

## **Mild Traumatic Brain Injuries Demonstration Project**

The Program of Care for Mild Traumatic Brain Injury is an evidence-based health care delivery plan developed by the WSIB in collaboration with health care professions whose scope of practice includes the referenced treatment modalities. It describes treatments shown to be effective for patients diagnosed with a mild traumatic brain injury and has been modified slightly to reflect AT practice. The MTBI POC is an evidence-based health care delivery plan, based on a systematic review of the scientific literature, and is specific to the treatment of patients with a MTBI. This POC is specific to the treatment of patients with a mild traumatic brain injury for up to six months of care. This POC is not intended for the treatment of patients with moderate or severe brain injuries.

The Program of Care consists of:

- Assessment for treatment planning
- Delivery of evidence-based interventions
- Outcome measurement using the Rivermead Post-Concussion Symptoms and the RAND 36-Item Health Survey (SF-36) Questionnaires
- Common forms including the Initial Assessment Form and Care and Outcomes Summary Form

### **Goals and Objectives**

The OATA wishes to use this Demonstration Project to ensure ATs' practices are consistent with the best clinical practices and hopefully to demonstrate that ATs are at least as cost effective in assessing and treating Mild Dramatic Brain Injuries as other health care professions. More specifically, our objectives are to:

- provide best possible evidence-based quality care to patients with MTBI in a timely manner
- promote safe, timely, and sustainable return to ADL for our patients in the program
- assist the patient to return to the best possible pre-injury level of overall function and quality of life

### **Eligibility Criteria**

Prior to commencing this POC:

- the patient must have been diagnosed with a MTBI
- within one year post-date of injury
- not hospitalized

### **Exclusion Criteria**

The MTBI POC is not designed for patients with:

- moderate or severe brain injuries
- cancer of the central nervous system
- structural defect of cranial vault at the time of injury
- penetrating brain injury
- a psychiatric disorder/psychopathology such that the MTBI POC would interfere with the treatment of this condition
- physical impairments or concurrent injuries that would prevent the patient from being assessed and /or treated in the MTBI POC

### Diagnosing a Mild Traumatic Brain Injury

Prior to entry into the MTBI POC, the patient must be diagnosed by MTBI according to either of the definitions of MTBI as published by the American Academy of Physical and Rehabilitation Medicine (AAPRM/ACRM), or the American Academy of Neurology (AAN). (Alexander M.P. (1995). Mild Traumatic Brain Injury: Pathophysiology, Natural History, and Clinical Management. Neurology, 45: 1253-1260). Based on the ACRM classification, the POC is applicable to patients with at least one of the following:

- any period of loss of consciousness
- any loss of memory for events immediately before or after the injury
- any alteration in mental state at the time of the injury
- focal neurologic deficit that may or may not be transient BUT the severity does not exceed the following:
  - loss of consciousness of 30 minutes,
  - an initial Glasgow Coma Scale score of 13-15 after 30 minutes AND,
  - post-traumatic amnesia of no more than 24 hours duration.

Based on the AAN definition, the POC is applicable for patients in Ontario with:

- the presence of head trauma
- some period of dazed consciousness; unconsciousness is not required
- a presenting ER Glasgow Coma Scale score of 13-15
- post-traumatic confusion with amnesia, usually for minutes to hours and with no abnormality on thorough neurologic examination
- negative findings on all neuroimaging studies

### Initial Assessment/Initial Assessment Report

The purpose of the initial assessment is to:

- establish extent of symptomatology and other injuries sustained
- establish baseline measures using the Rivermead and RAND SF-36 outcome measures
- determine which stream of care is appropriate for the patient
- develop treatment planning if patient is more than three months post-date of injury

Following completion of the initial assessment the MTBI POC Initial Assessment Report is to be developed.

Whenever a patient reaches three months post-date of injury and remains symptomatic, the patient should be moved to active treatment with continuing education.

### **Outcome Measurement Tools**

#### Rivermead Questionnaire

The use of the Rivermead Questionnaire is recommended at any reassessment point in the MTBI POC to track the progress of recovery of a patient from any symptoms related to the MTBI and assist with treatment planning. The Rivermead is a short, patient-completed instrument in which the patient rates the severity of current symptoms compared to prior to the injury. Symptoms monitored are: headaches,

dizziness, nausea/vomiting, phonophobia, sleep disturbance, fatigue, irritability, feeling depressed, feeling frustrated, forgetfulness, inattentiveness, slow thinking, blurring vision, photophobia, diplopia and restlessness.

ATs are required to provide the Rivermead score only in the Discharge Reports.

### **RAND SF-36 – Short Form Health Survey (SF-36)**

The RAND SF-36 is recommended as an instrument that has been scientifically validated for use in a MTBI population. One of the goals of the MTBI POC is to improve the quality of life of the patient. The RAND SF-36 was selected for use in the MTBI POC to assess aspects of quality of life of the patient. The RAND SF-36 assesses eight health concepts:

- 1) limitations in physical activities because of health problems
- 2) limitations in social activities because of physical or emotional problems
- 3) limitations in usual role activities because of physical health problems
- 4) bodily pain
- 5) general mental health (psychological distress and well-being)
- 6) limitations in usual role activities because of emotional problems
- 7) vitality (energy and fatigue)
- 8) general health perceptions

ATs are asked to provide scores for all eight concepts on their Discharge Reports.

### **Recommended and Non-recommended Interventions**

The interventions searched in the scientific literature were considered and are either recommended or not recommended for use in the POC. Recommended interventions are those for which there is evidence in the scientific literature of effectiveness in the treatment of symptoms related to a MTBI. Furthermore, recommended interventions are supported as best practices by the experts who were members of the committee designing the MTBI POC. Only recommended interventions are appropriate for treating patients with a MTBI. Non-recommended interventions are not supported by scientific evidence and are not included in the MTBI POC.

Recommended Interventions:

- Education
- Cognitive Rehabilitation
- Manual Mobilization Therapy

Non-recommended Interventions:

- Pharmacological Interventions [Amitriperlavil, Desmopressin (DDAVP), Dihydroergotamine (DHE)]

### **Discharge Report**

It is expected that ATs involved in the treatment of symptoms related to the MTBI will schedule follow-up visits with the patient. A follow-up is recommended at least six-to-eight weeks post start of treatment. At this follow-up visit, the AT will re-administer the Rivermead and the RAND SF-36 questionnaires and determine if the current treatment plan is warranted, requires change appropriate for the state of symptoms, or if the patient is ready for discharge. At any time in the MTBI POC the patient should be discharged when symptoms have resolved and no further treatment is required. When the patient is discharged from the MTBI POC, the AT completes and submits the Discharge Report.

## Transition to ADL

Patients should be moved towards a safe transition to ADL as early as possible. Some patients with MTBI remain/return to full ADL with no modifications. For some patients, modifications to ADL may be necessary depending both on the nature of the patient's MTBI symptoms and the nature of the individual's ADL. For example, if fatigue is a symptom, a gradual return to pre-injury hours may be required. If poor concentration is a symptom, a modification in duties may be appropriate for a period of time.

## Recommendations

Following the onset of symptoms for a MTBI, ATs are required to report the patient's health status, progress and outcomes by providing:

- Initial Assessment Report: baseline data collected to enable treatment planning
- Care & Outcomes Summary Report: a summary of the patient's achieved recovery and when necessary, recommendations for further treatment.

The AT is responsible for communication with the patient throughout the POC.

## Education Session

Regardless of the time of entry into the MTBI POC, the first treatment of the patient should consist of education about MTBI and potential treatments for symptoms related to the MTBI. The literature suggests that the education should be provided ideally in a single 1 to 1.5 hour session, but the length of the session should be determined by the treating AT in accordance with the patient's needs. Elements that should be included in the education session are:

- Reassurance that symptoms can be expected to resolve over time
- Typical time and pattern of recovery
- Most common symptoms include fatigue, forgetfulness and poor concentration, irritability, headache
- Less common symptoms include dizziness, cognitive impairment, communication disorders, anxiety, depression (post-traumatic stress disorder), sleep disturbance, photophobia and sonophobia
- How to cope with common problems
- Importance of rest as needed
- Gradual reintegration to regular ADL
- An opportunity to ask questions, provide feedback
- A mechanism to obtain help if a problem arises after the visit
- A review of the information in the session

Patients who enter the MTBI POC within three months of the date of the injury should be educated that their symptoms should typically resolve within three months and that treatment of symptoms within this initial period is usually not indicated. Patients should be asked about their current expectations and knowledge of symptoms and recovery from MTBI, and their education session should be adjusted accordingly. The education stream of the POC is for a maximum of 12 weeks of care and recovery, with discharge at any time.

## **Active Treatment and Education Stream of the POC**

The literature suggests that a patient with a MTBI who remains symptomatic three months post-date of injury would benefit from active treatment with specific interventions in addition to education related to the MTBI. The active treatment of symptoms in the POC is up to a maximum of 12 weeks with discharge at any time.

### **Assessment for Treatment Planning**

Prior to initiating treatment, an assessment is conducted by the treating AT. The length of a typical assessment for patients with a MTBI will vary for each patient. In the case where a patient moves from education only into the active treatment and education stream, and if the patient is referred to ATs for one or more of the recommended interventions, each AT will conduct an appropriate assessment prior to the initiation of a treatment program.

### **Recommended Treatment Interventions**

#### **A. Education Program**

As with patients who entered the MTBI POC less than three months post-date of injury, an education session is beneficial to patients entering the MTBI POC after three months post-date of injury. The core elements of an education program were discussed earlier. Both content and length of the education session for patients more than three months post-date of injury are dependent on a number of factors, including whether the patient has previously had an education session related to this MTBI.

#### **B. Cognitive Rehabilitation**

Following MTBI, cognitive rehabilitation strategies have been shown to improve patients' scores on many commonly used neuropsychological tests. The restorative approach and compensatory approach were both referenced in the literature.

##### **1. Restorative Approach**

The restorative approach focuses on eliminating or reducing underlying cognitive impairments and improving performance subcomponents. Intervention consists of hierarchically organized retraining exercises that target specific cognitive processes. Intervention is often conducted in clinical settings, using specially designed materials and tasks. These are usually paper and pencil tasks and 'real life' activities.

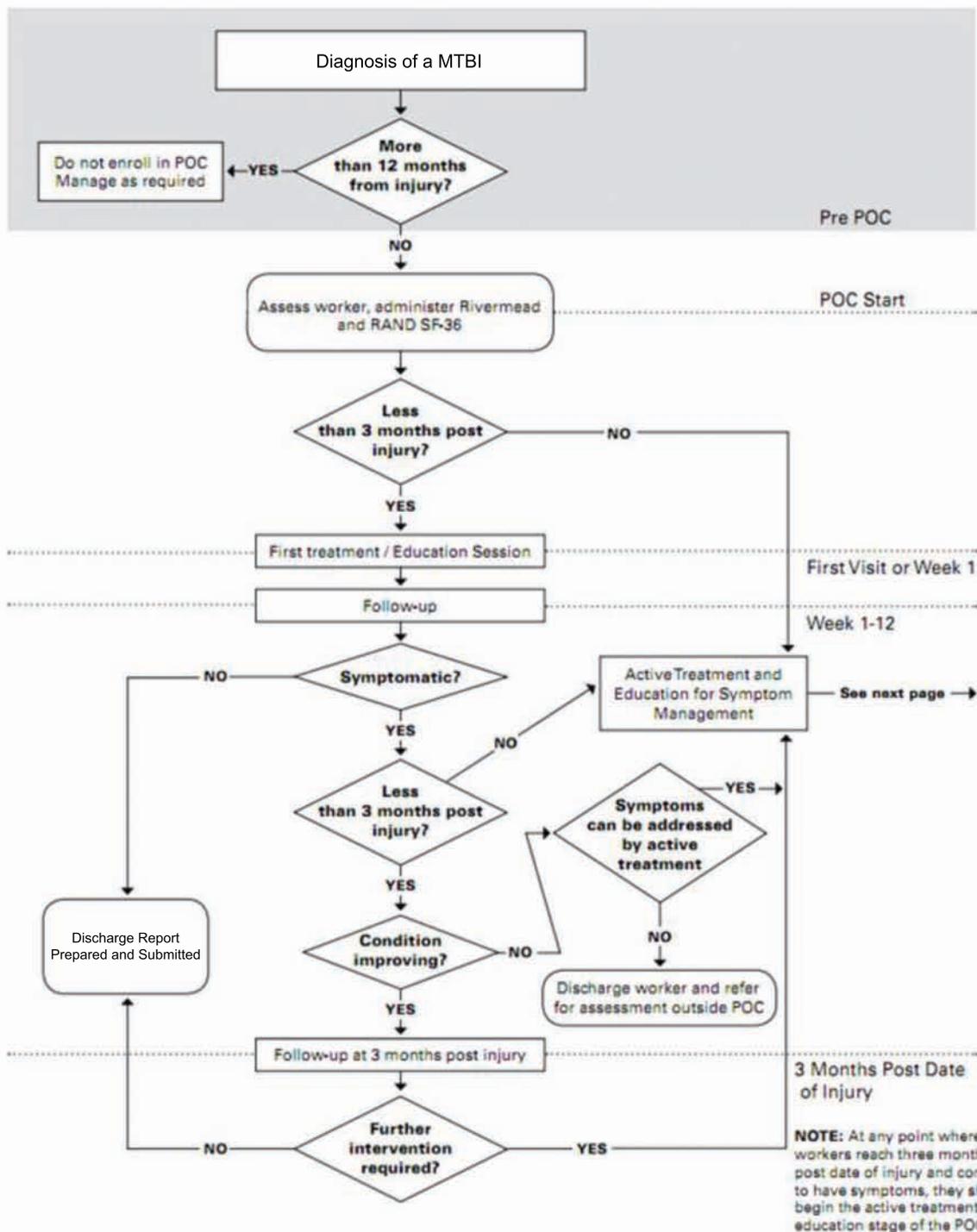
##### **2. Compensatory Approach**

The compensatory approach focuses on reducing the underlying impairment by achieving functional objectives and facilitating participation in real-world activities. Intervention consists of designing and teaching individualized compensatory strategies and behaviours using environmental supports, in both clinical and real-world settings. The compensatory approach to cognitive rehabilitation is more often used with MTBI patients to address issues such as activities of daily living, communication functions, and behavioural skills. Depending on the deficits of the patient, the frequency and duration of treatment will vary. Cognitive rehabilitation may be delivered by a variety of health care professionals. In practice, areas of cognitive rehabilitation treatment may overlap or be provided by more than one discipline. For example, members from several disciplines could treat the following: attention and concentration, orientation, memory and new learning, information processing, reasoning and problem solving processes,

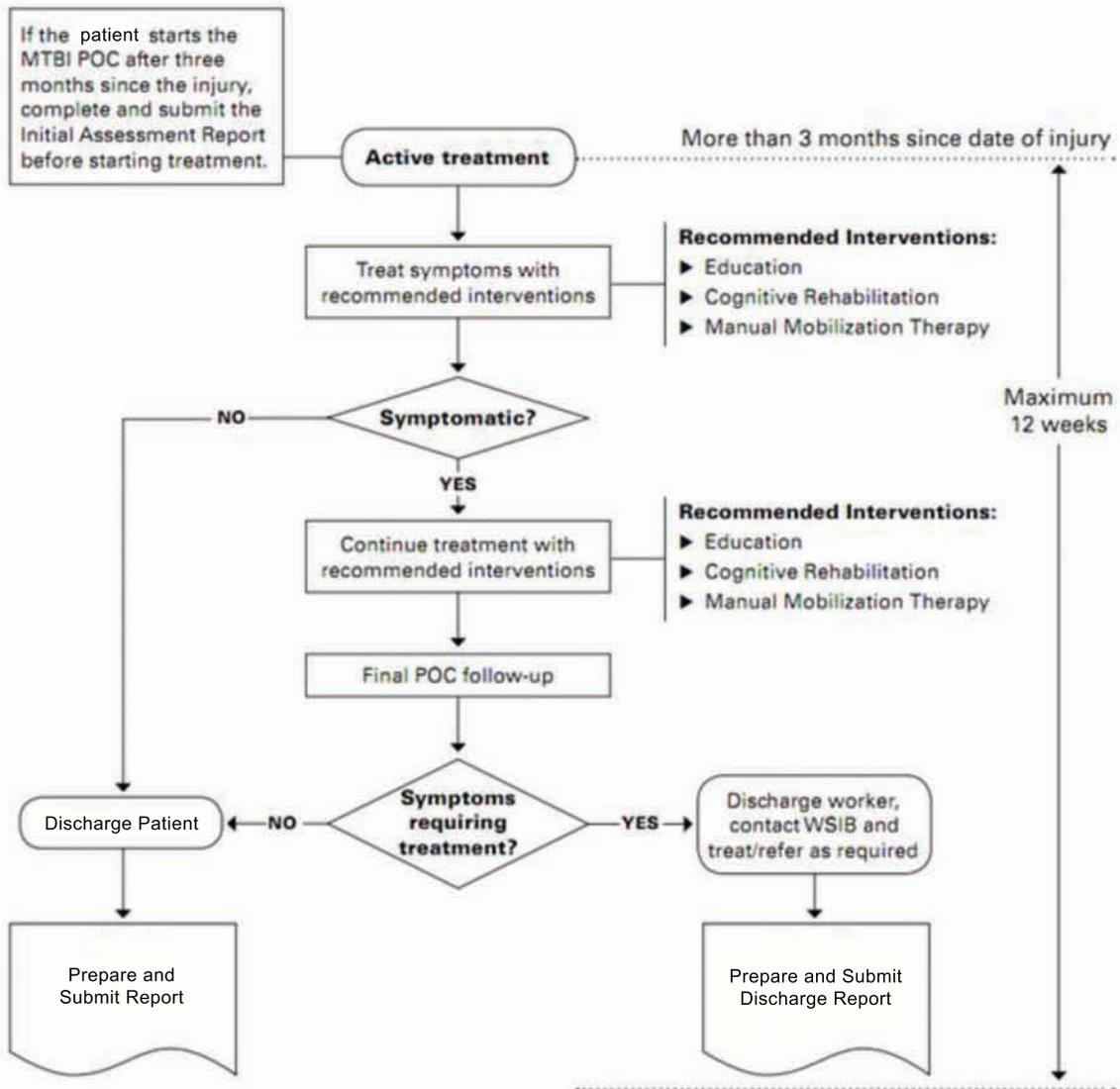
executive functions and metacognitive processes, insight, judgement and adjustment to disability, consideration of vision, hearing, olfaction, pain, fatigue, and sensory motor skills.

### C. Manual Mobilization Therapy

There was good evidence showing manual mobilization therapy to be moderately effective in treating post-traumatic headache. Mobilization consists of passive movements of the joint within its normal physiological range. The treatment is based on the principle that precise localization of tenderness and segmental hypomobility can be diagnosed by detailed examination of the neck, the so-called segmental spine examination. Since the upper part of the thoracic spine and cervical spine are functionally connected, the upper six thoracic segments have been involved in the examination and treatment. The treatments are provided according to the result of the segmental examination. At each session, two or three segments are treated. ATs are reminded that spinal manipulation/mobilization is a controlled act and may be performed only by ATs who are competent to perform the procedure safely and effectively or under a lawful delegation from a member of a regulated health care profession who is authorized to perform the procedure himself/herself.



Algorithm: Active Treatment and Education Stream



**NOTE:** At discharge complete both the Rivermead and RAND SF-36 questionnaires and record the scores on the Discharge Report.