Navigating the INESSS-ONF Clinical Practice Guideline for the Rehabilitation of Adults with Moderate to Severe Traumatic Brain Injury in Canada

Judy Gargaro
Clinical and Systems Implementation
Ontario Neurotrauma Foundation

BIAWE Workshop, Windsor, ON
June 28, 2017
An inter provincial partnership

INESSS-ONF Guideline Development Team:

- **Bonnie Swaine**, PhD, Center for interdisciplinary research in rehabilitation (CRIR) & Université de Montréal,
- **Corinne Kagan**, BA., BPS Cert. – ONF
- **Catherine Truchon**, Ph.D., MSc. Adm – INESS
- **Shawn Marshall**, MD, MSc (Epi), FRCPC, Ottawa Hospital Research Institute & University of Ottawa
- **Marie-Eve Lamontagne**, Ph.D. Université Laval, CIRRIS

Project coordinators

- **Ailene Kua**, M.Sc (ONT), **Anne-Sophie Allaire**, M.Sc (QC) & **Pascal Marier-Deschenes** (QC)
- +++ Collaborators
Learning objectives

- Recognize the topics and clinical resources contained in the INESSS-ONF Clinical Practice Guideline for use with persons with moderate to severe TBI;

- Identify components of the INESSS-ONF guideline website for future navigation;

- Identify relevant priorities for improving the quality and efficacy of TBI rehabilitation;

- Understand the process for implementation
What is a Guideline?

- What is evidence-based practice?
- Why are guidelines needed?
- Who uses guidelines?
Evidence-Based Practice

• The conscientious, explicit and judicious use of the current best evidence in making decisions about the care of individual patients. (Sackett, 1996, BMJ 312, 71-72)

• Clinicians who want to use EBP must find trusted and readily accessible sources for the best evidence, relevant to their practice area.
Clinical Practice Guidelines

- Systematically developed statements that help clinicians and patients identify and deliver appropriate health care

- Scientific evidence
- Clinical expertise
- Patients’ opinions and preferences

Systematic production process

Clinical practice guidelines
Why Guidelines?

• Identify the nature, volume and quality of research evidence supporting clinical recommendations

• Improve decision making and ultimately, clinical outcomes

• Improve consistency of care

• Inform patients and other stakeholders regarding the treatment they should be receiving

• Influence health policy to enhance treatment efficiency and access to services

Guideline Development and Adaptation

1. Review and evaluation of existing CPGs
   May – Nov. 2013

2. Validation of the end-users’ needs and expectations

3. Synthesis of all existing documentation and evidence
   Mar. – Nov. 2014

4. Consensus process amongst experts
   Nov. 2014

5. Adaptation of the recommendations and production of the guidelines
   Nov. 2014 – May 2015

Final Product

- INESSS-ONF Guideline
- Implementation/Evaluation: INESSS-ONF Guideline
  May 2015 – May 2016
- Fall 2016

Guideline Development Process

Presentations/Publications

Further input from panel experts

Refinement

Agreement

External Review

INESSS-ONF Guideline: Final Product
Validation of the end-users’ needs and expectations

- **Survey of end-users needs & expectations**
  - 53% were not aware of any CPGs for the rehabilitation of adults with moderate and severe TBI

- **Identification of relevant topics**
  - Comments and suggestions regarding new elements

- **Key implementation process elements**
  - Want training and think use of the CPG by the colleagues/team would facilitate implementation
### Stakeholder consultation: Guidelines topics

<table>
<thead>
<tr>
<th>Response</th>
<th>Chart</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access mechanisms</td>
<td></td>
<td>25%</td>
<td>78</td>
</tr>
<tr>
<td>Continuity-of-care mechanisms</td>
<td></td>
<td>59%</td>
<td>183</td>
</tr>
<tr>
<td>Coordination mechanisms</td>
<td></td>
<td>36%</td>
<td>111</td>
</tr>
<tr>
<td>Duration of interventions</td>
<td></td>
<td>66%</td>
<td>204</td>
</tr>
<tr>
<td>Length of stay</td>
<td></td>
<td>36%</td>
<td>113</td>
</tr>
<tr>
<td>Intensity / frequency of interventions</td>
<td></td>
<td>79%</td>
<td>246</td>
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<tr>
<td>Rehabilitation models or reference frameworks</td>
<td></td>
<td>74%</td>
<td>229</td>
</tr>
<tr>
<td>Program evaluation measures</td>
<td></td>
<td>44%</td>
<td>137</td>
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<tr>
<td><strong>Total Responses</strong></td>
<td></td>
<td><strong>310</strong></td>
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<tr>
<td>Response</td>
<td>Chart</td>
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<tr>
<td>-------------------------------------------------------------------------</td>
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<td></td>
<td></td>
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<tr>
<td>Incidence and prevalence of TBI and its associated conditions</td>
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<tr>
<td>General physical health</td>
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<td></td>
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<tr>
<td>TBI-related conditions (e.g.: heterotopic ossification)</td>
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<tr>
<td>Epilepsy and other neurological disorders</td>
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<td>Endocrine disorders</td>
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<tr>
<td>Vestibular and sensory impairments</td>
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<tr>
<td>Diet and nutrition</td>
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<tr>
<td>Motor impairments</td>
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<td>Cognitive function impairments</td>
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<td>Communication</td>
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<tr>
<td>Behaviour disorders</td>
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<tr>
<td>Orthotic devices and technical aids</td>
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<td>Positioning and mobility</td>
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<td>Pain management</td>
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<tr>
<td>Fatigue and sleep disturbances</td>
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<td></td>
<td></td>
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<tr>
<td>Sexuality</td>
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<tr>
<td>Mental health (psychological and emotional conditions)</td>
<td></td>
<td></td>
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<tr>
<td>Pharmacological treatments</td>
<td></td>
<td></td>
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<tr>
<td>Substance abuse</td>
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<tr>
<td>Alternative medicine (e.g.: acupuncture)</td>
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<td></td>
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<tr>
<td>TBI education</td>
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<tr>
<td>Vegetative state and individuals with low potential for recovery</td>
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</tbody>
</table>

Total Responses 303
GUIDELINE CONSENSUS CONFERENCE
NOV 26 & 27, 2014

CLINICAL PRACTICE GUIDELINE
FOR THE REHABILITATION OF ADULTS WITH MODERATE TO SEVERE TBI
Expert Panel

PROJECT TEAM
- Anne-Sophie Allaire
- Mark Bayley
- David Caplan
- Mario De Bellefeuille
- Corinne Kagan
- Ailene Kua
- Shawn Marshall
- Bonnie Swaine
- Catherine Truchon

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- Stéphane Gagnier
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- Danièle Labrèche
- Marie-Claude Lemay
- Carolyn Lemsly
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- Heather MacKenzie
- Scott McCullagh
- Suzanne McKenna
- Laura Moll
- Nancie Poulin
- Colin Pryor
- Laura Rees *
- Marie-Claude Roberge
- Robert Teasell *
- Alexis Turgeon
- Diana Velikonja
- Penny Welch-West

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- Patsy McNamara
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- John Zsofcsin *
- Debbie Furlotte *

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- Élaine De Guise
- Robin Green
- Shannon Janzen
- Marie-Josée Lever
- Michelle McKerral
- Marie-Christine Ouellet
- Mary Stergiou-Kita

DECISION-MAKERS and CONSUMER ASSOCIATION REPRESENTATIVES
- Gilles Bourgeois
- Jonathan Jean-Vézina
- Danie Lavoie
- Charissa Levy
- Jean-François Lupien
- Ruth Wilcock

* Advisory Committee Members
## Recommendations Matrix

### Principles/Approaches to Rehabilitation Across Continuum

<table>
<thead>
<tr>
<th>A1.1</th>
<th>General Principles for Organization of Rehabilitation Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1.1.1</td>
<td>Every patient with a moderate to severe acquired brain injury should have access to timely specialized interdisciplinary rehabilitation services.</td>
</tr>
<tr>
<td></td>
<td>(ABIKUS 2007, G2, p. 16)</td>
</tr>
<tr>
<td>A1.2</td>
<td>Interdisciplinary protocols or integrated care pathways should be in place for management of common problems.</td>
</tr>
<tr>
<td></td>
<td>(ABIKUS 2007, G5, p. 16)</td>
</tr>
<tr>
<td>A1.3</td>
<td>Care should follow a client centered approach responding to the needs and choices of persons with moderate to severe Acquired Brain Injury (ABI) as they evolve over time.</td>
</tr>
<tr>
<td></td>
<td>(ABIKUS 2007, G1, p. 16)</td>
</tr>
<tr>
<td>A1.4</td>
<td>Common goals of the team should be consumer centered.</td>
</tr>
<tr>
<td></td>
<td>(NZGG 2007, 4.4, p. 76)</td>
</tr>
<tr>
<td>A1.5</td>
<td>A holistic view should be taken of the person with traumatic brain injury and their care(s) within the context of their wider family and social networks.</td>
</tr>
<tr>
<td></td>
<td>(NZGG 2007, 13, p. 158)</td>
</tr>
<tr>
<td>A1.6</td>
<td>Rehabilitation programs should be developed in collaboration with family, caregivers or nursing staff to ensure that the program is carried over into daily activities.</td>
</tr>
<tr>
<td></td>
<td>(ABIKUS 2007, 698, p. 33)</td>
</tr>
<tr>
<td>A1.7</td>
<td>Health care practitioners working with people with traumatic brain injury should be aware of who the primary carers are, including both paid, formal carers and unpaid, informal carers who are usually family members.</td>
</tr>
<tr>
<td></td>
<td>(NZGG 2007, 13, p. 158)</td>
</tr>
</tbody>
</table>
Revising Recommendations / Developing Novel Recommendations

- Level of evidence used by existing guidelines varies depending on the individual methodology.

- To achieve consistency among the recommendations, the level of evidence for each recommendation was assigned the INESSS-ONF grade.

<table>
<thead>
<tr>
<th>INESSS-ONF LEVEL OF EVIDENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
</tr>
<tr>
<td><strong>B</strong></td>
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<tr>
<td><strong>C</strong></td>
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</tbody>
</table>
What Makes a Good Recommendation

A good recommendation should:

- Be short
- Be clear
- Specify who
- Specify what
- Specify how
- Specify when
- Be operationalizable
- Be implementable
- Be measurable

“It’s good that you’re eating more fresh fruit and vegetables, but be careful to chew more thoroughly.”
CLINICAL PRACTICE GUIDELINE
FOR THE REHABILITATION OF ADULTS WITH MODERATE TO SEVERE TBI
The Guideline

- Has 266 recommendations
- Addresses rehabilitative care from acute to community
- Covers all major impairments following TBI
- Is interactive, searchable, comprehensive, bilingual
- Provides the latest evidence-based practices
- Is for clinicians, managers, planners and policy makers, persons living with TBI and their families/caregivers,....
SECTION 1: Components of the Optimal TBI Rehabilitation System

A. Key Components of TBI Rehabilitation
B. Management of Disorders of Consciousness
C. Subacute Rehabilitation
D. Promoting Reintegration and Participation
E. Caregivers and Families
F. Brain Injury Education and Awareness
G. Capacity and Consent

SECTION 2: Assessment and Rehabilitation of Brain Injury Sequelae

H. Comprehensive Assessment of the Person with TBI
I. Disorders of Consciousness
J. Cognitive Functions
K. Cognitive Communication
L. Dysphagia and Nutrition
M. Motor Function and Control
N. Sensory Impairment
O. Fatigue and Sleep Disorders
P. Pain and Headaches
Q. Psychosocial / Adaptation Issues
R. Neurobehaviour and Mental Health
S. Substance Use Disorders
T. Medical / Nursing Management
Two Sections

1: Components of the Optimal TBI Rehabilitation System
   – target audience is health system leaders who are designing system

2: Assessment/Rehabilitation of TBI Sequelae
   – specific strategies targeted at clinicians
Two types of key recommendations

➢ **Fundamental Recommendations (N=11)**
  ▪ elements that rehabilitation programs need to have in place in order to build the rest of the system properly
  ▪ primarily for program managers and their leaders as they reflect upon the service conditions for optimal rehabilitation provision.

➢ **Priority Recommendations (N=104)**
  ▪ clinical practices or processes deemed most important to implement and monitor during rehabilitation
  ▪ practices most likely to bring on positive outcomes for people with TBI.
SECTION 1: Components of the Optimal TBI Rehabilitation System

A. Key Components of TBI Rehabilitation
B. Management of Disorders of Consciousness
C. Subacute Rehabilitation
D. Promoting Reintegration and Participation
E. Caregivers and Families
F. Brain Injury Education and Awareness
G. Capacity and Consent

71 recommendations:
35 new & 36 existing
10 Fundamental
24 Priority

Two main parts...
Section 1 General Principles for Organization of Rehabilitation Services

- Specialized Health Professional Training
- Case Management
- Specific Risk Management

Rehabilitation in the Acute Phase
- Management of Altered Level of Consciousness
- Transfer to Rehabilitation Services

Intensive SubAcute Rehabilitation
- Models of Traumatic Brain Injury Inpatient Rehabilitation
- Intensity and Duration of Treatment
- Discharge to the Community

Rehabilitation to promote Reintegration/ Participation in Community Roles
- Post-discharge Follow-up and Support
- Models of Community Rehabilitation
- Intensity and Duration of Community Based Therapy
- Optimizing Performance in Daily Living Tasks
- Leisure and Recreation
- Driving
- Vocational/ Education

Caregivers and Families
Brain injury Education and Awareness
Capacity and Consent
SECTION 2: Assessment and Rehabilitation of Brain Injury Sequelae

H. Comprehensive Assessment of the Person with TBI
I. Disorders of Consciousness
J. Cognitive Functions
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N. Sensory Impairment
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P. Pain and Headaches
Q. Psychosocial / Adaptation Issues
R. Neurobehaviour and Mental Health
S. Substance Use Disorders
T. Medical / Nursing Management

Two main parts...

195 recommendations:
91 new & 104 existing
1 Fundamental
80 Priority
Section 2 Assessment/Rehabilitation of TBI Sequelae

- Principles of Assessment of the Person with TBI
- Altered State of Consciousness
- Cognition Interventions
- Cognitive Communication
- Dysphagia and Nutrition Interventions
- Motor Function and Control
- Visual assessment and Rehab
- Fatigue and Sleep Disorders
- Pain and Headaches
- Psychosocial/Adaptation Issues
- Neurobehavioral / Emotional Mental Health Issues
- Special Challenges / Concomitant Issues e.g. Drug and Alcohol Use
A1. Principles for Organizing Rehabilitation Services

Recommendations

A1.1 NEW
Every individual with traumatic brain injury should have timely, specialized interdisciplinary rehabilitation services.
(Adapted from ABKUS 2007, G2, p. 16)

A 1.2 NEW
Rehabilitation interventions should be initiated as soon as the condition of the person with traumatic brain injury allows 12. (INESSS-ONF, 2015)
Suggested tool: Health Canada Indications of Use

References:
- CRABI Module 3- Efficacy and Models of Care Following an Acquired Brain Injury, p. 30, 3.3.2

A 1.3 NEW
Rehabilitation programs should have clearly stated admission criteria, which include a traumatic brain injury diagnosis, medical stability, the ability to improve through the rehabilitation process, the ability to learn and engage in rehabilitation and sufficient tolerance for therapy duration. (INESSS-ONF, 2015)
A1. Principles for Organizing Rehabilitation Services

Recommendations

A1.1 Every individual with traumatic brain injury should have timely, specialized interdisciplinary rehabilitation services.
(Adapted from ABIKUS 2007, G2, p. 16)

A1.2 Rehabilitation interventions allow 12. (INESSS-ONF, 2015)
Suggested tool: Health Canada Indications of Age

References:
- ERAB Module 3: Efficacy and Models of Care Following an Acquired Brain Injury, p. 30. 3.3.2

A1.3 Rehabilitation programs should have clearly stated admission criteria, which include a traumatic brain injury diagnosis, medical stability, the ability to improve through the rehabilitation process, the ability to learn and engage in rehabilitation and sufficient tolerance for therapy duration. (INESSS-ONF, 2015)
A1. Principles for Organizing Rehabilitation Services

Recommendations

Medications should only be prescribed by qualified physicians, and guideline users should consult the section on "Principles of medication management" before prescribing.

A1.1 NEW P-L-C

Every individual with traumatic brain injury should have timely, specialized interdisciplinary rehabilitation services.
(Adapted from ABIKUS 2007, G2, p. 16)

A 1.2 NEW P-L-B

Rehabilitation interventions should allow 12. (INESSS-ONF, 2015)

Suggested tool: Health Canada Indications of Use

References:

- CRABI Module 3- Efficacy and Models of Care Following an Acquired Brain Injury, p. 30, 3.3.2

A 1.3 NEW P-L-C

Rehabilitation programs should have clearly stated admission criteria, which include a traumatic brain injury diagnosis, medical stability, the ability to improve through the rehabilitation process, the ability to learn and engage in rehabilitation and sufficient tolerance for therapy duration. (INESSS-ONF, 2015)
## Format of the Guideline

<table>
<thead>
<tr>
<th>Section</th>
<th>-</th>
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</thead>
<tbody>
<tr>
<td>Rationale</td>
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<tr>
<td>System Implications</td>
<td></td>
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<tr>
<td>Key Indicators</td>
<td></td>
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<tr>
<td>Tools and Resources</td>
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<tr>
<td>Summary Of Evidence</td>
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</tbody>
</table>

> Open all content
1. How will you know that people have followed CPG?
   • *What are your Process Indicators?* (Measurement of presence/absence/timing/quality of care process)

2. How will you know that the person with brain injury is better because of the implementation of CPG?
   • *What are the Clinical Outcomes Measures?* (Outcome measures typically measure impairments, activity level, roles in life or quality of life domains)
**Process Indicators** *(Examples)*

- **Recommendation:** People with severe TBI who have not recovered independently in self care should be admitted to comprehensive inpatient rehabilitation as soon as they are medically stable and able to participate.
  
  **Potential Indicators:**
  
  - Proportion of people with severe TBI (i.e. GCS<9) referred to inpatient rehabilitation
  
  - Average time from injury to onset of inpatient rehabilitation

- **Recommendation:** All patients with TBI should be screened for depression during inpatient rehabilitation and at all transitions.

  **Potential Indicators:**
  
  - Proportion of TBI patients admitted to inpatient rehab with documented depression screening tool used
Outcome Measures

Measurement at patient level of recovery from brain injury

- Cognitive recovery as measured by the Wisconsin Card Sorting Test
- Physical recovery - 6 minute walk test
- Quality of Life measures
- Glasgow Outcome Scale
Implementing the Guideline

CLINICAL PRACTICE GUIDELINE
FOR THE REHABILITATION OF ADULTS WITH MODERATE TO SEVERE TBI
Implementation Goals

- Have the Guideline become part of routine practice:
  - all levels (site, regional, provincial system)
- Improve implementation of specific recommendations:
  - site/regional level
- Facilitate system priority change:
  - LHIN level
  - Ministry of Health and Long Term Care
The Implementation of the CPG

- Fundamental and priority recommendations too numerous to implement

- Surveyed 44 programs (n= 26 in Quebec, n= 18 in Ontario) about current situation, their opinions about priorities and feasibility of implementing recommendations (including potential obstacles)

- Identify a subset of recommendations not yet implemented in rehabilitation but of high priority and feasible to implement
The Process

- Collaborative process
  - Clinicians, managers, policy makers

- Evidence-based implementation process
  - Strategies, stakeholders, timing, etc.
  - Tools (workshops, auditing) & having designated time to read the guideline and familiarize with it

- Pilot projects in a few settings
Pre-Implementation Survey

- Addressed 109 priority and fundamental recommendations
- Was emailed to program managers/coordinators
- Was designed to:
  1. Determine the current level of implementation
  2. Identify the perceived level of importance and feasibility of implementation for recommendations not fully implemented
  3. Document potential obstacles to the implementation of recommendations identified as priorities in objective 2
## Pre-Implementation Survey

<table>
<thead>
<tr>
<th>#</th>
<th>RECOMMENDATION</th>
<th>LEVEL OF IMPLEMENTATION</th>
<th>LEVEL OF PRIORITY</th>
<th>LEVEL OF FEASIBILITY</th>
<th>MAIN OBSTACLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW A1.2</td>
<td>Rehabilitation interventions should be initiated as soon as the condition of the person with traumatic brain injury allows. (INESSS-ONF, 2015)</td>
<td>2 – Yes, it is implemented, but may not be followed on some occasions</td>
<td>1 – High priority</td>
<td>2 – Somewhat feasible</td>
<td>Lack of human resources</td>
</tr>
<tr>
<td>A1.6</td>
<td>Individuals with traumatic brain injury who require rehabilitation should have a case or clinical coordinator appointed at each phase of the continuum of care. (adapted from NZGS 2007, 4.3.2.1, p. 75)</td>
<td>4 – No, it is followed only occasionally, adherence to the recommendation is not systematic</td>
<td>3 – Low priority</td>
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<tr>
<td>A2.3</td>
<td>Health care professionals working with individuals having sustained a traumatic brain injury should be trained in behaviour disorders specific to traumatic brain injury in order to apply consistent neurobehavioral change strategies. (INESSS-ONF, 2015)</td>
<td>3 – It is partially implemented</td>
<td>2 – Medium priority</td>
<td>1 – Very feasible</td>
<td>To find someone to develop the training program and update it every year</td>
</tr>
<tr>
<td>B1.1</td>
<td>All individuals with a disorder of consciousness should be periodically assessed, throughout the first year post injury, by an interdisciplinary team with specialized experience in traumatic brain injury. (INESSS-ONF, 2015)</td>
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</table>

Main obstacles
Aside from the lack of time, what are the main obstacles to the implementation of this recommendation in your program?
Implementation Survey findings

<table>
<thead>
<tr>
<th>ONTARIO</th>
<th>Sent</th>
<th>Received</th>
<th>ACC</th>
<th>% recommendations “Implemented”</th>
<th>%recommendations “Not Implemented”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>8</td>
<td>6 (75%)</td>
<td></td>
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<tr>
<td>Specialized Rehab</td>
<td>12</td>
<td>8 (67%)</td>
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<tr>
<td>General Rehab</td>
<td>7</td>
<td>4 (57%)</td>
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<tr>
<td>Total</td>
<td>27</td>
<td>18 (67%)</td>
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</table>

10/12 LHINS represented among the responses

<table>
<thead>
<tr>
<th>Province</th>
<th>Acute (N=6)</th>
<th>Rehabilitation (N=12)</th>
<th>Acute (N=8)</th>
<th>Rehabilitation (N=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontario</td>
<td>70%</td>
<td>80%</td>
<td>59%</td>
<td>62%</td>
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<tr>
<td>Québec</td>
<td>59%</td>
<td>62%</td>
<td>17%</td>
<td>19%</td>
</tr>
<tr>
<td>Not implemented Recommendations for at least 50% of the respondent sites (Level of Evidence)</td>
<td>% not impl (Acute N=6)</td>
<td>% is a priority (if not impl)</td>
<td>% is feasible (if a priority)</td>
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<tr>
<td>Sec 2: J3.1 Methylphenidate (Level of evidence: B)</td>
<td>80% (4/5)*</td>
<td>50% (1/2)*</td>
<td>100% (1/1)*</td>
<td></td>
</tr>
<tr>
<td>Sec 2: T9.3 Careful drug selection and monitoring (Level of evidence: C)</td>
<td>80% (4/5)</td>
<td>100% (4/4)</td>
<td>100% (3/3)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: J3.4 Amantadine (Level of evidence: A)</td>
<td>75% (3/4)</td>
<td>66% (2/3)</td>
<td>100% (2/2)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: J6.2 Donepezil (Level of evidence: B)</td>
<td>67% (2/3)</td>
<td>0% (0/0)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Sec 1: A2.3 trained in behaviour disorders (Level of evidence: B)</td>
<td>67% (4/6)</td>
<td>75% (3/4)</td>
<td>100% (3/3)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: R10.3 Either propranolol or pindolol is recommended for the treatment of aggression (Level of evidence: A)</td>
<td>50% (3/6)</td>
<td>0% (0/2)</td>
<td>NA</td>
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<tr>
<td>Sec 2: L2.1 specialized oral and dental care (Level of evidence: B)</td>
<td>50% (3/6)</td>
<td>100% (3/3)</td>
<td>100% (3/3)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: I2.2 To minimize agitation and confusion (Level of evidence: C)</td>
<td>50% (3/6)</td>
<td>100% (3/3)</td>
<td>67% (2/3)</td>
<td></td>
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<tr>
<td>Sec 1: B1.1 disorder of (Level of evidence: C)</td>
<td>50% (2/4)</td>
<td>100% (2/2)</td>
<td>100% (2/2)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: J7.3 Strategies that encourage monitoring of performance and feedback (Level of evidence: A)</td>
<td>50% (2/4)</td>
<td>50% (1/2)</td>
<td>100% (1/1)</td>
<td></td>
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<tr>
<td>Sec 2: M5.1 assessed equipment or adaptations (Level of evidence: C)</td>
<td>50.00% (3/6)</td>
<td>66% (2/3)</td>
<td>100% (2/2)</td>
<td></td>
</tr>
<tr>
<td>Not implemented Recommendations for at least 50% of the respondent sites (Level of Evidence)</td>
<td>% not implemented (Rehab N=12)</td>
<td>% is a priority (if not impl)</td>
<td>% is feasible (if a priority)</td>
<td></td>
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</tr>
<tr>
<td>Sec 1: A 2.2 Collaboration and continuity with addiction /substance use (Level of evidence: C)</td>
<td>83% (10/12)*</td>
<td>80% (8/10)*</td>
<td>100% (6/6)*</td>
<td></td>
</tr>
<tr>
<td>Sec 1: A 2.1 Collaboration and continuity with mental health (Level of evidence: C)</td>
<td>82% (9/11)</td>
<td>89% (8/9)</td>
<td>88% (7/8)</td>
<td></td>
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<tr>
<td>Sec 2: R10.5 amantadine or methylphenidate (Level of evidence: B)</td>
<td>67% (6/9)</td>
<td>60% (3/5)</td>
<td>66% (2/3)</td>
<td></td>
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<tr>
<td>Sec 2: Q 1.3 sexuality (Level of evidence: C)</td>
<td>64% (7/11)</td>
<td>50% (3/6)</td>
<td>100% (3/3)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: J6.2 Donepezil (Level of evidence: B)</td>
<td>56% (5/9)</td>
<td>40% (2/5)</td>
<td>100% (2/2)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: O2.4 treatment of sleep disorders (Level of evidence: C)</td>
<td>55% (6/11)</td>
<td>33% (2/6)</td>
<td>100% (2/2)</td>
<td></td>
</tr>
<tr>
<td>Sec 1: A 2.3 trained in behaviour disorders (Level of evidence: B)</td>
<td>50% (6/12)</td>
<td>100% (5/5)</td>
<td>100% (5/5)</td>
<td></td>
</tr>
<tr>
<td>Sec 1: C 3.10 discharge report and the patient care plan (Level of evidence: C)</td>
<td>50% (6/12)</td>
<td>50% (3/6)</td>
<td>100% (3/3)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: T9.2 pharmacological treatment (Level of evidence: C)</td>
<td>50% (5/10)</td>
<td>80% (4/5)</td>
<td>100% (4/4)</td>
<td></td>
</tr>
<tr>
<td>Sec 2: R10.3 Either propranolol or pindolol is recommended for the treatment of aggression (Level of evidence: A)</td>
<td>50% (5/10)</td>
<td>75% (3/4)</td>
<td>100% (3/3)</td>
<td></td>
</tr>
</tbody>
</table>
Findings from Survey

• **Significant differences across sites were found:**
  • Motivation and capacity for engaging in implementation
  • Availability of resources, and regional priorities and funding

• **Common themes:**
  • Promote collaboration across Acute, Inpatient and Outpatient Rehabilitation and Community-based services
  • Develop a Community of Practice to share best practices and tools, and establish a provincial TBI Report Card
  • Improve collaboration with mental health and addiction services
  • Increase capacity to identify and manage challenging behaviours
  • Use consistent discharge, transfer and follow-up protocols
  • Focus on sustainability and evaluation within individual sites
Survey Follow up

• Overall summary report for provinces and individual sites prepared
• Recommendations not implemented were highlighted in the context of similar settings in the province
• Follow up was made to help identify implementation projects. Sites were asked to reflect on:
  • Specific recommendations that are a priority to implement
  • Past successful and unsuccessful implementation activities
  • Available resources (staff, tools and funding) to support implementation
  • Regional pressures likely to impact on recommendation implementation
  • Gaps in tools, resources and support
ONF facilitation role

- Assist with planning and enacting implementation projects
- Assist with developing capacity and resources (tools and strategies) for implementation
- Focus on sustainability (local, region, province)
- Hope for scalability across province
  - shared resources
  - community of practice
  - push for systematic improvements and policy change at the LHIN/province level
  - provincial report card/strategy
Survey-Responder sites

ONF follow-up to ascertain level of interest:

- Which recommendations do you wish to implement?
- What support would you like from ONF?
- Who (at your site, from other sites, LHIN) should be part of the implementation process?

- Willingness to be part of a shared network of providers?
- Support the creation of an *TBI Report Card*?
Common Areas for Implementation

- Collaboration with Mental Health and Addiction services
- Capacity to manage challenging behaviours
- Clinical Coordination
- Discharge protocols and follow up
Rehab Site

Acute Site

Community-based

TBI

Mental Illness

Addiction

INESSS-ONF CPG

ABI Implementation Programme
Dissemination

Preliminary Steps

Implementation plan

Implementation process

Evaluation

Sustainability
Implementation Planning Processes

SLOW DOWN AND PLAN: RESIST RUSH TO ACTION

- Identify implementation processes (e.g. clinical, administrative process change, equipment)
- Identify stakeholders
- Adapt the recommendation(s) to local context
- Identify barriers and facilitators
- Determine training and capacity-building strategies
- Establish timetable and budget
- Introduce appropriate process indicators
- Plan for sustainability
Evaluation Framework

From: Straus, S.E., Moore, J.E., and Khan, S. (2017) "Planning for Implementation and Sustainability workshop." Knowledge Translation Program, St. Michaels Hospital, Toronto, Ontario
Process Evaluation

Percentage of staff participating
Assessment of quality of implementation:
  • Adherence/fidelity to processes
  • Reach and Responsiveness
Outcome Evaluation

- Are we meeting our goals?
- Have the skills, capacity, behaviour, changed?
- Have clinical outcomes changed?
Evaluation Methods

- Observation
- Implementer Self-Report
- Administrative Documents
- Objective clinical data
- Participant Self-Reports
• Review System, Organizational/Community and individual factors
• Identify timeline for ongoing review
• Collaborate on advocacy efforts for provincial strategies (funding/policy)
Longer Term Goals

Identify Opportunities for:

- Spread
- Scale up
Key Implementation Questions

- Who are the potential partners?
- Who should be on the Implementation Team

- How consistent should we be across settings/sectors/the province?

- How do we mitigate/eliminate the barriers?
  - Locally
  - Provincially
  - Whose role is it to advocate?
Implementation Next Steps

- Facilitation of the projects using the Knowledge to Action Process
- Active cultivation of relationships and networks
- Promotion of implementation documentation and evaluation
- Facilitation of sustainable practices
- Understanding the political landscape to advocate for governmental support of the CPG
Conclusions

- Potential users of the CPG and stakeholders at the system and partner levels (professional regulating bodies, regional healthcare authorities) were actively involved in the Exploration phase.

- The implementation model is grounded in collaboration to increase success of implementation and promote sustainability.

- By using Partial Implementation in early-adopter sites we hope to scale up to Full Implementation broadly across the province.
Summary

- CPGs are important to evidence-based practice
- CPG has been adapted to improve TBI rehabilitation in Ontario and Québec
- Website provides a repository of recommendations, rationale tools, indicators, and evidence summaries
- Implementation of the CPG is starting across the province
Discussion Case Example

- ALEC: 32 yr old male involved in an MVC
  - Married with a 12-yr old son
  - Occupation: electrician
  - Injury details:
    - GCS-4
    - Intracranial injury;
    - Left subarachnoid hemorrhage with bilateral temporal bone fractures and bilateral aspiration;
    - Pulmonary embolism;
    - Right sided facial nerve paralysis secondary to his temporal bone fracture;
    - Persistent hypoxia
Symptoms: Physical

- Daily headaches
- Weakness on right side
- Increased fatigue; highly disrupted sleep pattern
- Facial weakness impacting speech
- Lack of satiety (feeling full) after eating
Symptoms: Cognitive

- Memory - moderate to severe problems remembering new information and appointments
- Attention - easily distracted; loses focus during sessions or when completing tasks at home
- Executive function - organization and planning impairments - doesn’t change clothes unless cued; needs cues to complete the steps of daily activities i.e. cooking or shaving; lacks initiation of tasks
- Difficulties with time management and tracking time passage - following a schedule and completing a task
- Speech - slurred speech
- Language - word-finding and word substitution difficulties
Symptoms: Emotional

- Frustration when over stimulated/fatigued
- Irritable when frustrated
- Depression
- Decreased socializing with friends
Symptoms: Insight

- Fatigue level which impacts on daily functioning and the need to pace
- Executive function-unaware of lack of initiation of tasks; getting stuck on a task
- Irritability-not identifying triggers
Discussion about the case

- How might the Guideline be helpful?
- Which sections of the Guideline are the most relevant?
- What other information do you wish the Guideline would provide?
Final Thoughts

- **Resources**
  - Local, region; priorities
  - Equity (relative to other areas of province; across conditions; sub groups of the population)

- **Communication**
  - Between sectors
  - Among similar providers
  - Community of practice

- **Role in Advocacy**
Case 1

Ross is a 45 year old man who sustained a severe brain injury and had to have craniectomy and partial resection of the left temporal lobe due to severe elevated ICP.
Ross is just arrived on the floor from the ICU and is very agitated. He is swinging at the nurses when they enter the room and yelling loudly.
With treatment with IM neuroleptics followed by oral neuroleptics Ross settles down but still very concerned.

- His blood work shows he has low sodium which is corrected.
- More alert and decreased need for sedative medications.
ROSS

- Ross settles down but still has gradually developed increased yelling when the nurses walk in the room.
- Antecedent behaviour Consequence charting is completed and the yelling occurs only when a nurse walks in the room not others.
- Recognize the cause is pain
- Reassurance reduces the frequency but it still happens
- Ross improves but the subacute rehab team feels they could improve the efficiency of the care they provide to people like him
- What are some of the key practices?
- HINT This is a system question
The director of the rehab services just came from managing the emergency and acute area and is asking why all the changes are needed in the service, he does not understand.
A new doctor comes on the service and asks why the patient needs more intense cognitive rehabilitation

“Where’s the evidence”
The director authorizes specialized behavioural training for the team and wonders how this is affecting team performance. What indicators should we use?
Lisa

- 30 year old woman married with no children
- Skiing accident sustaining a severe TBI- initial Glasgow Coma Scale = 8
- Coma for 48 hours and PTA for 7 days
- Has mild left hemiparesis
- Initially irritable/restless but improves and still little impulsive/ lack of insight
- Admitted for rehab 3 weeks post injury
Lisa

- in inpatient rehab- became independent in ADL and minimal supervision with community living skills
- receives outpt rehabilitation and improves with PT and OT
- husband notices some ongoing irritability and memory impairment
- very supportive employer is willing to take her back
- returns to work 8 months after injury as a lab technician
Lisa (two years later....)

- Gained 25 lbs- Lisa anxious about attending gym because she's aware of the appearance of the very mild hemiparesis
- Husband is reporting challenges in relationship including lack of awareness of impact on others, impulsivity and emotional lability
Lisa (two years later....

- employer had expressed concerns about her memory, occasional outbursts and problem-solving skills
  - laboratory faces cutbacks because of decreased government funding
  - Lisa laid off with other more junior workers
Lisa (two years later....)

- Lisa's mood is low because of lack of meaningful activities
- Lisa would like to start a family however husband concerned that she may not be able to manage new baby
Problems illustrated by Lisa's Case

- Irritability
- Memory
- Fatigability
- Cognitive communication
- Social cognition
- Vocational return
- Executive skills
Early rehabilitation- Problems with Irritability

- Lisa's husband is provided with education about the signs of irritability and after working with the team to do an antecedent analysis recognizes that Lisa is irritable when she is tired, has slept poorly or if they spend longer than 1.5 hours in busy environment such as public places
Early rehab - Problems with Fatigue

- Lisa is found to be hypothyroid and feels little better
- Lisa is taught about sleep hygiene
Optimization of learned activities into Community

- Lisa’s therapist take her to the gym and she gets into a routine that she follows
Cognitive Communication

- Communication impairments resulting from underlying cognitive deficits due to neurological impairment
- Difficulties in communicative competence (listening, speaking, reading, writing, conversation, and social interaction) that result from underlying cognitive impairments (attention, memory, organization, information processing, problem solving and executive functions). (CASLPO)
Social cognition includes processes such as emotion recognition from facial affect and voice and Theory of Mind, the belief that others have thoughts separate from one’s own and that these thoughts influence others’ behaviors.

With cognitive communication training, Lisa is better able to recognize the social cues and when she loses track of conversation gets clarification from her boss or colleague.
Lisa’s Memory issues

- Commences use of her iPhone
- Lets move into the 21st century!
- taught some internal strategies for memory in her own environment
Lisa and her husband have learned to avoid the busy malls however find it somewhat limiting their lifestyle.
With education the employer recognizes Lisa's situations that are problematic and prompts her when she observes issues.

Lisa receives training in certain metacognitive straining an executive problem-solving and adopts use of these on a daily that she uses regular basis.
- Avoids layoffs despite impairments
- Continues to require ongoing employment of techniques
- Now hoping to start a family.