

# Methodology

## Identification of a Clinical Area of Interest

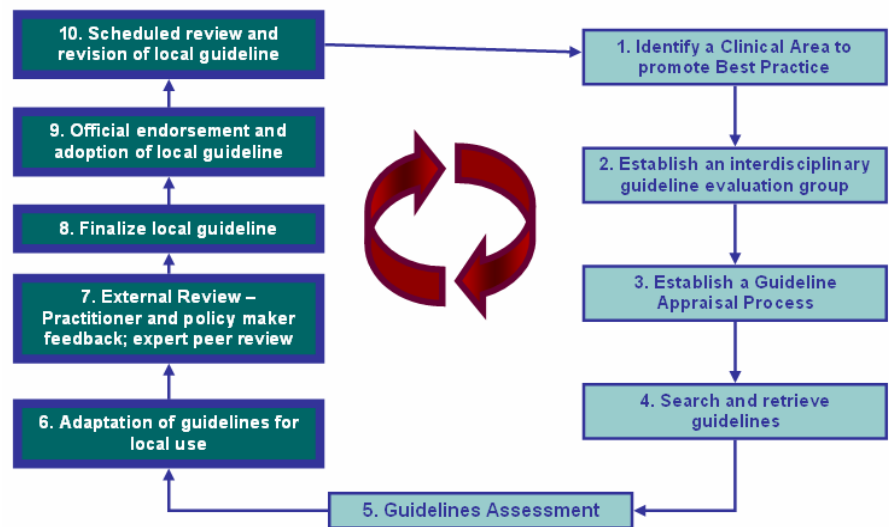
The Guidelines Adaptation Cycle process<sup>1</sup> was used to guide the development of the original guideline, as well as the current update. Figure A illustrates the elements involved in this process. Initially, the concussion/mTBI Project Team identified there was a need for evidence-based treatment guidelines for the assessment and management of symptoms persisting after concussion/mTBI. Although some guidance for the acute care of mild injuries is available, the concussion/mTBI Project Team identified the specific area of persistent symptoms as a priority, due to a lack of guidance for healthcare professionals for the assessment and management of those individuals who do not spontaneously recover.

The current update represents Step 10 in the Guidelines Adaptation Cycle process – a scheduled review and revision of the guideline to maintain the relevancy and utility of these recommendations. Steps 2 through 9 were revisited and improved to enhance development and efficient use of the guidelines for healthcare professionals.

## Establishment of the Expert Consensus Group

In the current update, the concussion/mTBI Expert Consensus Group (see [Appendix A](#)) was expanded to ensure greater representation of (1) the various healthcare professions servicing the concussion/mTBI patient population, (2) domain of expertise, and (3) geographic location.

Figure A. Practice Guidelines Evaluation and Adaptation Cycle\*



In regard to healthcare professions, a wide range of disciplines including emergency medicine, family medicine, sports medicine, neurology, physical medicine and rehabilitation, radiology, psychiatry, psychology, physical therapy, **chiropractor** and occupational therapy were represented. In addition, representatives of relevant organizations, such as the Ontario Neurotrauma Foundation (sponsoring organization), the Ontario Brain Injury Association and persons who had experienced persistent symptoms following concussion/mTBI, were also included in the expert consensus group. In regard to domain of expertise, individuals recognized as experts in treatment of the different spheres of symptoms (i.e., physical, behavioural, and cognitive) were involved in the project. Also, experts on objective evidence of concussion/mTBI, quality of life and outcomes or knowledge translation took part in the consensus group. In terms of the variety of injuries associated with concussion/mTBI, individuals with expertise in sport-related, worker safety, and military and veteran health were all represented. Lastly, in regard to geographic location, the members forming the expert consensus group were recruited from Ontario, across Canada and the United States. A formal schema identifying these factors was created prior to the meeting to assist in establishing balanced representation [Appendix B](#).

At the beginning of the guideline development process, members of the guideline development team and the expert consensus group were asked to declare any possible conflicts of interest. All declared conflicts of interest are listed in [Appendix C](#).

## Updating the Evidence: Search and Retrieval of Existing Guidelines and New Evidence

### Search and Retrieval of Existing Guidelines

Building upon the review conducted for the Second Edition, a new search (July 2012 – May 2017) for existing clinical practice guidelines addressing concussion/mTBI and a systematic review of the literature evaluating treatment of concussion/mTBI and persistent symptoms was conducted. First, a comprehensive search for existing clinical practice

\* Reproduced from Graham ID, Harrison MB. Evaluation and adaptation of clinical practice guidelines. *Evidence Based Nursing*. 2005;8(3):68-72; with permission from BMJ Publishing Group Ltd.

guidelines (CPGs) published in English or French between 2012 and 2016 that were relevant to concussion/mTBI and included recommendations for the care of individuals with concussion/mTBI was undertaken. This allowed the Project Team to identify quality recommendations that could be adapted to minimize repetition of previously completed work. The search for existing CPGs was conducted using six bibliographic databases (MEDLINE, PubMed, EMBASE, PsycINFO, CINAHL, Cochrane Library), guideline search sites (e.g., National Guidelines Clearing House, Scottish Intercollegiate Guidelines Network), websites of relevant organizations (e.g., Canadian Medical Association, National Institute of Clinical Excellence) and a general web search (i.e., first 10 pages screened in Google and Google Scholar). The following key words were used in combination for all searches: brain injuries, head injuries, traumatic brain injury, concussion, guidelines, practice guidelines, and best practice. Documents obtained via the search were excluded from further review if: 1) they were more than four years old, (2) did not address concussion/mTBI, (3) they were found to be reviews only and did not include practice recommendations, (4) they only addressed pre-hospital and/or acute care, or (5) they only addressed pediatric care. This search was repeated again in May 2017 to ensure to capture any guidelines released within that year.

Two reviewers independently compiled a list of all guidelines they found related to concussion/mTBI. After applying the exclusion criteria, 30 relevant CPG's containing recommendations were considered. A third reviewer was consulted to finalize the list, from which 9 CPGs remained.

**Table C. Existing TBI Guidelines Evaluated in the Process of Developing the Current Guideline**

| Abbreviation | Group  | Guideline Title  | Year |
|--------------|--|--|------|
| VA/DoD       | Department of Veterans Affairs/<br>Department of Defense | VA/DoD Clinical Practice Guidelines for the Management of Concussion-Mild Traumatic Brain Injury   | 2016 |
| CISG*        | Concussion in Sport Group                                | Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016              | 2016 |
| EAST         | Eastern Association for the Surgery of Trauma            | Evaluation and management of mild traumatic brain injury: An Eastern Association for the Surgery of Trauma practice management guideline     | 2012 |
| EFNS         | European Federation of Neurological Societies            | Mild traumatic brain injury  | 2012 |
| AAN          | American Academy of Neurology                            | Summary of evidence-based guideline update: Evaluation and management of concussion in sports  | 2012 |
| SNC          | Scandinavian Neurotrauma Committee                       | Scandinavian guidelines for initial management of minimal, mild and moderate head injuries in adults: an evidence and consensus-based update | 2013 |
| SIGN         | Scottish Intercollegiate Guidelines Network              | Brain injury rehabilitation in adults  | 2013 |
| CTSQ         | Corporation des Thérapeutes du Sport du Québec           | Concussion Management Guidelines for Certified Athletic Therapists in Quebec   | 2014 |
| NATA         | National Athletic Trainers' Association                  | National Athletic Trainers' Association Position Statement: Management of Sport Concussion   | 2014 |

\*Note: The Summary and Agreement Statement of the 4rd International Conference on Concussion in Sport, Zurich 2012 was identified in the comprehensive search for existing guidelines, but then later replaced with the release of the Consensus Statement on Concussion in Sport from the 5th International Conference on Concussion in Sport, Berlin 2016.

### Search and Retrieval of New Evidence

An extensive search of the literature was conducted to capture all published research evaluating the effectiveness of treatments or interventions intended to manage persistent symptoms following concussion/mTBI. A professional librarian working at the Ottawa Hospital Research Institute (Ottawa, Ontario) was consulted to develop a systematic search strategy, ensuring a thorough search was conducted for all databases. Bibliographic databases (MEDLINE, PubMed, EMBASE, PsycINFO, CINAHL, and Cochrane Library) were searched using the following key words: brain injury, concussion, brain concussion head injury, traumatic brain injury, post-concussion syndrome and commotion cerebri. The list of search terms

indexed in each database was also reviewed to ensure that all relevant search terms were included. All search terms were also truncated to ensure that every alteration of that search word was captured (e.g., searching “concuss\$” retrieved results for “concussive”, “concussion”, “concussions”, etc). See [Appendix D](#) for the stepwise search strategies employed for each database. The search was performed in May 2016 and again in May 2017.

All results were included for further review if they met the following inclusion criteria: published in English or French, a 50% adult population (18+ years of age) and if at least 50% of the sample was composed of patients with mild injuries/persistent symptoms following concussion/mTBI or statistical analyses for studies of mixed samples were performed according to level of TBI severity. Studies were included for full review if they:

- met the above inclusion criteria
- were on the prevention or prognosis of developing persistent symptoms
- treated persistent symptoms
- diagnosed/ assessed concussion/mTBI

Studies examining penetrating brain injuries, birth injuries, brain damage incurred from stroke or other cerebrovascular accidents, shaken baby syndrome or moderate to severe closed head injuries that did not meet the above inclusion criteria were excluded from further review. Non-systematic review papers (i.e., narrative reviews), clinical review papers, conference abstracts, letters to the editor and editorials without data, studies using non-human subjects and unpublished studies or data were not reviewed. However, the reference lists of narrative review papers were examined to ensure all relevant literature was included.

**Review Process (Figure B):** Due to the large number of articles, article title/abstract review were performed simultaneously by two reviewers in [DistillerSR](#)®. After which a 10% randomized spot check was conducted on the opposing reviewers articles to ensure accuracy and consistency between reviewers. A team of four reviewers then screened the articles included for full review for inclusion. A third reviewer was consulted after the full article review stage to resolve any discrepancies between reviewers’ decisions.

**Figure B. PRISMA Flow Diagram:**<sup>2</sup> Results from the Systematic Review of the Literature (2012 – May 2017) Evaluating Treatment of Persistent Symptoms.

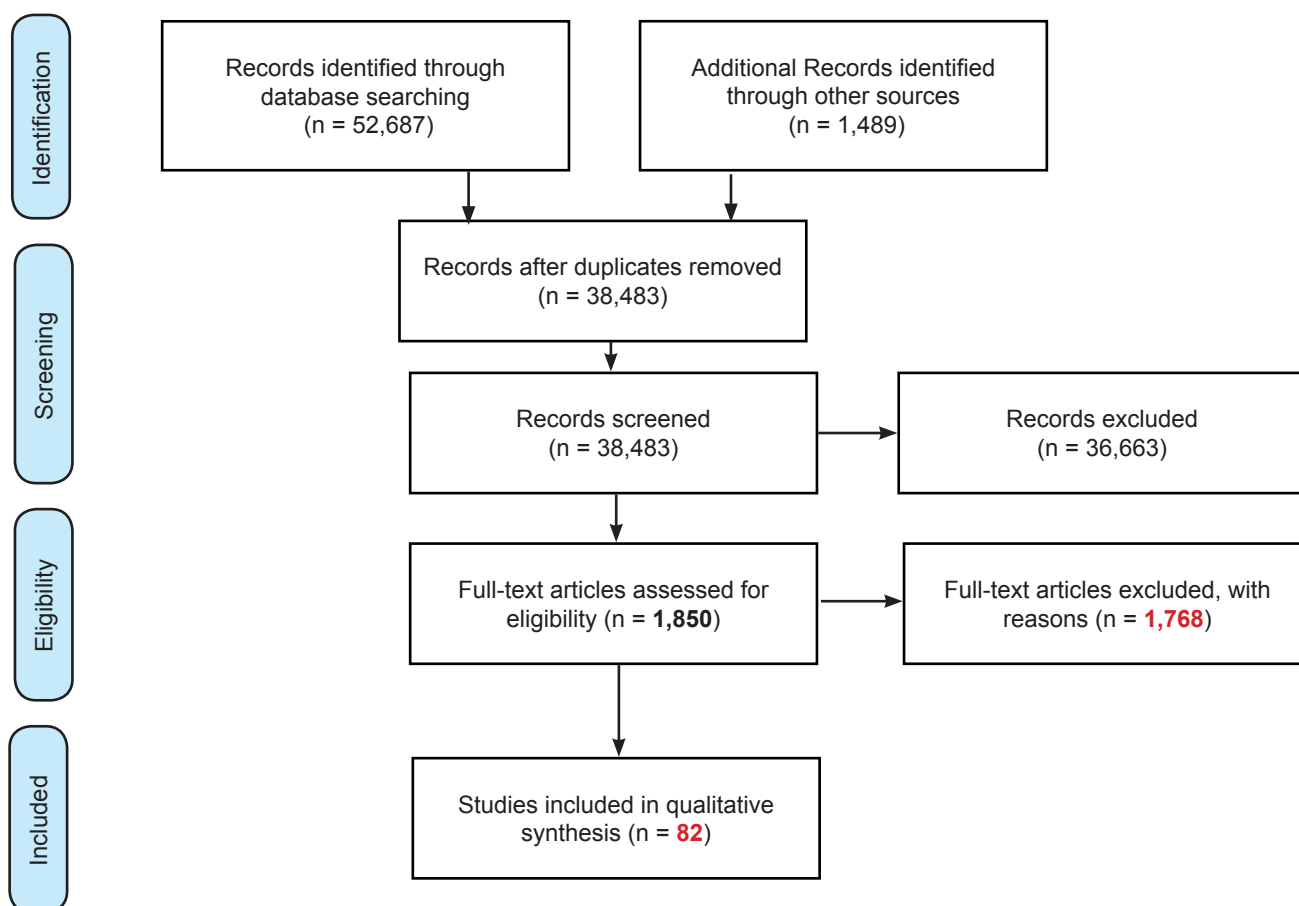


Figure B represents an overview of all of the articles screened at each step across all databases. In the end, 82 articles evaluating the effectiveness of prognosis, prevention, treatments/interventions of persistent symptoms or diagnosis/assessment of concussion/mTBI were added to the evidence base for the current update. [Appendix G](#) contains the full list of evidence.

## Resource Evaluation:

While completing the literature search the project team flagged any tools, tables, resources algorithms or figures that could be used in the guideline. A manual search was then completed to look for updates of existing clinical tools.

The project team completed a Resource Evaluation for each of the clinical tools in the guideline. Resource Evaluations were developed by the Project Team to aid in determining whether a resource was a viable option for use in the clinical population. These descriptions contain information on the reliability, validity, accessibility (e.g., proprietary), ease of use and information on the administration of the tool. See below for an example Resource Evaluation. Key determinants in the use of a resource were accessibility of the tool and ease of use.

### EXAMPLE

#### Resource Evaluation

Updating the Guidelines for the Management of Concussion / Mild Traumatic Brain Injury and Persistent Symptoms



#### Section 1: Diagnosis and Assessment

**Title of Resource:** Abbreviated Westmead Post-Traumatic Amnesia Scale (A-WPTAS)

**Reference:** Shores A, Lammel A. Abbreviated Westmead PTA Scale (A-WPTAS): GCS & PTA testing of patients with MTBI following mild head injury. <http://psy.mq.edu.au/GCS/>. 2007.

**Description:** The A-WPTAS was developed as a screening tool for promptly assessing any cognitive problems, such as memory loss or amnesia directly following concussion/mTBI. It identifies the duration of post-traumatic amnesia (PTA) in order to assess the level of brain damage. It should be used hourly in combination with a standardized Glasgow Coma Scale (GCS) assessment in order to assess the patient.

#### Resource Criteria:

|   |   |
|---|---|
| Population  | Mild Traumatic Brain Injury   |
| Reliability/ Validity   | The A-WPTAS is a valid measure. The A-WPTAS may reduce the risk of failing to classify patients with concussion/mTBI by identifying and documenting acute cognitive impairment. <sup>1</sup><br>The R-WPTAS significantly improves diagnostic accuracy in identifying patients with mTBI/concussion who may be in PTA. Administration takes less than 1 min, and since early identification of a patient's cognitive status facilitates management decisions, it is recommended for routine use whenever the GCS is used. <sup>2</sup><br>The addition of the R-WPTAS to the GCS can help to rapidly identify patients with concussion/mTBI who may need further management. <sup>3</sup> |
| Proprietary?  | No  |
| Time to Administer  | 20 Minutes  |
| Method to Administer  | A healthcare professional would administer the assessment and evaluate the patient's performance in order to determine the level of brain damage.   |
| Formal Instructions (Mention if special environment/ equipment is needed) | None  |
| Instructional Video Available?  | No  |

|  |      |   |   |   |   |
|--|------|---|---|---|---|
| Ease of Use<br>(By Patient)                  | 1    | 2 | 3 | 4 | 5 |
| Ease of Administration<br>(By Administrator) | 1    | 2 | 3 | 4 | 5 |
| Other Comments                               | None |   |   |   |   |

1. Meares S, Shores EA, Taylor AJ, Lammel A, Batchelor J. Validation of the Abbreviated Westmead Post-traumatic Amnesia Scale: a brief measure to identify acute cognitive impairment in mild traumatic brain injury. *Brain Inj.* 2011;25(12):1198-205, Epub 2011 Sep 8.
2. Shores EA, Lammel A, Hullick C, Sheedy J, Flynn M, Levick W, Batchelor J. The diagnostic accuracy of the Revised Westmead PTA Scale as an adjunct to the Glasgow Coma Scale in the early identification of cognitive impairment in patients with mild traumatic brain injury. *Journal of Neurology, Neurosurgery & Psychiatry.* 79(10):1100-1106. October 2008.
3. Sharp, David J. Cognitive impairment after mild traumatic brain injury – the value of memory testing. *Nature Clinical Practice Neurology.* 4(8):420-421. August 2008.

## Strengths and Limitations of the Body of Evidence

In order to assess the body of evidence upon which the current guideline is based, all included guidelines and new evidence of treatment/intervention for persisting symptoms were subject to evaluation:

### i) Assessment of Existing Guidelines

There was only one guideline - the VA/DoD Clinical Practice Guidelines for the Management of Concussion-Mild Traumatic Brain Injury - that was included in the Third Edition of the guideline. It was independently evaluated using the Appraisal of Guidelines for Research and Evaluation II ([AGREE II](#)) instrument<sup>3</sup> by at least three Project Team members. The AGREE II instrument assesses the quality of a CPG across six domains: (1) Scope and purpose, (2) Stakeholder involvement, (3) Rigour of development, (4) Clarity of presentation, (5) Applicability and (6) Editorial independence. Reviewers are also asked to provide an overall quality assessment of the guideline taking into account the criteria considered in the assessment process, as well as whether he/she would recommend use of the guideline. Each guideline was given six standardized domain scores ranging from 1-100 (100 representing a strong score) based on the ratings from the reviewing experts.

### ii) Assessment of New Evidence ([Appendix G](#))

All included articles on treatment/intervention for persisting symptoms following concussion/mTBI were evaluated using a validated checklist for methodological quality:

a) For systematic literature reviews/meta-analyses of healthcare interventions, the PRISMA<sup>2</sup> rating checklist was used. The PRISMA Statement contains a 27-item checklist and a four-phase flow diagram. The purpose of the PRISMA is to help authors improve the reporting of systematic reviews and meta-analyses. The PRISMA has primarily focused on randomized trials but can also be used as a basis for reporting systematic reviews of other types of research (i.e., evaluations and interventions). The PRISMA is also useful for critical appraisal of published systematic reviews, although the checklist is not considered a quality assessment instrument to gauge the quality of a systematic review.<sup>3</sup> There is currently no quality assessment instrument available for systematic reviews, which is why we used the PRISMA to assess systematic reviews and meta-analyses that were included as evidence for the guideline. Scores from these rating scales were provided with the respective article summary to all experts before, during and after the consensus conference in the Excel sheets.

b) For randomized studies of healthcare interventions, the PEDro<sup>4</sup> rating scale was used. The PEDro scale is a modified 11-item, expert consensus-based Delphi list developed by Verhagen and colleagues at the Department of Epidemiology, University of Maastricht. The purpose of the scale is to assist the users of the PEDro database to quickly identify which of the known or suspected clinical trials are likely to be internally valid (criteria 2-9) and could have sufficient statistical information to make their results interpretable (criteria 10-11). The PEDro scale should not be used as a measure of the validity of a study's conclusions and should not be used to compare the quality of trials performed in different areas of therapy. Thus, for our purposes, the PEDro scale was used to objectively measure the methodological quality of randomized healthcare intervention studies.

c) For non-randomized studies of healthcare interventions, the Downs and Black<sup>5</sup> rating scale was used. The Downs and Black rating is a methodological quality checklist based on epidemiological principles, reviews, and existing checklists for randomized studies. The checklist contains 27 items which are added to provide a total score out of 32. Answers **were**

scored 0 or 1, except for one item in the reporting subscale, which scored 0 to 2 and the single item on power, which is scored 0 to 5. The checklist is broken down into 5 sections:

- i. Reporting (criteria 1-9): assesses whether the information provided in the paper is sufficient to allow a reader to make an unbiased assessment of the findings of the study.
- ii. External validity (criteria 11-13): assesses the extent to which the findings from the study can be generalized to the population from which the study subjects were derived.
- iii. Bias (criteria 14-20): assesses biases in the measurement of the intervention and the outcome.
- iv. Confounding (criteria 21-26): assesses bias in the selection of study subjects.
- v. Power (criterion 27): attempts to assess whether the negative findings from a study could be due to chance.

Articles were marked N/A for criterion 27, which is reflected in the lower scores for all articles rated using this checklist.

Scores from these rating scales were provided with the respective article summary to all experts after the consensus conference in the Recommendation Endorsement phase of voting. See [Appendix G](#) for the rating scores and summaries for all 82 articles that were added to the evidence base for the current update.

### Recommendation Level of Evidence:

The level of evidence used by each of the existing guidelines varied depending on the individual methodology followed. To achieve consistency among the recommendations, whether adapted from existing guidelines or generated by the expert consensus group, the level of evidence for each recommendation included in the current guideline was reviewed and assigned a grade according to the scheme outlined in [Table D](#).

**Table D. Levels of Evidence**

|          |  |
|----------|--|
| <b>A</b> | At least one randomized controlled trial, meta-analysis, or systematic review.     |
| <b>B</b> | At least one cohort comparison, case studies, or other type of experimental study. |
| <b>C</b> | Expert opinion, experience of a consensus panel.                                   |

### iii. Quality of the Body of Evidence

The body of evidence upon which the current guideline is based includes high levels of evidence (e.g., RCT, meta-analysis) supporting many of the recommendations for the acute assessment and management of concussion/mTBI. Furthermore, there is high alignment across treatment/intervention studies, as well as across different guidelines from other groups, on the acute diagnosis and treatment of mTBI. Due to gaps in research recommendations for the management of persistent symptoms post-injury are primarily supported by expert consensus opinion, due to limited high-quality studies evaluating treatment for persistent symptoms following concussion/mTBI and limited guideline recommendations on chronic management. Nevertheless, while there are limitations to the body of evidence supporting the current guideline, the recommendations listed herein address a large gap in the current literature on treatment following concussion/mTBI. Further research is needed on the effectiveness of treatments or interventions intended to manage persistent symptoms following concussion/mTBI.

### Adaptation of Existing Recommendations and Development of Novel Recommendations

The objective of updating the guideline recommendations was to:

- a) strengthen the level of evidence of the recommendations based on new research
- b) create more specific recommendations
- c) introduce new recommendations based on consensus level agreement or new research

To accomplish this Expert Consensus Group members were organized into four Working Groups. Group composition was determined based on members' expertise and interest. Each group worked on updating their assigned recommendations prior to sending out to the entire expert group. This allowed for the targeted review of recommendations by experts in their specific field.

## Review of the new evidence, guidelines and resources occurred in a 7-step process:

### **STEP 1: Pre-Conference Voting**

The Working Groups were sent the Second Edition recommendations that were assigned to them, i.e., group 1 reviewed sections 1,4,7,11. The experts were given a choice to “Keep, Modify, or Delete” the Second Edition recommendations. All new evidence (guideline recommendations, articles) related to the current recommendations was available to the experts for review using the networking software [Alfresco](#). The votes were compiled and each recommendation was assigned status as “Keep”, “Modify” or “Delete”.

### **STEP 2 Online Meetings**

Results of the pre-conference voting were then reviewed during online meetings using [Adobeconnect](#) meeting software. Approximately 2-3 meetings were held per group. The experts collaboratively discussed what edits were to be made to each of the recommendations based on feedback from the votes (e.g., major or minor edits). The Project Team took notes on this discussion and afterwards began drafting the updated recommendation. Recommendations reviewed in adobeconnect that were voted as major edits were saved to review at conference.

### **STEP 3 Expert Consensus Conference**

The expert consensus group convened for a one-day conference on April 6, 2017 in Toronto, Ontario. Conference members broke into their respective Working Groups to review the recommendations marked as major edits from the Working Group and to review the Project Team’s edits. All information (e.g., source documents, presentations, summary tables etc.) were directly available to all consensus panel members during the meeting. After the Working Groups convened, the Working Group team leaders presented the results (e.g., recommendation deletions, additions and major revisions) to the entire expert consensus group. The conference also allowed group members to discuss other important issues including a discussion on the alignment of the Third Edition with the other guidelines and the [ONF Standards For Post-Concussion Care](#), published shortly after the meeting.

### **STEP 4 Post Conference**

#### i. Working Group Final Recommendation Review

Post-conference any groups requiring further review of recommendations participated in final online meetings. Once all recommendations were reviewed within the Working Groups a “Final Internal Group Vote” was conducted. This was to ensure that the changes were synthesized correctly and the relevant section experts approved of the recommendation prior to send out to the entire consensus group. The Project Team made any final edits and a list of 106 recommendations were sent for review.

#### ii. Resource voting

A significant component of the guideline are the resources that accompany the guideline recommendations. A thorough search for updated/ new resources was completed during the literature review. Working Group members were sent a list of the current resources, along with any updated versions and possible new resources that could be added to the guideline. Working Group members voted on whether to keep, use updated, edit or add a resource. Resource Descriptions were completed by the Project Team and were available to the Working Group. These contained information on reliability/validity, method of administration, ease of use, whether it is proprietary or not, time to administer, etc.

#### iii. New Recommendation Voting

During the literature review the Project Team identified 51 new topics/areas that could support the creation of a new recommendation. These were either taken from studies marked as include in the literature review, or from current guidelines. Evidence was grouped according to topic Working Groups were sent a list of new potential recommendations (according to section) and voted to “Create Recommendation”, “Add to Existing Recommendation” or “Do Not Use”. From this five recommendations were voted to include in the updated guideline.

### **STEP 5 Post Conference Recommendation Review**

Upon completion of the post conference online meetings the Working Groups were sent a finalized list of recommendations. Experts voted on whether to “approve” or “edit” the recommendation before it was sent for final review by the entire Consensus Team. Project Team members reviewed feedback and edited recommendations based on comments. The Project Team then reviewed the recommendations and modified the phrasing of some of the recommendations in order to achieve standardized terminology or to clarify the intent of the specific recommendations. Care was taken not to alter the meaning of the recommendations.

### **STEP 6 Round 1 All Recommendation Review**

The experts then voted independently on these recommendations using a modified Delphi voting technique<sup>6</sup> to collect feedback from the other Consensus Group members to narrow them down to the most important and relevant recommendations and ensure that everyone had a chance to provide feedback. Experts were asked to vote to “Keep Original” “Approve Update” or “Edit” each recommendation. Recommendations that did not have an 80% agreement were reviewed by the Project Team

and edited based on expert's comments and feedback. Persons who were unable to comment due to the recommendation being outside their area of expertise were able to skip recommendations.

### **STEP 7 Recommendation Endorsement**

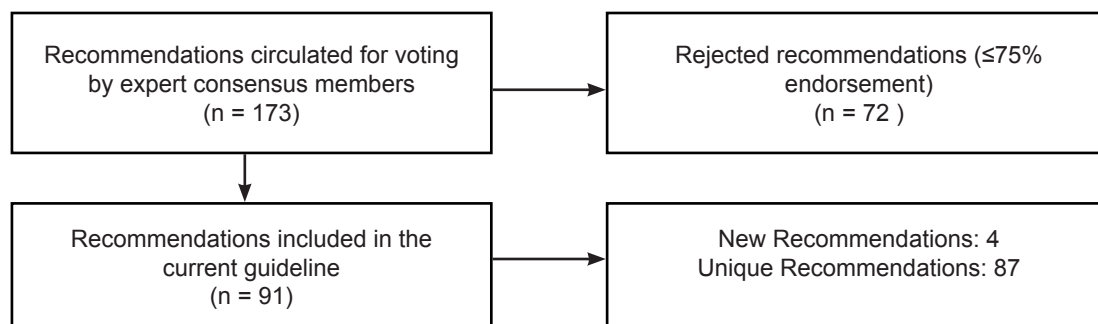
Following the first round of complete recommendation voting the Project Team collated all revisions and comments and edited the recommendations before final send out. Experts were asked to either “Endorse” or “Reject” each of the unique recommendations. If a recommendation met at least one of the following criteria, it was retained: 1) based on level A evidence; 2) received either a minimum of 75% endorsement by the Expert Consensus Group; or 3) represented an important care issue (i.e., addressed a topic relevant to a large proportion of the concussion/mTBI population and clearly represented a current gap in treatment guidance).

Experts were also asked to prioritize the top 20 most important recommendations for implementation. Specifically, experts were allowed to provide four priority votes for each of the five ranking categories (5-high to 1-highest) for a total of 20 prioritization votes. Guideline recommendations with a summed prioritization score greater than 30 are highlighted in the current guideline as key recommendations for implementation. This can help the treating healthcare professional with evaluation and implementation of the guideline recommendations, since it can guide where and how efforts should be made to change practice, especially early on. See “Key Recommendations” at the beginning of this guideline, which are also highlighted using a key symbol throughout the full list of recommendations.

### **Summary**

A total of 173 recommendations (102 from Second Edition and 51 novel recommendations) were voted on during the update process. After review 91 recommendations remained comprising of 4 novel recommendations, 87 unique recommendations. It should be noted that each section of recommendations in the current guideline has been written to stand alone to some extent; accordingly, nine recommendations that are applicable across multiple topics (e.g., provision of education) have

### **Figure C. Guideline Recommendation Review**



### **External Review**

A draft of the guideline was circulated to recognized experts in the field and stakeholders (see [Appendix A](#)) who did not participate in the development process. The external reviewers were requested to provide input about the validity and relevance of the guideline. This feedback was incorporated into the final draft.

### **Evaluation**

The Second Edition of the guideline was evaluated to ensure that any gaps/areas of improvement were addressed. To complete this evaluation sports medicine and military physicians who participated in the pilot project in 2012 on the First Edition of the guideline were contacted, as they were most likely familiar with the guideline. An online survey was developed by the executive committee on areas including: content, format and barriers to use.

A majority of responders noted that the guideline did help to facilitate patient care, including using the resources for patient education and the treatment of persistent symptoms. There were no reported barriers to use of the guideline; however those who did not endorse using the guideline cited not having a copy as the reason. Algorithms, patient handouts and reference guides were reported as the most frequently used tools; however it was important that tools and resources were created to be more printer friendly. More specific information regarding pharmacological treatment was noted as an important aspect to include in the updated guideline.



### Ongoing Update and Review

Further feedback from frontline clinicians and their patients during the implementation phase, as well as findings from an ongoing literature review, will inform the update of these recommendations scheduled for 2021. Any updates to the guideline in the interim period will be noted on the ONF website: [www.onf.org](http://www.onf.org). Procedures for the next update will follow a similar stepwise process to those outlined herein.

### References

- 1 Graham ID, Harrison MB. Evaluation and adaptation of clinical practice guidelines. *Evidence-based Nursing*. 2005;8:68-72.
- 2 Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med*. 2009;6(6):e1000097.
- 3 Brouwers MC, Kho ME, Browman GP, Burgers JS, Cluzeau F, Feder G, et al. AGREE II: advancing guideline development, reporting and evaluation in health care. *CMAJ*. 2010;182:E839-42. doi: 10.1503/cmaj.090449.
- 4 Maher CG, Sherrington C, Herbert RD, Moseley AM, Elkins M. Reliability of the PEDro scale for rating quality of randomized controlled trials. *Physical Therapy*. 2003;83(8):713-721.
- 5 Downs SH, Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *Journal of Epidemiology and Community Health*. 1998;52:377-384.
- 6 Linstone HA, Turoff M, eds. *The Delphi Method. Techniques and Applications*. Reading, MA: Wesley; 1975.