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Introduction To Traumatic Brain Injury

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Overview of Traumatic Brain Injury (TBI)

- TBI occurs when an external mechanical force causes brain dysfunction
- A TBI consists of an alteration of consciousness usually as a result of a bump, blow or jolt to the head or body
- An object penetrating the skull can also cause TBI
- TBI may be described as “closed” (the skull is intact) or “open” or “compound” (there is a skull fracture present)

Classification of TBI

- TBIs are classified as mild, moderate and severe
- Mild TBI results in full recovery in most cases
- Since 1974 the tool most widely used for standardized assessment of head injury is the Glasgow Coma Scale (GCS)

Glasgow Coma Scale

Best eye response (E)	Spontaneous--open with blinking at baseline	4
	Opens to verbal command, speech, or shout	3
	Opens to pain, not applied to face	2
	None	1
Best verbal response (V)	Oriented	5
	Confused conversation, but able to answer questions	4
	Inappropriate responses, words discernible	3
	Incomprehensible speech	2
	None	1
Best motor response (M)	Obeys commands for movement	6
	Purposeful movement to painful stimulus	5
	Withdraws from pain	4
	Abnormal (spastic) flexion, decorticate posture	3
	Extensor (rigid) response, decerebrate posture	2
	None	1

The Glasgow Coma Scale

The Glasgow Coma Scale (GCS) is a neurological scale which aims to give a reliable and objective way of recording the conscious state of a person for initial as well as subsequent assessment.

- The scale is composed of three tests: eye, verbal and motor responses. The lowest possible GCS (the sum) is 3 (deep coma or death), while the highest is 15 (fully awake person).
- **Mild TBI** generally results in: • a GCS rating of 13-15 • no loss of consciousness • full recovery

Mild Concussion Overview

- In the case of concussion, the bump, blow or jolt is usually relatively mild
- It is estimated that at least 75% of all TBIs are concussion injuries, when measured using the GCS
- Most concussions are associated with some degree of confusion or memory loss
- A physical exam following concussion is usually unremarkable. A very thorough history is taken of worker's symptoms
- CT and MRI are very rarely indicated however head/brain imaging may be performed to rule out a more serious injury
- Focus is on treating the symptoms . Generally, recovery is full and fast . Can be difficult to manage given subjective nature of reports

Common Symptoms of Concussion

Headache • Balance problems • Nausea • Increased sensitivity to noise and/or light • Changes in sleep patterns/disrupted sleep • Mental fogginess • Difficulty with memory • Difficulty with concentration • Irritability and mood swings • Visions issues



- Many of these symptoms can also result from a neck injury – be sure of the diagnosis
- For the vast majority of workers, symptoms resulting from concussion should resolve very quickly
- A minority of patients who sustain a concussion may experience a number of persisting symptoms in the ensuing weeks or months following their injury
- Approximately 10-20% of persons with a concussion may have post concussive symptoms . A very small percentage of concussion patients will have symptoms that persist for one to two years

Post Concussive Syndrome

- When the symptoms persist beyond 3 months post injury they are commonly referred to as “Post Concussion Syndrome” (PCS) (a.k.a. Post concussive Syndrome, Postconcussional Disorder, Prolonged Symptoms After Recovery).
- Primarily a label and an indicator that symptoms have lasted longer than would have been expected
- Most/all the symptoms being reported should be the same as at the outset of injury
- Symptoms persisting 3-6 months following a concussion are less likely related to the direct effects of the injury and have higher evidence of co-morbidities (i.e. depression, anxiety disorders, PTSD symptoms, substance abuse issues)
- Generally are a predictor of a poor final outcome

How Mild Concussions are Adjudicated

- Claim is registered and routed to a Customer Service Representative (CSR) for initial entitlement (i.e. claims acceptance) decision and possibly a first and final payment
- If an involved injury/protest from employer/delay in reporting – routed to an Entitlement Officer (EO) for initial entitlement (claims acceptance decision) and often initial payment
- Once initial entitlement decision is made and if worker remains off work – claim is routed to a Case Manager (CM).



- Mild Traumatic Brain Injuries are managed in the regular Claims Offices
- Moderate to Severe injuries are assigned to a Case Manager on the Brain Injury team in Special Care Services.

Treatment Options

- Best treatment is probably no treatment (recovery should occur quickly with little or no interventions)
- Recovery guide says 3 days (optimum) to 21 days (maximum)
- Complete rest is not indicated – a return to “ normal” activity is encouraged
- Education to the worker is the best course of action

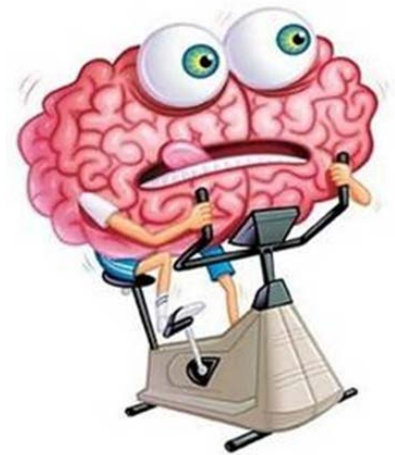


HIATS option – Head Injury Assessment and Treatment Services

- HIATS provides early intervention consisting of assessment and treatment services for brain injured workers and with a goal of improved durable return to work rates.
- Concussion clinic, Comprehensive neuropsychological assessment
- Single service OT or PT, Many other single disciplinary services

4 Service Locations currently Kelowna, Surrey, Vancouver and Victoria

- Over last 12 months, program average duration is 55 days including RTW



Community Occupational Therapist

- Can be considered if worker is not within a HIATS serviced area
- Historically used for workers with more severe injuries
- Can provide the education/reassurance the worker requires
- HCS has agreed to assist in finding providers with head injury experience



Summary – Mild TBI

- **Most workers who have a concussion recover quickly and fully without formal assessment or much treatment. A minority develop Post Concussion Syndrome and some have permanent impairment**
- **HIATS offers services tailored to meet specific needs. CBIS is available for those outside areas served by HIATS. Care should be taken to provide appropriate treatment and not to over-treat**
- **Given the challenges of assessing (mostly) subjective symptoms, quality investigation and adjudication are crucial**
- **Stay focused on the symptoms the worker is presenting with**

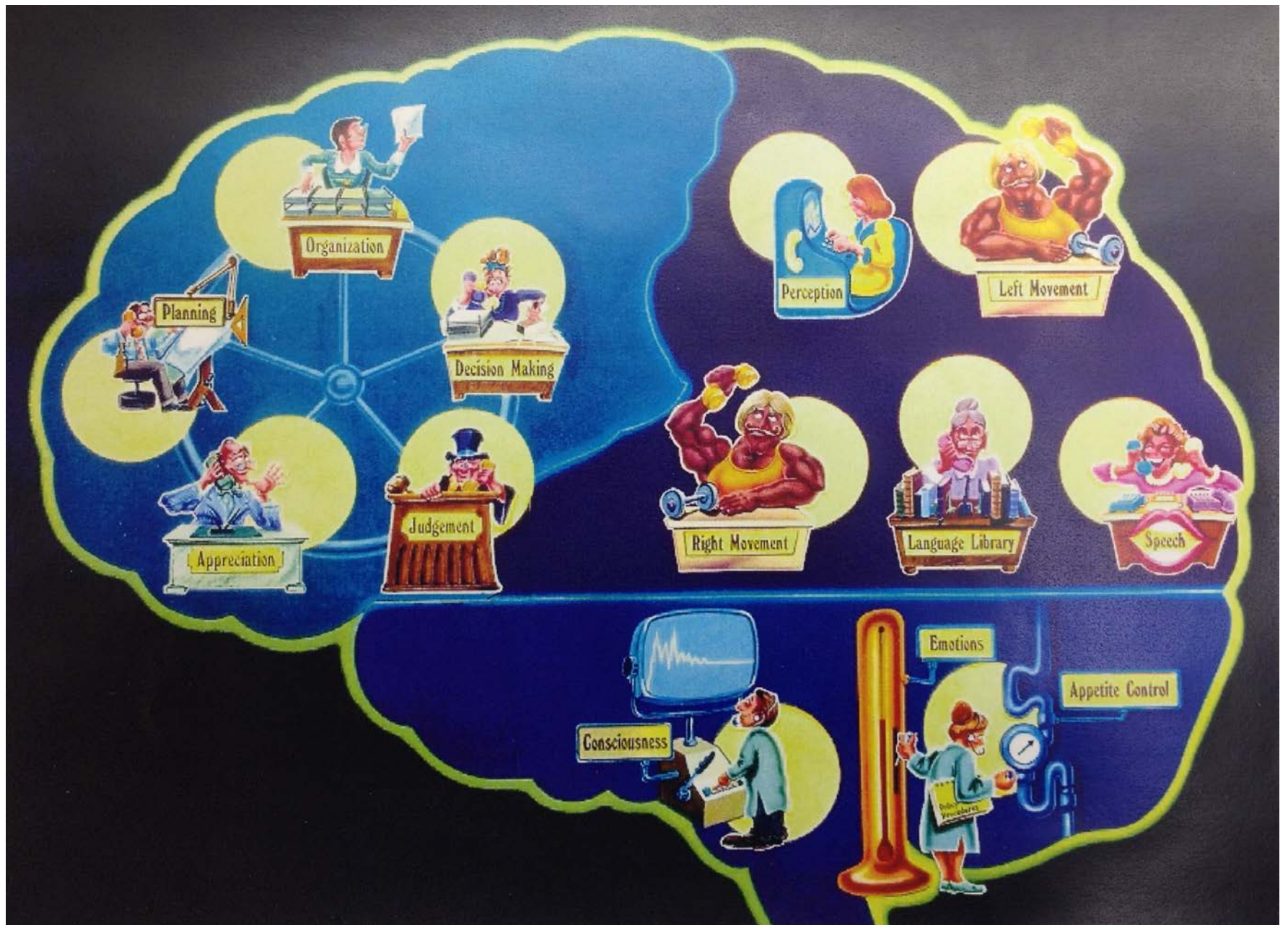
Moderate to Severe TBI

- **Moderate TBI generally results in:** • a GCS rating of 9-12 • a loss of consciousness between 15 minutes and 6 hours • a period of post-traumatic amnesia of up to 24 hours
- **Moderate TBI can often result in permanent neurological deficit**
- **Severe TBI generally results in:** • a GCS rating of 3-8 • a loss of consciousness greater than 6 hours • pre and post traumatic amnesia
- **Severe TBI often results in permanent neurological deficit, prolonged coma or death**

Acute Care

- **Emergency Transportation**
- **Hospitalization**
- **Surgery**
- **Post-surgery, pre-discharge rehabilitation can include physiotherapy, occupational therapy, speech language therapy, wound care etc.**
- **Discharge planning**
- **Initiation of wage loss and health care benefits**





The impact of a moderate to severe brain injury can include:

Cognitive deficits including difficulties with:

- Attention
- Concentration
- Distractibility
- Memory
- Speed of Processing
- Confusion
- Perseveration
- Impulsiveness
- Language Processing
- “Executive functions”



Speech and Language

- not understanding the spoken word (receptive aphasia)
- difficulty speaking and being understood (expressive aphasia)
- slurred speech
- speaking very fast or very slow
- problems reading
- problems writing

Vision

- partial or total loss of vision
- weakness of eye muscles and double vision (diplopia)
- blurred vision
- problems judging distance
- involuntary eye movements (nystagmus)
- intolerance of light (photophobia)

The impact of a moderate to severe brain injury can also include:

Hearing

- decrease or loss of hearing
- ringing in the ears (tinnitus)
- increased sensitivity to sounds

Smell

- loss or diminished sense of smell (anosmia)

Taste

- loss or diminished sense of taste

Social-Emotional

- Dependent behaviors
- Emotional ability
- Lack of motivation
- Irritability
- Aggression
- Depression
- Disinhibition
- Denial/lack of awareness



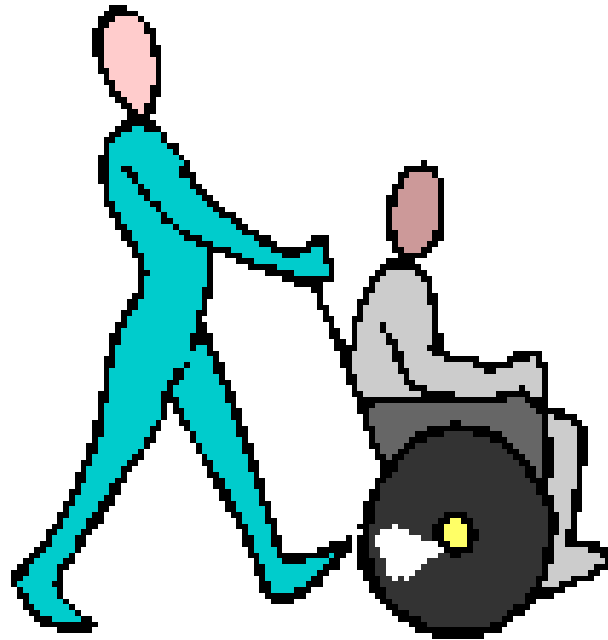
Physical Changes

- Physical paralysis/spasticity
- Chronic pain
- Control of bowel and bladder
- Sleep disorders
- Loss of stamina
- Appetite changes
- Regulation of body temperature

Seizures

- the convulsions associated with epilepsy that can be several types and can involve disruption in consciousness, sensory perception, or motor movements

Following Hospital Discharge



Community Based Rehabilitation

Treatment Team can include any or all of the following:

- Certified Brain Injury Specialist (CBIS) Occupational Therapist
- Rehab Assistant
- Community Occupational Therapist (to review potential home modifications/adaptive aides)
- Speech-language Pathologist (SLP) (speech or swallowing impairment)
- Physiotherapist (home or in clinic)/Vestibular Therapist
- Psychologist/Psychiatrist
- Physician/Dentist
- Audiologist/ENT/Ophthalmologist
- Home Care Services/Care Aid
- Social Worker
- Head Injury Assessment and Treatment Services(HIATS)



Certified Brain Injury Specialist (CBIS) Occupational Therapist



Recovery and Return to Work

Return-to-work programs are proactive ways for employers to help injured workers return to productive and safe employment as soon as physically possible.

Benefits for employers:

- Demonstrates to all workers they are valued employees
- Returns injured workers to work in a safe and timely manner
- Maintains worker/employer relationships
- Reduces the cost of claims, which can help employers be more competitive
- Helps retain healthy and qualified workers
- Reduces the cost of training replacement workers
- Includes the employer in the recovery process for their injured worker

RTW Support team:

- WorkSafeBC Case Manager
- WorkSafeBC Vocational Rehabilitation Consultant
- CBIS OT



Permanent Disability Benefits

- If there is evidence that a work-related injury or disease has permanently disabled a worker, they will be assessed for permanent disability benefits. The amount will likely be based on the loss of function of your body.
- If WorkSafeBC determines that the combination of the worker's occupation and disability is so exceptional that the functional award does not appropriately compensate them, then a loss of earnings award may be paid.



Additional Benefits

“The Board may pay for various additional health care and vocational rehabilitation benefits and services to severely disabled workers. These are designed to alleviate the effects of the compensable personal injury, occupational disease or mental disorder and to assist in achieving physical, psychological, economic, social and vocational rehabilitation. The Board’s goal is to assist severely disabled workers to reintegrate into the workplace, community and/or family environment.”

- **Personal Care Allowance (PCA)**
- **Independence and Home Maintenance Allowance (IHMA)**
- **Respite Care**
- **Home and Vehicle Modifications**
- **Long Term Care Facility**
- **Extended Health Care Benefits**



Employer Support

- **Critical Incident Intervention**

Province wide early intervention program for workers and employers who have experienced a critical incident in their workplace.

Pager 1-888-922-3700, 9am-11pm, 7 days a week

- **Accident Investigation**

Fatal & Serious Injury Investigations conducts comprehensive and timely investigations and reports on the causes of serious workplace health and safety incidents.

Makes recommendations to prevent future incidents, enforces regulatory requirements and promotes a culture of workplace health and safety

- **Ongoing Communication with Case Manager**

Contacts and Resources

<http://www.worksafebc.com>

- **The Workers' Advisers Office** (WAO) provides free advice and assistance to workers and their dependants on disagreements they may have with WorkSafeBC decisions. WAO operates independently of WorkSafeBC.

<https://www.labour.gov.bc.ca/>

- **Employer's Advisor** provides independent advice, assistance, representation and education to employers, potential employers and employer associations concerning workers' compensation issues

<https://www.labour.gov.bc.ca/eao/>

- **Review Division:** 604-214-5411 or Toll-free 1-888-922-8804
- **Worker's Compensation Appeal Tribunal (WCAT):** 604-664-7800 or
- Toll-free 1-800-663-2782

