Mild Traumatic Brain Injury Pathway

**Inclusion Criteria: please tick**

A blunt head injury within the last 24 hrs with a GCS of 14-15 & one of the following:

- Any History of LOC
- Any Loss of memory for events immediately before or after the accident
- Any alteration in usual mental state at the time of the accident

**Exclusion criteria:**

- GCS < 14 on arrival
- Age < 8
- Major head injury
- A pre-existing condition that may affect orientation or memory eg CVA or dementia
- Other major injuries (use trauma chart)

**NOTE:**

Studies have shown that patients can have ongoing symptoms after a mild traumatic brain injury for up to 6 months, which may include being forgetful, poor concentration irritability dizziness & headache. This in turn has the potential to lead to job loss & relationship problems.
On arrival
- Assess patient meets inclusion criteria
- Assess/ document time of accident
- Commence clinical observation
  
  (At least hourly GCS for 4 hrs & 3 consecutive PTA assessments as stipulated on the PTA assessment form on p6)

- Attend history & examination (page 3)
- Consider CT guidelines throughout patients stay – clinical judgement required

CT mandatory:
- GCS < 13 at any stage after arrival
- GCS < 15 two hours after injury
- Suspected open/depressed skull fracture
- Clinical evidence of fractured base of skull (haemotympanum, raccoon eyes, otorrhoea, rhinorrhoea, Battle's sign
- Known coagulopathy, oral anticoagulants or clopidogrel
- Focal neurological deficit
- Amnesia before impact > 30 mins
- Age ≥ 65
- Seizure following impact
- Dangerous mechanism (pedestrian struck by motor vehicle, occupant ejected from motor vehicle, fall from height >3 feet or five stairs)
- Vomiting ≥ 2 episodes

Consider CT:
- Persistent nausea
- Prolonged loss of consciousness >5 minutes
- Persistent severe headache
- Haematoma overlying mid meningeal artery
- Large scalp haematoma

If CT is performed & the result is abnormal - exit pathway & consult neurosurgical VMO/registrar.

If CT is not indicated, or if CT is normal, continue on the pathway.

Continue GCS / PTA assessments for 4hrs post injury.

At 2hrs post injury:
- Review. If GCS <15 at 2 hrs post injury, arrange CT.
- Continue clinical observation

At 4hrs post injury
- GCS 15/15 & PTA 10/10 (x3) then discharge
- If GCS 15/15 but patient has failed PTA testing
  1. Do not discharge
  1. Staff specialist review
  1. Neurosurgical review
  1. Continue GCS & observations
  gnitset ATP yliaD 1. Refer to OT on ext 42523
- GCS<15
  egrahcisd ton oD
  TC egnarrA
  noissimda & tlusnoc lacigolorueN
  1. Continue GCS & observations
  D 1aily PTA testing - Refer to OT on ext 42523

Discharge home with
1. 'Mild Traumatic Brain Injury brochure'
2. A dept 'Head Injury card'.
3. Into care of a relative/friend.
Assessment: Isolated Head Injury

If patient has any other injuries present please use the Emergency Department Trauma chart.

Date/Time: __________________________ Sex: _______ Age: _______

History:

Mode & time of injury:
____________________________________________________________________________________
____________________________________________________________________________________

GCS on arrival: /15
Duration of loss of consciousness:
____________________________________________________________________________________

Any associated symptoms?

☐ NIL ☐ Vomiting ☐ Visual disturbance ☐ Speech disturbance ☐ Neck pain
☐ Seizure ☐ Headache ☐ Amnesia (30 mins before event) ☐ Amnesia (30mins after event)

Details:
____________________________________________________________________________________

Allergies __________________________ Tetanus Status __________________________

Previous Head Injury? Yes/ No

Past History: Details:
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Medications:

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<tr>
<th>Drug</th>
<th>Dose</th>
<th>Frequency</th>
<th>Drug</th>
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Social history / Habits: (include drug / alcohol / cigarette use)
____________________________________________________________________________________

Examination

Heart rate ____/min
Blood pressure ____/____mmHG
Respirations ____/min
Temperature _________
SaO2% __________
**GCS Score:**
- Eye Opening ________
- Verbal score ________
- Best motor score ________
- Total GCS score ________

**Pupils**
- R) size ________ reaction ________
- L) size ________ reaction ________

**N= Normal S= Sluggish F= Fixed**

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**Limb movement**
- R) arm ________ L) arm ________
- R) leg ________ L) leg ________

**General appearance/demeanour**
_____________________________________________________________________________________
_____________________________________________________________________________________
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**Document injuries to face / head**  Eg: scalp lacerations, abrasions.
_____________________________________________________________________________________
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**Is the cervical spine cleared?**
- Yes [ ]
- No [ ]

> X-rays or Clinical clearance using Nexus criteria

<table>
<thead>
<tr>
<th>Nexus Criteria: Clinical Assessment of Spine (NB this tool is not validated for children under 8 yo)</th>
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<tbody>
<tr>
<td>1. Posterior Midline Spinal tenderness</td>
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<td>2. Altered level of consciousness</td>
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<td>3. Neurological Deficit</td>
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<td>4. Evidence of intoxication</td>
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<td>5. Painful distracting injuries</td>
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## If NO to all—imaging not indicated—remove immobilisation

## If YES to any, maintain spinal immobilisation, perform plain x-rays with CT scans as indicated.

**Is there CSF leakage?**  No / Yes  →  Exit pathway

**Specific Neurological findings:**
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

**Notes:**
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**Post Traumatic Amnesia ED Protocol - Recording Form**

A common symptom resulting from head injury is PTA. The duration of PTA is used as a guide to the extensiveness of brain injury.

Ask the patient to answer the following questions hourly over the period of observation in ED. For question 8, write in the picture cards to be remembered. Change the picture cards if a full score is obtained and rehearse with the patient for the next test.
- The patient may fail their fist Post Traumatic Assessment (PTA) without penalty
- When the patient scores 10/10 on 3 PTA tests in a row, testing can cease.
- PTA testing can continue hourly for up to 4-8hrs. If 3 consecutive PTA assessments with a full score of 10 are not obtained, admit under the appropriate neurosurgical team & perform daily PTA.
- Refer to the Occupational Therapists on ext 42523, if testing past 8 hours is required or the patient is to be admitted.

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<tr>
<th>Score: 1=correct answer</th>
<th>0=incorrect answer</th>
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<tbody>
<tr>
<td>Questions:</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; hr</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; hr</td>
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<tr>
<td>1. How old are you?</td>
<td>answer</td>
<td>score</td>
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<td>2. What month are we in?</td>
<td>answer</td>
<td>score</td>
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<tr>
<td>3. What is your date of birth?</td>
<td>answer</td>
<td>score</td>
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<td>4. What time of day is it?</td>
<td>(Morning, afternoon or night)</td>
<td>answer</td>
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<td>5. What year are we in?</td>
<td>answer</td>
<td>score</td>
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<td>6. What is the name of this place (eg, Nepean Hospital)</td>
<td>answer</td>
<td>score</td>
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<td>7. Face</td>
<td>Show photos (ask pt to remember face 4). Subsequently ask “can you identify which of these faces you have seen before (show choice of 6, always use photo 4)</td>
<td>Picture</td>
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</tbody>
</table>

If patient’s PTA score is 10/10, change to 3 new pictures.
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<th>Questions</th>
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<th>0=incorrect answer</th>
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<td>6. What is the name of this place (home, Nepean Hospital, Westmead Hospital)</td>
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<td>Choose &amp; show pt 3 pictures. 1/24 after, ask the pt to identify the same 3 pictures from the series. At hour 1 Pictures used: 8, 9, 10.</td>
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<td>At Hour 2 Pictures used: 8, 9, 10.</td>
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<td>At Hour 3 Pictures used: 8, 9, 10.</td>
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<td>(If required) At Hour Pictures used: 8, 9, 10.</td>
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If patient’s PTA score is 10/10, change to 3 new pictures

Total score

NEPEAN HOSPITAL

Head Injuries

Instructions to Outpatients with Head Injuries (including lacerations) observed and treated in the Emergency Department, and sent home.

Instructions to Relatives and/or Patient
The patient must be taken to his/her doctor immediately if:

1. The patient becomes unconscious, unrousable, or unduly drowsy
2. The patient becomes irrational
3. The occurrence of any fits or spasms of the limbs or face
4. If there is any bleeding from the ear
5. The patient vomits repeatedly
6. Persistent headache
7. Severe persistent dizziness

The patient must be taken to his/her doctor if the following signs & symptoms persist over days or weeks:

   Headache, dizziness, feeling vague, irritable, losing temper, being forgetful, feeling more tired than usual & or poor concentration.

If these symptoms last for more than three months then ask for referral to the Adult Brain Injury Outreach team on (02) 9845 6906

______________________________
Emergency Medical Officer