



= 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 < 15
 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*
 Provide patient information sheet

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 *Refer to decision guide on page 4 and C-spine trauma best care bundle*

NO RED FLAGS

Continue BCB
 Nursing Pathway

RED FLAGS PRESENT (ANY) → Senior Dr review ASAP (*SMO / Senior Registrar*)

Dr Name: _____ Sign: _____

Continue Best Care Bundle. Intervention if any: _____

Exit Care Bundle: Reason: _____

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

INVESTIGATION INDICATIONS *(includes the Canadian CT head rules)*

- Age > 65 Decreasing level of consciousness at any time GCS < 15 at 2 hrs post injury
 Seizure Amnesia > 30 minutes before impact Anticoagulant therapy
 ? Skull fracture: ? Open, depressed, or base of skull # (*Raccoon eyes, Battle's sign*) Focal neurological signs
 Dangerous mechanism *Pedestrian vs car, ejected from car, fall from height > 1m* Vomiting 2 or more times

NONE

No investigations
 indicated

Any of the above indications require bloods and probably a CT (*senior doctor decision*)

↳ Bloods sent ✓ Trauma panel bloods ✓ β-HCG ♀ 14-50y ✓ Coags if relevant

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



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NEURO OBSERVATIONS / WESTMEAD SCORE (A-WPTAS)

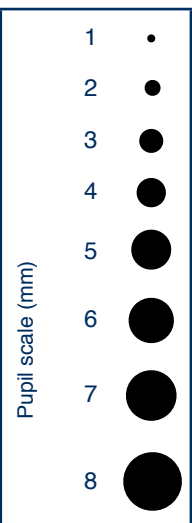
Westmead Post Traumatic Amnesia Score

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 & Lammel (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.



+	<i>brisk reaction</i>
SL	<i>sluggish</i>
C	<i>closed</i>
-	<i>no reaction</i>

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



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



DISCHARGE CRITERIA MUST MEET ALL

- Senior doctor agrees with discharge plan
- No indication for CT or CT normal
Westmead < 18/18 is not an absolute contraindication to discharge, however, ensure senior review done & CT NAD
- No ongoing clinical indication for prolonged observation e.g:
 - Abnormal behaviour
 - Severe post-concussive symptoms
 - Drugs and/or alcohol intoxication
- Responsible person at home
- Patient or responsible person understands head injury instructions

INPATIENT ADMISSION CRITERIA

- Persistent abnormal vital signs
- GCS < 15 unless SMO opinion is safe for discharge
- Any new neurological deficit
- Any sequelae of trauma on CT needing neurosurgical intervention or prolonged observation
- Senior clinician discretion Dr: _____
- Multiple medical co-morbidities

DISCHARGE CHECK LIST

- Meets all discharge criteria above
- Prescription for home analgesia *formulary page 4*
- Patient information leaflet
(Bundle pack, or EM CeDDs site)
- ACC form signed

FOLLOW UP - please document this in the EDS

- Ask all patients to follow up with their GP in 7-10 days

Persistent Post Traumatic Amnesia may need concussion clinic referral. Ensure GP review

See 'Mild Head Injury proforma - link from the EDS. It is already pre-populated with typical discharge details & helpful patient information

ADDITIONAL INFORMATION

Concussion service	Guideline and details available on CeDDS
CT head rules	http://www.thelancet.com/pdfs/journals/lancet/PIIS014067360004561X.pdf



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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	

C-SPINE DECISION GUIDES *see C-spine injury best care bundle*

NEXUS C-SPINE RULES

LOW RISK CRITERIA:

- No posterior midline C-spine tenderness
- No evidence of intoxication
- Normal Level of consciousness
- No focal neurological deficit
- No painful distracting injuries

MEETS ALL CRITERIA

YES

NO

IMAGING NOT INDICATED

Discuss with senior if any doubt

CONSIDER IMAGING

*Apply Canadian C-spine rules.
Discuss with senior*

CANADIAN C-SPINE RULES

ANY HIGH RISK FACTORS?

Age > 65

Dangerous mechanism:

- Fall > 1m
- Axial load to head (e.g. diving)
- RTC high speed (>100k / hr, roll over, ejection)
- Motorised recreational vehicle
- Bicycle struck or collision

Paresthesia in extremities

Rule not applicable if:

- GCS < 15
- Unstable vitals Age < 16
- Acute paralysis
- Known vertebral disease
- Previous C-spine surgery

Simple rear end RTC excludes:

- Pushed into oncoming traffic
- Hit by bus or large truck
- Rollover
- Hit by high speed vehicle

NO

YES

ANY LOW RISK FACTORS?

- Simple rear end RTC *or*
- Sitting position in ED *or*
- Ambulatory at any time *or*
- Delayed onset neck pain *or*
- No midline C-spine tenderness

IMAGING INDICATED

YES

NO

Safe to assess range of motion:

**ABLE TO ACTIVELY ROTATE NECK
45° left and right**

YES

IMAGING NOT INDICATED