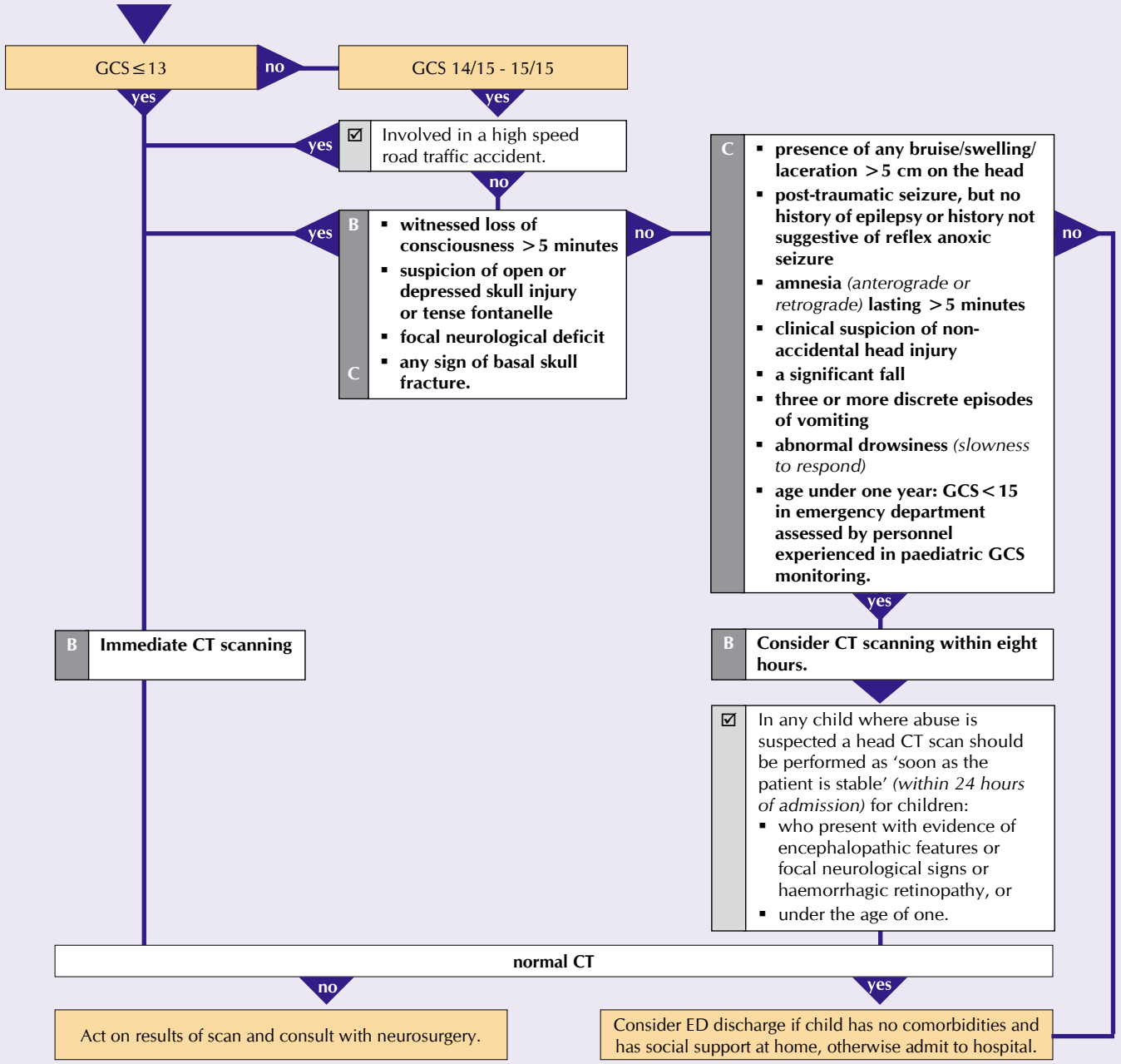
INDICATIONS FOR REFERRAL TO THE ED

B **Children with any of the following signs and symptoms should be referred to an appropriate hospital for further investigation of potential brain injury:**

- **GCS < 15 at initial assessment**
- **post-traumatic seizure** *(generalised or focal)*
- **focal neurological signs**
- **signs of a skull fracture**
- **loss of consciousness**
- **severe and persistent headache**
- **repeated vomiting** *(two or more occasions)*
- **post-traumatic amnesia > 5 minutes**
- **retrograde amnesia > 30 minutes**
- **high risk mechanism of injury**
- **coagulopathy, whether drug-induced or otherwise**
- **clinical suspicion of non-accidental injury.**

☑
- significant medical comorbidity
- difficulty making a full assessment
- not accompanied by a responsible adult
- social circumstances considered unsuitable.

INDICATIONS FOR HEAD CT



IMAGING THE CERVICAL SPINE

- In children under 10 years initial assessment of the cervical spine is by anteroposterior and lateral plain radiography.
- Cervical spine CT scanning should be directed at patients with a severe head injury, or where there are signs or symptoms of cord injury, or where plain radiography is abnormal or inadequate.
- Criteria for imaging the cervical spine in children over 10 years of age should reflect those for adults (base of skull to T4 images).