Tools and resources

The following are suggestions of tools and resources that can be used to support the implementation of the recommendations in this section. Healthcare professionals must respect the legal and normative regulations of the regulatory bodies, in particular with regards to scopes of practice and restricted/protected activities, as these may differ provincially.

SECTION 1: Components of the Optimal TBI Rehabilitation System

A. Key Components of TBI Rehabilitation

Clinical Tools:
- Glasgow Coma Scale (GCS)
- Mayo-Portland Adaptability Inventory – 4 (MPAI-4)
- Functional Independence Measure (FIM) and Functional Assessment Measure (FAM)
- Disability Rating Scale
- JFK Coma Recovery Scale – Revised (CRS-R)
- Modified Ashworth Scale
- Quality of Life after Brain injury (QOLIBRI)
- Rancho Levels of Cognitive Functioning Scale
- Crisis Prevention Institute (CPI) materials
- Comportements perturbateurs en réadaptation – Trousse d’intervention (Disruptive behaviour in rehabilitation – Intervention Kit) – IRDPQ, CIUSSS CN (in French only)
- Plan d’intervention individualisé (PII) – Guide d’élaboration et de révision (Example of an Interdisciplinary intervention plan – User guide) – CRDP InterVal, CIUSSS MCQ (in French only)
- Plan d’intervention individualisé (Example of an Interdisciplinary intervention plan) – CRDP InterVal, CIUSSS MCQ (in French only)
- Length of Stay (LOS) – Reference table

Patient and Family Resources:

Other Resources:
- Liste des installations offrant des services de réadaptation pour la clientèle adulte ayant subi un TCC modéré ou sévère – province de Québec (List of facilities offering rehabilitation services for adult with moderate or severe TBI – Province of Quebec) (in French only)
- Exemple d’un protocole d’entente (Standing agreement / transfer / collaboration protocols between acute and rehabilitation facilities) (in French only)
- Rehabilitation Measures Database
- The Center for Outcome Measurement in Brain Injury (COMBI)
- TBI Model Systems National Data and Statistical Center
- Access Data and Reports from the Canadian Institute for Health Information (CIHI)
- National Rehabilitation Reporting System Metadata
- For substance abuse see Section S. Substance Use Disorders for tools and resources
- For Neurobehaviour and Mental Health see Section R. Neurobehaviour and Mental Health for tools and Resources

To be Developed Locally:
- Clearly defined admission criteria – including clear definition of what is a medically stable and rehab ready condition.
SECTION 1: Components of the Optimal TBI Rehabilitation System

B. Management of Disorders of Consciousness

Clinical Tools:
- The Spaulding Disorders Of Consciousness Comprehensive Evidence-Based Assessment Battery (DOC COMPASS)
- Glasgow Coma Scale (GCS)
- Wessex Head Injury Matrix (WHIM)
- Sensory Modality Assessment and Rehabilitation Technique (SMART)
- JFK Coma Recovery Scale – Revised (CRS-R)
- Royal College of Physicians guidelines

Patient and Family Resource:
- Vegetative and Minimally Conscious States after Severe Brain injury – TBI Model Systems Knowledge Translation Center

Other Resource:
- ACRM Disorders of Consciousness Task Force – ACRM

C. Subacute Rehabilitation

Clinical Tools:
- Plan d’intervention individualisé (PII) – Guide d’élaboration et de révision (Interdisciplinary intervention plans – User guide) – CRDP InterVal, CIUSSS MCQ (in French only)
- Plan d’intervention individualisé (Interdisciplinary intervention plan) – CRDP InterVal, CIUSSS MCQ (in French only)
- Pittsburgh Rehabilitation Participation Scale
- Discharge Planning Guidelines
- Length of Stay (LOS) – Reference table

Other Resource:
- Elements of the RCA capacity-planning tool

D. Promoting Reintegration and Participation

Clinical Tools:
- Mayo-Portland Adaptability Inventory – 4 (MPAI-4)
- LIFE-H (RIPPH)
- Work-Ability Support Scale
- Work Role Functioning Questionnaire (in French only)
- How to Conduct a Post-discharge Follow-up Phone Call Toolkit – Agency for Healthcare Research and Quality (AHRQ)
- Goal Attainment Scaling
- Activity Card Sort
- Activity Measure for Post Acute Care
SECTION 1: Components of the Optimal TBI Rehabilitation System

- **Components of the Vocational Evaluation following mTBI (Appendix 12.1)** from the ONF Adult mTBI guidelines Return to Work Considerations (adapted from Stergiou-Kita 2012)
- **Identification des meilleures pratiques de remédiation des fonctions cognitives reliées à la conduite automobile chez les personnes ayant subi un traumatisme craniocérébral modéré ou grave** (Identification of Best Practices for Remediation of Cognitive Functions Related to Driving for People with Moderate to Severe Traumatic Brain Injury) – IRDPQ, CIUSSS CN (in French only)
- **L’évaluation des capacités reliées au travail pour une clientèle présentant une déficience physique – Guide de pratique à l’intention des ergothérapeutes** (Assessment of work-related abilities for people with physical disabilities – Practice Guide for Occupational Therapists) – IRSST (in French only)

Patient and Family Resources:
- **Guide en soutien à la famille** (Guide to Family Support – For The Parents of a Child or an Adult with a disability) – OPHQ (in French only)
- **Factsheet for Driving After Traumatic Brain Injury** – TBI Model Systems KT Center
- **Medical Review Section** – Ontario Ministry of Transportation Fact
- **Fatigue au volant – Guide de gestion de la fatigue** (Fatigue while driving) – SAAQ (in French only)
- For Ontario: **Ontario Brain Injury Association** (OBIA) – Directory of Services **Peer Support Programs** offered through local brain injury associations
- For Quebec: **Regroupement des associations de personnes traumatisées craniocérébrales du Québec** (RAPTCCQ) **Office des personnes handicapées** – Gouvernement du Québec
- **Kéroul** – Tourisme et culture pour les personnes à capacité physique restreinte

Other Resource:
- **Canadian council of Motor transport Administrators**; CCMTA Medical Standards 2009

E. Caregivers and Families

Patient and Family Resources:
- **Peer Support Programs** offered through local brain injury associations
- **Ontario Caregiver Coalition**
- **Regroupement des associations de personnes traumatisées craniocérébrales du Québec** (RAPTCCQ)
- **Taking Care of YOU: Self-Care for Family Caregivers** – Family Caregiver Alliance: National Center on Caregiving
- **La maman de Simon a eu un accident – cahier de l’enfant** (Simon’s Mother Had an Accident – Child’s Notebook) – IRDPQ, CIUSSS CN (in French only)
- Movie: **The crash reel – the ride of a lifetime**

Other Resource:
- **Hospital Discharge** – Family Caregiver Alliance: National Center on Caregiving

F. Brain Injury Education and Awareness

Patient and Family Resources:
- **Information for people with TBI** – BrainLine
- **Caregiving and TBI** – BrainLine
- **Materials on living with brain injury** – OBIA
- **Traumatic Brain Injury – Brochure Intended for Victims and Family Members** – SAAQ
- **Traumatisme crânien : des témoignages** (Brain Injury: testimonials) – RAPTCCQ (in French only)
SECTION 1: Components of the Optimal TBI Rehabilitation System

- *Guide d’information à l’intention des familles de personnes ayant subi un traumatisme cranio-cérébral modéré ou sévère* (Guide for Families of Individuals with Moderate or Severe Traumatic Brain Injury) – HSCM (in French only)
- *La maman de Simon a eu un accident – cahier de l’enfant* (Simon’s Mother Had an Accident – Child’s Notebook) – IRDPO, CIUSSS CN (in French only)
- Movie: *The crash reel – the ride of a lifetime*

Other Resources:
- *2012 OBIA Impact Report is a statistical snapshot of ABI and its effects on survivors and caregivers* – OBIA
- *Communication with Patients and Families about TBI* – BrainLine

G. Capacity and Consent

Clinical Tools:
- *Communicative Aid for Capacity Evaluation* (CACE)
- *MacArthur Competence Assessment Tool for Treatment* (MacCat-T)
- *Assessment of Capacity for Everyday Decision-making* (ACED)
- *Mental capacity flowchart* – Decision making when patients may lack capacity
- *Tool on Capacity & Consent Ontario edition*
- *Guide de pratique : l’évaluation psychosociale dans le contexte des régimes de protection, du mandat donné en prévision de l’inaptitude et des autres mesures de protection au majeur* (Practice guide : Psychosocial assessment in the context of protective regimes, the mandate given in anticipation of incapacity and other protective measures to the person of full age) – OTSTCFQ (in French only)
- *Psychosocial Assessment on Filing an Application for Instituting Protective Supervision or Homologating a Mandate* – Curateur Public, Quebec (applicable to social workers only)
- *Medical Assessment on Filing an Application for Instituting Protective Supervision or Homologating a Mandate* – Curateur Public, Quebec
- *Module 5 – La réévaluation de l’inaptitude et du besoin de protection* (Module 5 – Capacity and Consent) – Curateur public du Québec (in French only)
SECTION 2: Assessment and Rehabilitation of Brain Injury Sequelae

H. Comprehensive Assessment of the Person with TBI

Clinical Tools:
- Cognitive Rehabilitation Manual from American Congress of Rehabilitation Medicine (ACRM)
- Algorithm for PTA (figure 2, p. 304) and Health Records Chart audit (p. 306) (INCOG publications)

To be Developed Locally:
- Family interview forms

I. Disorders of Consciousness

Clinical Tools:
- Medication Algorithm (to be used by physicians making decisions regarding Pharmacological Management of Agitation and Aggression following TBI)
- Audit Guidelines for priority, p. 315 and Algorithm Screen for PTA (Figure 1), p. 316 (INCOG publications)
- Glasgow Coma Scale (GCS)
- Wessex Head Injury Matrix (WHIM)
- Sensory Modality Assessment and Rehabilitation Technique (SMART)
- JFK Coma Recovery Scale – Revised (CRS-R)
- Westmead Post-Traumatic Amnesia (PTA) Scale
- Galveston Orientation and Amnesia test (GOAT)
- The Orientation Log (O-Log)
- Rancho Levels of Cognitive Functioning Scale
- Royal College of Physicians guidelines

Patient and Family Resources:
- Vegetative and Minimally Conscious States after Severe Brain injury – TBI Model Systems Knowledge Translation Center
- Rancho Los Amigos Scale: A Guide for Family and Friends

Other Resources:
- Videos of different stages of TBI and recovery process – Craig Hospital
- ACRM Disorders of Consciousness Task Force - ACRM

J. Cognitive Functions

Clinical tools:
- Cognitive Rehabilitation Manual – ACRM
- Guide des meilleures pratiques en réadaptation cognitive (Guideline of best practices in cognitive rehabilitation) – Presses de l’Université du Québec (in French only)
- Cognitive behaviour therapy for TBI manual – Guidebook for Psychologists: Working with Clients with Traumatic Brain Injury
- Medication use for physicians: UpToDate or DynaMed resources
SECTION 2: Assessment and Rehabilitation of Brain Injury Sequelae

- **Indications of use (Health Canada) and insurance coverage (for Quebec only) for the Pharmacological Management of TBI related Impairments**
- **Specific Activities, Devices and Tools** (p. 332, p. 375-76) and Attention algorithm (p. 333) (INCOG publications)
- **Intervention tools** (p. 371) (INCOG publications)
- **Executive Function and Self-awareness Algorithm** (Figure 1, p. 347) (INCOG publications)

**Patient and Family Resource:**

- **QCARD App** for the iPhone (not yet available for android)
- Environment criteria for J 2.2 [Reference to 1.2.2]

**K. Cognitive Communication**

**Clinical Tools:**

- **Algorithm for impaired Communication and Cognitive-Communication Rehabilitation, p. 362** (INCOG publications)
- **Practice Standards Section** - College of Audiologists and Speech-Language Pathologists of Ontario (CASLPO’s)
- **Speech Pathology Database of Best Interventions and Treatment Efficacy** – (speechBITE)
- **Cognitive-communication CHECKLIST for Acquired Brain Injury** (CCCABI)
- **Group interactive structured treatment** (GIST): a social competence intervention for individuals with brain injury
- **Improving First Impressions: A Step-by-Step Social Skills Program** – Australian Society for the Study of Brain Impairments
- **TBI Express** – Australian Society for the Study of Brain Impairments

**L. Dysphagia and Nutrition**

**Clinical Tools:**

- **INPAC: Integrated nutrition pathway for acute care**
- Canadian nutrition screening tool (CNST) – Canadian Malnutrition Task Force
- Passy Muir Valve placement protocol
- **Dépistage précoce de la dysphagie oropharyngée** (Standardized screening for dysphagia) (in French only)
- **Dysphagia** – APNED
- **Dysphagia tools** – APNED
- **Avis : Intervention spécifique du diététiste en dysphagie** (Notice: Dietitian-specific intervention in dysphagia) – OPDQ (in French only)
- **Adult dysphagia** – American Speech-Language-Hearing Association
- **Guidelines** – American Society for Parenteral and Enteral Nutrition
- **Practice standards and guidelines for dysphagia intervention by speech-language pathologists** – College of Audiologists and Speech-Language Pathologists of Ontario (CASLPO) (2014) –
  *Note: According to existing legal and normative regulations, some of the standards proposed in this tool are not applicable to the clinical practice of speech language pathologists in the province of Quebec.*

**Patient and Family Resources:**

- **L’installation d’une gastrostomie : Guide pour le patient** (Gastrostomy installation : Patient guide – CHUS (in French only)
- Parenteral and Enteral feeding information
- **Tube feeding and parenteral nutrition** – Canadian Cancer Society

**Other Resources:**

- **Rapport d’évaluation : Pratiques optimales d’évaluation de la dysphagie pour la clientèle hospitalisée** (Evaluation report: Best practices for the assessment of dysphagia in hospital settings) – UETMIS of CHU de Québec
SECTION 2: Assessment and Rehabilitation of Brain Injury Sequelae

- Développement et implantation d’outils et de procédures interdisciplinaires pour évaluer et intervenir au niveau de la santé bucco-dentaire pendant la réadaptation : Projet SAGE, rapport synthèse (Development and implementation of tools and procedures to assess and provide interventions related to oral and dental health during rehabilitation: Projet SAGE; Summary report) – CIUSSS du Centre-Sud-de-l’Île-de-Montréal, Installation Gingras-Lindsay-de-Montréal (in French only)
- Oral Health FactSheet for Dental Professionals

M. Motor Function and Control

Clinical tools:
- 6 minutes Walk Test
- 10 Meter Walk Test
- Berg Balance Scale
- Community Balance and Mobility Scale
- Purdue Pegboard Test
- Neurology Treatment Techniques – Physiopedia
- The effectiveness of gaming technology in neurological rehabilitation – Physiopedia
- Gait Training – Physiopedia
- Hydrotherapy-Balneotherapy – Physiopedia
- Constraint Induced Movement Therapy – Physiopedia
- Electrical Stimulation in Stroke and Brain Injury (2002)
- Mirror Therapy – Physiopedia
- Therapeutic Modalities – Physiopedia
- Hemi Arm Protocol, Management of the Hemiplegic-Arm: Implementing a Best Practice Protocol

Other Resources:
- Information on Botulinum Toxin injections – Dystonia Canada
- Physiopedia

N. Sensory Impairment

Clinical Tools:
- Cognitive Rehabilitation Manual - ACRM

Patient and Family Resources:
- What is Balance and Vestibular Rehabilitation Therapy? – BrainLine
- Vision Problems and Traumatic Brain Injury – Model Systems Knowledge Translation Center
- Vision and Rehabilitation After Brain Trauma – BrainLine

Other Resource:
- Neuro-Optometric Rehabilitation Association (NORA)
SECTION 2: Assessment and Rehabilitation of Brain Injury Sequelae

O. Fatigue and Sleep Disorders

Clinical Tools:
- Insomnia severity index (Morin, 1993)
- Pittsburgh sleep quality index (Buysse et al., 1989)
  English contact person: Daniel J. Buysse, M.D. at buyssedj@upmc.edu
- Fatigue severity scale (Krupp et al., 1989)
- Indications of use (Health Canada) and insurance coverage (for Quebec only) for the Pharmacological Management of TBI related Impairments

Patient and Family Resources:
- Sleep Comic – TBI Model Systems Knowledge Translation Center
- Fatigue and TBI – TBI Model Systems Knowledge Translation Center

P. Pain and Headaches

Clinical Tools:
- Medication Algorithm (to be used by physicians making decisions regarding Pharmacological Management of Agitation and Aggression following TBI)
- Visual Analogue Scale
- Numeric Pain Rating Scale
- McGill Pain Questionnaire
- Headache Disability Inventory
- BECK Depression Inventory (BDI) and BECK Anxiety Inventory (BAI)
- The International Classification of Headache Disorders – 3rd edition
- Indications of use (Health Canada) and insurance coverage (for Quebec only) for the Pharmacological Management of TBI related Impairments

Patient and Family Resource:
- Traumatic Brain Injury and Headaches – TBI Model Systems Knowledge Translation Center

Other Resources:
- The Canadian Pain Society
- Association Québécoise de la douleur chronique
- Chronic Pain Association of Canada

Q. Psychosocial / Adaptation Issues

Clinical Tools:
- The Role Checklist
- Guide de la sexualité des traumatisés cérébraux : La sexualité traumatisée (Guide on the sexuality of the brain injured: The traumatized sexuality) – ESPARR (in French only)

Patient and Family Resources:
- Emotional issues After Traumatic Brain Injury – TBI Model Systems Knowledge Translation Center
- Sexuality After Traumatic Brain Injury – TBI Model Systems Knowledge Translation Center
- Couples’ Relationships After Traumatic Brain Injury – TBI Model Systems Knowledge Translation Center
SECTION 2: Assessment and Rehabilitation of Brain Injury Sequelae

- For Ontario: Peer Support Programs offered through local brain injury associations
  Ontario Brain Injury Association (OBIA) – Directory of Services
- For Quebec: Association québécoise pour le loisir des personnes handicapées
  Kéroul – Tourisme et culture pour les personnes à capacité physique restreinte

R. Neurobehaviour and Mental Health

Clinical Tools:
- Medication Algorithm (to be used by physicians making decisions regarding Pharmacological Management of Agitation and Aggression following TBI)
- Rancho Levels of Cognitive Functioning Scale
- Galveston Orientation and Amnesia test (GOAT)
- Overt Behaviour Scale (OBS)
- Agitated Behaviour Scale
- Mini-Mental State Examination (MMSE)
- BECK Depression Inventory (BDI)
- Canadian Network for Mood and Anxiety Treatments (CANMAT)
- Cognitive behaviour therapy for TBI manual – Guidebook for Psychologists: Working with Clients with Traumatic Brain Injury
- The BC Guidelines – Major Depressive Disorder in Adults: Diagnosis & Management
- Medication use for physicians: UpToDate or DynaMed resources
- Indications of use (Health Canada) and insurance coverage (for Quebec only) for the Pharmacological Management of TBI related Impairments
- Medication Adverse Side Effects: CANMAT Guidelines document table

Patient and Family Resources:
- Brochure intended for victims and family members – SAAQ
- Interventions for Behavioral Problems After Brain Injury – BrainLine
- Positive Coping with Health Conditions, A Self-Care Workbook (Dan Bilsker, Joti Samra, Elliot Goldner)

Other Resources:
- Programme pour les personnes présentant un trouble grave du comportement (Program for Persons with Severe Behavior Disorder) – CR Lucie-Bruneau, CIUSSS Centre-Sud-de-l’Île de Montréal (in French only)
- Neurological exam example (video)
- Mindfulness-Based Cognitive Therapy for Acquired Brain Injury – ONF ABI Webinar
SECTION 2: Assessment and Rehabilitation of Brain Injury Sequelae

S. Substance Use Disorders

Clinical Tools:
- Cut, Annoyed, Guilty, Eye-Opener – Adapted to include Drugs (CAGE-AID)
- Substance Abuse Subtle Screening Inventory (SASSI)
- Alcohol Use Disorders Identification Test (AUDIT)
- AUDIT manual
- Michigan Alcoholism Screening Test (MAST)
- Assessment and Screening of Assistance Needs – Alcohol/Drug (DEBA)
- Substance Abuse and Brain Injury (SUBI) materials
- Guideline for Alcohol and Substance Use Screening, Brief Intervention, Referral to Treatment, Colorado Clinical Guidelines Collaborative (2008)

Patient and Family Resources:
- Alcohol & TBI – Factsheets – TBI Model Systems Knowledge Translation Center
- Traumatisme cranio-cérébral et alcool : un dangereux mélange! (Traumatic Brain Injury and Alcohol: A Dangerous mix!) – CUSM (in French only)
- Le traumatisme craniocérébral et la consommation à risque (Traumatic Brain Injury and high-risk substance use) – HSCM (in French only)

Other Resource:
- Canadian center on Substance Use and Addiction

T. Medical / Nursing Management

Clinical Tools:
- JFK Coma Recovery Scale – Revised (CRS-R)
- Patient Health Questionnaire (PHQ-9)
- Generalized anxiety Disorder 7-item (GAD-7)
- Agitated Behaviour Scale
- Galveston Orientation and Amnesia test (GOAT)
- Deep Vein Thrombosis: Diagnostic (Clinical Guide) – Thrombosis Canada
- Guidelines for Management of Neurogenic Bowel Dysfunction in Individuals with Central Neurological Conditions
- Provincial guidelines for the management of epilepsy in adults and children – Critical Care Services Ontario Guideline 2015
- American Association of Clinical Endocrinologists – Guideline
- Bowel/Bladder screening Developed by Rehab Stroke Best Practice Team Vancouver Island Health Authority (2004)
- Example of Passive and Assistive Range of Motion Exercises
- Standardized urinary function retraining program
- Indications of use (Health Canada) and insurance coverage (for Quebec only) for the Pharmacological Management of TBI related Impairments

Patient and Family Resources:
- Venous Thromboembolism (VTE) Pocket Cards
- Heterotopic Ossification – Craig Hospital

Other Resources:
- Bladder re-education basic Information – Patient
- Mild Traumatic Brain Injury: Neuroendocrine Dysfunction – Defense Centers or Excellence