



# CLINICAL PRACTICE GUIDELINE

## FOR THE REHABILITATION OF ADULTS WITH MODERATE TO SEVERE TBI



## GLOSSARY

### **A-B-A Design**

Refers to a specific type of research design in which there is a baseline period where no treatment is given and/or no variable is introduced (A), followed by a period in which the treatment or variable is introduced (B), and then a period in which the treatment is removed so the behaviour can be observed a second time (A). This way behaviour can be measured before treatment, during treatment, and once treatment is removed.

### **Acquired brain injury (ABI)**

ABI implies damage to the brain that was sudden in onset and occurred after birth and the neonatal period. It is thus differentiated from birth injuries, congenital abnormalities and progressive or degenerative diseases affecting the central nervous system.

### **Acute Care**

Takes place in the hospital setting and the focus is on medical assessment, treatment and monitoring of urgent and emergent medical conditions, with the aim of achieving medical stability.

### **Appraisal of Guidelines for Research and Evaluation (AGREE II)**

AGREE II is an international tool to assess the quality and reporting of practice guideline developed by the National Collaborating Center for Methods and Tools. AGREE II (*Appraisal of Guidelines for Research and Evaluation II*) is based on the most recent version of these standards.

### **Assessment**

Assessment is defined as an approach that may use multiple methods of data collection such as interviews, standardized tools, questionnaires and observations, within a decision-making process.

### **Assistive Technology**

Adaptive devices used to improve function, independence and quality of life across a wide range of modalities including communication, physical function and cognition.

### **Balance**

Balance refers to postural stability at rest or during activities.

### **Balance Retraining**

Sensory, motor and/or cognitive interventions to promote postural stability and coordinated limb movements during postures, functional tasks and/or after perturbations.

**Behavioural Rehabilitation**

The process of reducing the inappropriate or maladaptive thinking, feeling or action patterns brought about by an acquired brain injury.

**Biofeedback**

The technique of using monitoring devices to furnish information regarding an autonomic bodily function, such as heart rate or blood pressure, in an attempt to gain some voluntary control over that function.

**Caregiver**

A caregiver is any paid or unpaid human resource responsible for supporting or providing care to another individual.

**Case Coordinator**

A case coordinator facilitates the access of a patient to appropriate medical, rehabilitation and support programs, and coordination of the delivery of services.

**Clinical Practice Guidelines (CPG)**

Clinical Practice Guidelines (CPG) are practice tools which consist of systematically developed statements designed to assist clinicians and patients in making decisions about appropriate health care.

**Cognition**

Cognition encompasses all the 'thinking' modalities of the brain, including alertness, registration of new ideas, memory and problem-solving. It involves the conscious process of knowing or being aware of thoughts or perceptions, including understanding and reasoning.

**Cognitive Behaviour Therapy**

Cognitive behaviour therapy (CBT) is a short-term, goal-oriented psychotherapy treatment that takes a hands-on, practical approach to problem-solving. Its goal is to change patterns of thinking or behaviour that are behind an individual's difficulties.

**Cognitive Communication Disorder**

Cognitive Communication Disorder refers to communication impairments resulting from underlying cognitive deficits due to neurological impairment, including difficulties in communicative competence (listening, speaking, reading, writing, conversation and social interaction).

**Cognitive Rehabilitation**

Cognitive rehabilitation refers to interventions aimed at minimizing the functional impact of disabilities arising from impairments in cognitive functions such as perception, attention, memory, problem solving, and organization.

**Coma**

Coma is a state of unconsciousness from which the patient cannot be awakened or aroused, even by powerful stimulation; lack of any response to one's environment. Defined clinically as an inability to follow a one-step command consistently; Glasgow Coma Scale score of 8 or less.

### **Community-Based Rehabilitation Therapy**

Rehabilitation provided in the home or community-based setting.

### **Community Reintegration**

Community Reintegration is the process of re-engaging in social roles, recreational and vocational activities following acquired brain injury.

### **Comorbid**

When two or more conditions are present in the same person they exist simultaneously and usually independently of each other. For example, a person can have a brain injury as well as diabetes.

### **Complex therapeutic activities**

Complex therapeutic activities have multiple steps and require several different types of skills to perform and are performed in a therapeutic (rehabilitation) context with a service provider. An example would be preparing a meal using a recipe as this requires reading comprehension, organization, planning, cutting and measuring food and keeping track of multiple things at once.

### **Computed Tomography (CT) Scan / Computerized tomography**

A CT scan is a computer-aided X-ray used to provide clear pictures of brain structures for diagnostic and interventional purposes.

### **Concurrent Disorders**

Refers to a person who has a TBI with a co-existing psychiatric problem in which the manifestation of the psychiatric problem is the more significant issue.

### **Counselling**

A verbally-based therapeutic process focused on assessing motivation and capacity in order to develop self-awareness and opportunity for behaviour change.

### **Dementia**

Dementia is the deterioration of intellectual faculties, such as memory, concentration and judgement, resulting from an organic disease or a disorder of the brain.

### **Disorder of consciousness**

A state of diminished or absent responsiveness/awareness.

### **Dissociative**

To remove from association; separate, as in dissociative disorder. Someone with a dissociative disorder escapes reality in ways that are involuntary and unhealthy. The person experiences a disconnection and lack of continuity between thoughts, memories, surroundings, actions and identity.

**Dysphagia**

Dysphagia means that there is difficulty in swallowing.

**Dystonia**

A neurological movement disorder in which sustained muscle contractions cause twisting and repetitive movements or abnormal postures.

**Electroencephalography**

A test that records and measures electrical activity in the brain.

**Epilepsy**

Epilepsy is any of various neurological disorders characterized by sudden recurring attacks of motor, sensory or psychic malfunction; with or without loss of consciousness or convulsive seizures.

**Evaluation**

Evaluation is defined as a systematic approach that incorporates the elements of assessment, and the reasoned approach required for the analysis of findings and development of recommendations.

**Executive Function**

Those thinking abilities involved in attention, working memory, learning and episodic memory, problem solving, organization, planning and judgment, self-awareness and insight. Executive function also includes the ability to control behaviour so that is adaptive and appropriate to the situation. Behavioural control refers to the ability to regulate and direct the expression of mood, impulses, and motivation.

**Follow-Up**

The assessment of the individual following the end of a phase of rehabilitation to determine the effects of services, outcomes attained and the durability of outcomes to determine the status of the individual and their future needs.

**Functional Magnetic Resonance Imaging (fMRI)**

A functional neuroimaging procedure that uses MRI technology to measure brain activity by detecting changes in blood flow associated with various cognitive or motor tasks.

**Gait**

Gait is a particular way or manner of moving on foot.

**Glasgow Coma Scale**

A standardized system used to assess the degree of brain impairment and to identify the seriousness of injury in relation to outcome. The system involves three determinants: eye opening, verbal responses and motor response; all of which are evaluated independently according to a numerical value that indicates the level of consciousness and degree of dysfunction. Scores run from a high of 15 to a low of 3. Persons are considered to have experienced a 'mild' brain injury when their score is 13 to 15. A score of 9 to 12 is considered to reflect a 'moderate' brain injury and a score of 8 or less reflects a 'severe' brain injury.

**Goal Setting**

Goal setting involves identifying specific and measurable targets for the rehabilitation process, ideally by agreement between the rehabilitation team and the affected individual, and ideally involving their family or caregivers.

**Heterotopic Ossification**

Heterotopic ossification involves the development of bony substances in normally soft tissues.

**Holistic**

The use of the term holistic emphasizes the importance of the whole and the interdependence of its parts.

**Implementation**

Implementation is defined as an active process of putting an innovation, such as a clinical practice guideline to use, the goal of which is sustained practice change.

**Integrated Care Pathways**

Integrated Care Pathways are structured interdisciplinary care plans which detail essential steps in the care of individuals with a specific clinical problem.

**Intensity**

Intensity refers to the duration, frequency and demands of a therapeutic intervention, in terms of its strength or concentration.

**Interdisciplinary Rehabilitation**

Interdisciplinary rehabilitation is an approach in which all members of a rehabilitation team, including the affected individual and the family and caregivers, communicate and work together to achieve the affected individual's needs and goals which cross discipline boundaries.

**Interdisciplinary Team**

A team consisting of professionals (+ others) from several disciplines, brought together by a common interest in the management of certain clinical conditions. In the context of traumatic brain injury, that commonly includes medicine, nursing, physiotherapy, occupational therapy, speech-language pathologist, clinical (neuro) psychology, dietetics, and social work/care management. Team members must see the team as an entity, meet regularly to discuss patients/clients, and share patient records.

**Interval Care**

Care (treatment or programming) that is individualized in different blocks or phases either in sequence or after a period of time without treatment or care. These blocks of care can be of different intensity to take advantage of increased neurological recovery and/or focus on different aspects of care as indicated by the progress and needs of the individual with the brain injury. Re-entry to rehabilitative services is also considered interval care.

**Intervention**

An active treatment approach designed to improve a specific or general outcome such as patient programming, medication treatment or a behaviour strategy.

**Job**

Job is defined as work at an identifiable place of employment e.g., a nurse working at hospital “X”.

**Job Coach**

A Job Coach helps people with career development, employment goals and workplace training and success strategies. A job coach can also “shadow” or accompany a client to places of employment to provide on-site training and support.

**Magnetic resonance imaging (MRI)**

A method of imaging that uses strong magnetic fields and radio waves to produce cross-sectional images of organs and internal structures in the body.

**Metacognition**

Refers to thinking and/or reasoning about one's own thinking (including memory, attention, and executive function). This includes the use of strategies applicable to many different situations, for example, thinking about the need to and actually writing down appointments in a day-timer.

**Mindfulness**

Mindfulness is the process of bringing one's attention to the internal and external experiences occurring in the present moment, which can be developed through the practice of meditation and other training. With training, the goal is that this heightened attention will bring acknowledgment and acceptance of one's feelings, thoughts, and bodily sensations.

**Minimally conscious state (MCS)**

A state of wakefulness with minimal awareness is characterized by inconsistent, but reproducible, responses above the level of spontaneous or reflexive behaviour.

**Motivational Interviewing**

Motivational interviewing (MI) is a method that works on facilitating and engaging intrinsic motivation within a client in order to change behaviour. MI is a goal-oriented, client-centred counseling style for eliciting behaviour change by helping clients to explore and resolve issues.

**MRI–Structural**

Structural MRI stands for magnetic resonance imaging, a technique for creating internal images of the body and brain, and conducted in a resting state.

**Multidisciplinary Research**

Researchers of various disciplines work separately on different aspects of a broad problem.

**Neurobehavioural**

Neurobehavioural refers to the relationship between the action of the nervous system and behaviour.

**Neurologic Deficit**

Sensory, motor or communication impairment, secondary to central or peripheral nervous system injury in the context of the neurologic examination.

**Neuropsychiatrist**

A Neuropsychiatrist is a medical specialist for disorders with both neurological and psychiatric features.

**Neuropsychologist**

A neuropsychologist is a psychologist who specializes in ailments of the mind and mental processes caused by diseases of the nervous system.

**Neurorehab team**

Many skilled professionals are part of the neurological rehabilitation (Neurorehab) team. The composition of the team will vary depending on the specific setting but all members will have specific training to provide care to individuals with neurological deficits. This interdisciplinary team can provide a wide range of care relating to medical, nutritional, psychiatric, psychological, physical, speech, social and recreational/occupational issues.

**Occupation**

Occupation is defined as a cluster of jobs with common characteristics e.g. teaching, nursing, farming.

**Orthopaedic**

Orthopaedic refers to the branch of medicine that deals with the prevention or correction of injuries or disorders of the skeletal system and associated muscles, joints and ligaments.

**Orthosis**

Device or aid to prevent, correct or control deformities of the musculature or bones of the body.

**Osteopathy**

A system of medicine based on the theory that disturbances in the musculoskeletal system affect other bodily parts, causing many disorders that can be corrected by various manipulative techniques in conjunction with conventional medical, surgical, pharmacological, and other therapeutic procedures.

**Outcome**

Outcome is the status of the individual measured by the individual's functional abilities and performance.

**Outpatient**

The patient, or individual residing outside the hospital but returning on a regular basis for one or more therapeutic services is called an outpatient.

**Orthoptist**

Specialize in the non-surgical treatment of visual disorders.

**Paraprofessional**

A paraprofessional is a trained aide who assists a registered healthcare professional but who is not professionally licensed. Examples of paraprofessionals are Therapy Assistants (Occupational Therapy and Physiotherapy).

### **Paresis**

Paresis refers to slight or partial paralysis.

### **Pathology**

Pathology is the scientific study of the nature of disease and its causes, processes, development and consequences.

### **Patient-focused and patient-centred care**

Both patient-centred and person-focused care are important, but they are different. Patient-centred care puts the patient in the centre of all treatments decisions; all treatment planning takes into account the specific needs of the individual patient. Person-focused care specifically focuses on the whole person and allows for the provision of comprehensive care as needed to a variety of patients. It is the difference between the individual level (patient-centred) and the organization or system level (patient-focused).

### **Persistent Vegetative State (PVS)**

A long-standing condition in which the patient is unresponsive to mental or physical stimuli (i.e. utters no words, does not follow commands or make any response that is meaningful).

### **Positron emission tomography (PET)**

A nuclear imaging technique that produces a three-dimensional image or picture of functional processes in the body by detecting gamma rays emitted from a radioactive tracer, introduced into the body on a biologically active molecule.

### **Post-acute care**

Post-acute care is delivered in settings that include long-term care centres, inpatient rehabilitation facilities, skilled nursing facilities, nursing homes and home health agencies.

### **Post-traumatic Amnesia (PTA)**

Post-traumatic Amnesia refers to the period of time after the injury when the affected person exhibits a loss of day-to-day memory. This period of time may also be called Anterograde Amnesia.

### **Post-acute Rehabilitation**

Post-acute rehabilitation programs are designed to provide intensive rehabilitation to improve cognitive, physical, emotional, and psychosocial abilities, and to facilitate better independent living skills. Community based services typically provide a full spectrum of clinical therapies, as well as life-skills training in a community setting.

### **Primary Care**



Primary care is health care at a basic or general rather than specialized level. It reflects the day-to-day healthcare given by a health care provider. Typically this provider acts as the first contact and principal point of continuing care for patients within a healthcare system, and coordinates other specialist care that the patient may need.

### **Prolonged disorders of consciousness**

A state of diminished or absent responsiveness/awareness persisting for more than 4 weeks following sudden onset profound acquired brain injury.

### **Psychoactive**

A psychoactive substance is a chemical substance that changes brain function and results in alterations in perception, mood, or consciousness.

### **Psychosis**

A severe mental disorder, with or without organic damage, characterized by derangement of personality and loss of contact with reality and causing deterioration of normal social functioning.

### **Psychosocial**

Psychosocial involves aspects of social and psychological behaviour.

### **Rehabilitation**

A progressive, dynamic, goal-oriented process, that aims to enable an individual with impairment(s) to identify and reach his/her optimal mental, physical, cognitive and/or social functional level. Rehabilitation also provides opportunities for the individual, the family and the community to accommodate a limitation or loss of function and aims to facilitate social integration and independence.

### **Restraint**

Physical, mechanical, chemical or environmental means of restricting a person's activities or movements.

### **Retrograde amnesia**

Retrograde amnesia refers to the loss of memory of what occurred prior to the trauma/event.

### **Risk factor**

An aspect of personal behaviour or lifestyle, an environmental exposure, or an inherited characteristic that is associated with an increased risk of a person developing a disease or sustaining an injury.

### **Schizophrenia**

Any of a group of psychotic disorders usually characterized by withdrawal from reality, illogical patterns of thinking, delusions and hallucinations, and accompanied in varying degrees by other emotional, behavioural or intellectual disturbances. Schizophrenia is associated with dopamine imbalances in the brain and defects of the frontal lobe and is caused by genetic, other biological and psychosocial factors.

### **Seizure**

Sudden and unstoppable alteration in behaviour caused by excessive electrical activity of the brain that can manifest itself as simply unresponsive staring, focal movement of a limb, to an altered level of awareness, to uncontrollable shaking of all 4 limbs with associated loss of consciousness.

### **Self -Management**

Interventions, training, and skills by which patients with a chronic condition, disability, or disease can effectively take care of themselves and learn how to do so.

### **Self-Care**

Self-care refers to fundamental daily activities such as bathing, grooming, feeding, dressing and toileting.

### **Sleep Hygiene**

Habits and practices that are conducive to sleeping well on a regular basis.

### **Spasticity**

Velocity-dependent increase in muscle tone (i.e. an increase in muscle stiffness above the normal level) in response to movement.

### **Sub-acute care**

Sub-acute care is a level of care needed by a patient who does not require hospital acute care, but who requires more intensive skilled nursing care than is typically provided in post-acute settings. Sub-acute patients are medically fragile and require special services, such as respiratory therapy, tracheotomy care, intravenous tube feeding, and complex wound management care.

### **Team**

A team is a small group of people who have complementary skills and are committed to a common purpose for which they have shared responsibility.

### **Tertiary Care**

Tertiary care is specialized consultative care, usually on referral from primary or secondary (specialist) medical care personnel, provided by specialists and subspecialists working in a centre that has personnel and facilities for special investigation and treatment.

### **Therapy**

Therapy refers to a treatment intended to cure or alleviate an illness or injury, whether physical or mental.

### **Tone**

Muscle tone (aka residual muscle tension or tonus) is the continuous and passive partial contraction of the muscles, and is evaluated as the amount of resistance of a limb where resistance arises from passive and active forces.

### **Traumatic Brain Injury (TBI)**

Traumatic brain injury (TBI) is a non-degenerative, non-congenital insult to the brain from an external mechanical force, with an associated diminished or altered state of consciousness and possibly leading to permanent or temporary impairment of cognitive, physical, and psychosocial functions.

### **Traumatic Brain Injury Severity**

Severity of brain injury is classified by evaluating three indicators consisting of:

- 1) Glasgow Coma Score (GCS) which indicates the depth of coma,
- 2) Duration of loss of consciousness (LOC) and
- 3) Duration of post-traumatic amnesia (PTA) which indicates the period of time after the brain injury during which the individual is not able to consistently remember day-to-day events.

No single indicator of injury severity should be considered in isolation. When evaluating brain injury, severity the functional status of the person with the brain injury should also be considered.

### **Vegetative state**

Vegetative state is a state of wakefulness with absent awareness, characterized by complete absence of behavioural evidence for self- or environmental awareness.

### **Vestibular**

Vestibular is a term pertaining to the (vestibular) system in the inner ear and brain that senses movements of the head. Disorders of the vestibular system can lead to dizziness, poor regulation of postural muscle tone and inability to detect quick movements of the head.

### **Vocational Evaluation**

Vocational evaluation is defined as a comprehensive collaborative inter-professional process of evaluating an individual's current work abilities and work functions, limitations, and tolerances in order to gain an understanding of a client's work-related strengths and deficits. This is used to determine whether the occupation or job being evaluated is consistent with individual's interests and capabilities, and make recommendations as to the supports necessary to achieving the identified occupational or job goal e.g. training, education, job coaching, additional services and supports.

### **Vocational Rehabilitation**

Assessment and interventions following an injury, disability or health condition, designed to assist individuals to engage or re-engage in productive activities such as employment, retraining/education, or volunteerism

### **Work**

Work is defined as the principal activity from which an individual garners an income.