

= YES = NO

(PLACE PATIENT LABEL HERE)

SURNAME: _____ NHI: _____

FIRST NAMES: _____

Date of Birth: ____ / ____ / ____ SEX: _____

MINOR HEAD INJURY GCS ≥ 13

Date: _____ Time: _____ Assessment nurse: _____ Sign: _____

INCLUSION CRITERIA

Trauma to the head < 24 hrs

EXCLUSION CRITERIA

Age < 16

Multi-trauma requiring team response e.g. RTC

Select Treatment Pathway on Whiteboard
Enter actual time started
Data collected for Ministry of Health

STOP! Not suitable for this Best Care Bundle
Select 'BCB removed' Treatment Pathway
Continue usual nursing cares

NURSING ASSESSMENT *Aim < 30 minutes*

History, examination & vital signs *Document on Nursing Assessment Record*

Neuro observations & Westmead *Document on page 2*

Administer analgesia *Nurse initiated analgesia. Standing orders page 4*

Concomitant C-spine injury? → C-spine trauma Best Care Bundle started as well Yes No

Provide patient information sheet

INDICATIONS FOR IV LINE AND BLOODS ✓ Trauma panel bloods ✓ β-HCG ♀ 14-50y ✓ Coags if relevant

Anticoagulant Rx Collapse Persistent vomiting

Bleeding disorder Unwell prior to head injury Clinician request

Seizure Alcohol / drug intoxication

RED FLAGS *All boxes must be populated* ✓ = YES ✗ = NO

GCS < 13 at any time GCS < 14 at 2 hrs post injury Seizure *New, either pre - or post injury*

Anticoagulant Rx *e.g. Warfarin, Clopidogrel, Dabigatran, Rivaroxaban etc.* Collapse *Still needs investigation if cause unknown*

C-spine pain *Start C-spine trauma best care bundle*

NO RED FLAGS **RED FLAGS PRESENT (ANY)** → Senior Dr review ASAP (*SMO / Senior Registrar*)

Continue BCB Nursing Pathway

Dr Name: _____ Sign: _____

Continue Best Care Bundle. Intervention if any: _____

Exit Care Bundle: Reason: _____

↳ Select 'BCB removed' in TP column, Electronic Whiteboard.

INDICATIONS FOR CT HEAD *NSH in hours: E-request > Pathways tab > SMO head CT. No need to discuss*

GCS < 13 Decreasing level of consciousness at any time GCS < 15 at 2 hrs post injury

Focal neurology Anticoagulant therapy / bleeding disorder Post traumatic seizure

? Skull fracture: ? Open, depressed, or base of skull # (*Raccoon eyes, Battle's sign, CSF otorrhoea, rhinorrhoea, haemotympanum*)

Witnessed loss of consciousness, disorientation or amnesia - apply Canadian CT head rule on page 4

Clinical concern *Discuss with lead SMO*

NONE Any of the above indications

No CT indicated

↳ CT head: Ordered Not ordered *Discuss with Lead SMO or clinician if unsure*

MINOR HEAD INJURY BEST CARE BUNDLE PATHWAY

7.7.207 A



= YES = NO

(PLACE PATIENT LABEL HERE)

SURNAME: _____ NHI: _____

FIRST NAMES: _____

Date of Birth: ____ / ____ / ____ SEX: _____

NEURO OBSERVATIONS / WESTMEAD SCORE (A-WPTAS)

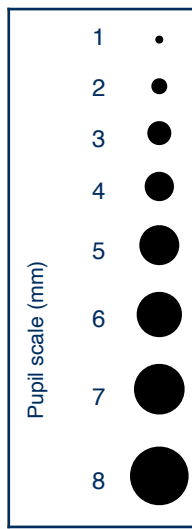
Westmead Post Traumatic Amnesia Score

DATE:		T1	T2	T3	T4	T5
TIME:						
MOTOR	Obeys commands	6	6	6	6	6
	Localises	5	5	5	5	5
	Withdraws to pain	4	4	4	4	4
	Abnormal flexion	3	3	3	3	3
	Abnormal extension	2	2	2	2	2
	None	1	1	1	1	1
EYE OPENING	Spontaneously	4	4	4	4	4
	To speech	3	3	3	3	3
	To pain	2	2	2	2	2
	None	1	1	1	1	1
VERBAL	Name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Why are you here	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Month	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Year	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Orientated <i>(must have all 5 correct to score 5)</i>	5	5	5	5	5
	Confused	4	4	4	4	4
Inappropriate words	3	3	3	3	3	
Incomprehensible sounds	2	2	2	2	2	
	None	1	1	1	1	1
GCS	Score out of 15	/15	/15	/15	/15	/15
	Picture 1	Show pictures				
	Picture 2					
	Picture 3					
A-WPTAS	Score out of 18	/18	/18	/18	/18	/18

A-WPTAS & GCS in Minor Traumatic Brain Injury: An objective measure of Post Traumatic Amnesia (PTA) *Shores & Lammell (2007)*

Instructions:

- Complete hourly to assess orientation and ability to retain new information.
- T1: Start: Calculate GCS. Show the three pictures (*located on page 3*) at the end of the first assessment.
- T2: Repeat GCS and test recall of pictures at 1 hour.
- If correctly recalls all 3 pictures, they do not have post traumatic amnesia and no further picture testing is required. Continue usual vital signs and GCS.
- If unable to recall all 3 pictures, show the prompt sheet with 9 pictures (*laminated copy available under the pathway documents in Acutes and Cubicles*).
- Score 1 per correctly recognised item.
- Show the patient any original pictures that were not recognised.
- If < 18/18 re-assess at hourly intervals until they obtain 18/18
- When interpreting the A-WPTAS, consider:
 - pre-morbid conditions
 - alcohol/drug/medication effects
 - poor motivation or depression
- Where there is doubt, more thorough assessment may be needed
- Westmead of 18 is not a pre-requisite for discharge, however, ensure senior review and CT NAD prior to discharge.



+	brisk reaction
SL	sluggish
C	closed
-	no reaction

MINOR HEAD INJURY BEST CARE BUNDLE PATHWAY

PUPILS	T1		T2		T3		T4		T5	
	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt
Size										
Reactivity										

NURSING COMMENTS

= YES = NO

(PLACE PATIENT LABEL HERE)

SURNAME: _____ NHI: _____

FIRST NAMES: _____

Date of Birth: ____ / ____ / ____ SEX: _____

A-WPTA SCORE PICTURES for use in conjunction with A-WPTA assessment on page 2



DISCHARGE CRITERIA MUST MEET ALL	INPATIENT ADMISSION CRITERIA
<input type="checkbox"/> Senior doctor agrees with discharge plan <input type="checkbox"/> No indication for CT or CT normal <i>Westmead < 18/18 is not an absolute contraindication to discharge, however, ensure senior review done & CT NAD</i> <input type="checkbox"/> No ongoing clinical indication for prolonged observation e.g: <ul style="list-style-type: none"> • Abnormal behaviour • Severe post-concussive symptoms • Drugs and/or alcohol intoxication <input type="checkbox"/> Responsible person at home <input type="checkbox"/> Patient or responsible person understands head injury instructions	<input type="checkbox"/> Persistent abnormal vital signs <input type="checkbox"/> GCS < 15 unless SMO opinion is safe for discharge <input type="checkbox"/> Any new neurological deficit <input type="checkbox"/> Any sequelae of trauma on CT needing neurosurgical intervention or prolonged observation <input type="checkbox"/> Senior clinician discretion Dr: _____ <input type="checkbox"/> Multiple medical co-morbidities

DISCHARGE CHECK LIST	FOLLOW UP - please document this in the EDS
<input type="checkbox"/> Meets all discharge criteria above <input type="checkbox"/> Prescription for home analgesia <i>formulary page 4</i> <input type="checkbox"/> Patient information leaflet <i>Bundle pack, EM CeDSS</i> <input type="checkbox"/> Sports related injury? <i>Provide SCAT5 sports related concussion questionnaire & referral. CeDSS</i> <input type="checkbox"/> ACC form signed	<input type="checkbox"/> Ask all patients to follow up with their GP in 7-10 days <i>Persistent Post Traumatic Amnesia may need concussion clinic referral. Ensure GP review</i> <i>See 'Mild Head Injury proforma - link from the EDS. It is already pre-populated with typical discharge details & helpful patient information</i>



= YES = NO

(PLACE PATIENT LABEL HERE)

SURNAME: _____ NHI: _____

FIRST NAMES: _____

Date of Birth: ____ / ____ / ____ SEX: _____

FORMULARY / MEDICATION OPTIONS

CHECK ALLERGY STATUS AND SEE MEDSAFE OR OTHER TEXT FOR FULL LIST OF CONTRAINDICATIONS**
ALL MEDICATIONS MUST BE CHARTED ON THE NATIONAL MEDICATION CHART

ANALGESIA OPTIONS

For use in hospital and on discharge

Note: Please prescribe regular and PRN dosing, especially on discharge

Medication	Dose	Route	Freq	Notes
Paracetamol	1 g	Oral	Q 6 hourly	Standing order
Ibuprofen	400 mg	Oral	Q 6-8 hourly	Standing order Up to 800 mg TDS. (Max 2400 mg / day) Ensure normal eGFR (> 60 ml / 1.73 m2)
Codeine phosphate	30 - 60 mg	Oral	Q 6 hourly	Standing order. Max 400 mg / day Constipating. Consider laxative or stool softeners
Morphine	5 mg (max)	IV	SLOW push	Standing order. < 50 kg = 0.1 mg / kg IV > 50 kg = 5 mg

ALTERNATIVE ANALGESIA

Morphine as per protocol	2 mg	IV	Q 5 minutes	Ensure RR > 8
Tramadol	50 - 100 mg	Oral	4 - 6 hourly	High side effect profile, ↓ seizure threshold Max 400 mg / day
Diclofenac SR	75 mg	Oral	Twice daily	Ensure normal eGFR (>60 ml / 1.73 m2) Max 150 mg Daily. Consider Omeprazole 20 mg PO daily. GI upset common

ANTIEMETICS *In order of preference*

Ondansetron	4 mg	IV / Oral	6 hourly	Standing order. Contraindication: Long QT syndrome
Cyclizine	25 mg	IV	8 hourly	Can induce tachycardia esp. IV. Can worsen confusion
Metoclopramide	10 mg	IV/ Oral	8 hourly	

CANADIAN CT HEAD RULE

In addition to the indications for CT head listed on page 1, for patients with a witnessed loss of consciousness, disorientation or amnesia the following are indications for imaging:

- Vomiting - 2 or more episodes
- Age 65 years or greater
- Amnesia before impact 30 minutes or more
- Dangerous mechanism: *e.g. Pedestrian struck by a vehicle, occupant ejected from a motor vehicle, fall from elevation of 1 metre or 5 stairs*

YES

IMAGING INDICATED

CT head required

NO

IMAGING NOT INDICATED

ADDITIONAL INFORMATION

Concussion service	Guideline and details available on CeDSS
Sports related injury	SCAT5 self assessment questionnaire and referral letter on CeDSS
Supporting document	EM CeDSS best care bundle page
Patient advice sheet	EM CeDSS best care bundle page
CT head rules	http://www.thelancet.com/pdfs/journals/lancet/PIIS014067360004561X.pdf