Traumatic Brain Injury: Quick Reference Guide for Neuropsychologists

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Traumatic Brain Injury (TBI) refers to disruption of normal brain function caused by an external mechanical force. This may result in temporary or permanent cognitive, physical, emotional, and behavioural impairments.

Common Causes of TBI

- Falls (especially in children & older adults)
- Vehicular accidents (road traffic collisions)
- Assaults (e.g., blows to head)
- Sports injuries (contact sports)
- Blast injuries (military context)

TBI Classification by Severity (Glasgow Coma Scale)

- ***Mild***: GCS 13–15 (e.g., concussion)
- ***Moderate***: GCS 9–12
- ***Severe***: GCS ≤8

TBI Classification by Severity (Westmead PTA Scale)

More reliable than GCS:

- ***Mild***: PTA < 24 hours
- ***Severe***: PTA 1-7 days
- ***Very Severe***: PTA 1-4 weeks
- ***Extremely Severe***: PTA > 4 weeks

Types of TBI

- **Closed (Non-penetrating)**: head struck but skull intact — e.g., diffuse axonal injury
- **Open (Penetrating)**: foreign object penetrates skull — often focal
- **Primary injury**: damage occurring at moment of impact (contusion, haemorrhage)
- **Secondary injury**: delayed cascade of metabolic, vascular, inflammatory processes that worsen outcome

Common TBI Neuropathology

- Diffuse axonal injury (DAI)
- Contusions (coup-contrecoup)
- Intracranial haemorrhages (subdural, epidural, subarachnoid)

Neuropsychological Sequelae of TBI

- ***Cognitive***: slowed processing speed, impaired attention/working memory, executive dysfunction, memory deficits
- ***Emotional/Behavioural***: irritability, depression, anxiety, apathy, disinhibition
- ***Physical***: headaches, sleep disruption, dizziness, fatigue, motor dysfunction

Assessment Considerations

- Premorbid functioning estimation
- Stage (acute vs post-acute vs chronic)
- Use standardised batteries (e.g., WAIS, D-KEFS, RBANS)
- Assess emotional/behavioural changes (e.g., HADS, BDI-II)
- Collateral history from family/rehab team

Rehabilitation & Management Strategies

- Cognitive rehabilitation (attention, memory, executive function)
- Psychotherapy/behavioural interventions
- Multidisciplinary approach (OT, PT, speech therapy)
- Education of patient & family re: expectations and strategies

- See also Stages and Recovery Timelines After Traumatic Brain Injury

Prognostic Factors

- Injury severity and localisation
- Age at injury
- Time to treatment
- Socio-environmental support

Key Role of Clinical Neuropsychologists

- Detailed cognitive & behavioural assessment
- Differential diagnosis & tracking recovery
- Planning rehabilitation and compensatory strategies
- Guiding return-to-work/school decisions

Free TBI MOOC

Embedded media: https://mooc.utas.edu.au/course/20350

Learn much more about Traumatic Brain Injury by enrolling in a FREE MOOC offered by The Wicking Dementia Research & Education Centre.