SHARING AND USING THE LIVING GUIDELINE FOR DIAGNOSING AND MANAGING PEDIATRIC CONCUSSION

Identifying your role in driving pediatric concussion care

Research has shown that it can take up to 17 years for evidence-based findings to reach clinical practice.[1] You can help reduce this gap. Ask yourself "What actions can I take to provide the best concussion care for kids?" This might involve sharing this guideline with others and/or looking for opportunities to align your (or your team's) work with best practices in concussion care.

Not sure where to begin? Here are some tips to get started!

KNOWING: Sharing the Guideline

Healthcare providers need to know a clinical practice guideline exists before they can use it. As individuals who provide concussion care, you can play a role in sharing the new guideline to improve the lives of children with concussion.

Here's how: Use the **Guideline Sharing Tool** to identify:

WHO
Who needs to know about the guideline?

WHAT
What information is most important to share about the guideline?

WHY
Why share the guideline?

HOW
How should the guideline be shared?

ACTING: Using the Guideline

Integrating recommendations from a guideline into practice takes time and effort. It is important to know where your (or your team's) current practice for concussion care aligns with the recommendations, and where gaps in practice may exist.

Here's how: Use the **Guideline: Planning for Action Tool** to:

REFLECT
Reflect on your current practice

IDENTIFY
Identify recommendations that you practice *all of the time, some of the time or not at all*

PRIORITIZE
Prioritize the recommendations that you can put into practice

Planning for use

PLAN
Plan your steps to put recommendations into practice

Use

1. Balas, E.A. & Boren, S.A. Managing clinical knowledge for health care improvement. In: Bemmel J, McCray AT, editors. Yearbook of Medical Informatics 2000: Patient-Centered Systems. Stuttgart, Germany: Schattauer Verlagsgesellschaft mbH; 2000:65-70

Ontario Neurotrauma Foundation
Fondation ontarienne de neurotraumatologie

GUIDELINE SHARING TOOL

Use this checklist to work through ideas regarding who, what, why and how ***you*** can share the guideline.

WHO:

- Who (target audience) should know about the guideline?
- Who would benefit from guideline information and resources?

Identify the target audience you or your team want to share the guideline with. This could be:

- ☐ healthcare providers
- ☐ healthcare trainees/ students
- ☐ service providers
- ☐ policy makers
- ☐ patients/consumers
- ☐ other: _____

> Research shows that target audiences are in a better position to receive information from someone from their discipline and/or someone they respect [2]

WHY:

- Why share the guideline?

Understand the needs of the target audience and how the guideline can support them in:

- ☐ providing education
- ☐ informing care
- ☐ informing policy
- ☐ driving research
- ☐ other: _____

WHAT:

- The information you share depends on *who* you are sharing it with. Understand what information is important for the target audience. The information shared could be:
  - ☐ recommendations
  - ☐ tools and algorithms
  - ☐ resources to share with the community
  - ☐ where to find the guideline
  - ☐ other: _____

HOW:

- How does the target audience like to receive information?
- What strategies should you use?

To understand how your target audience prefers to receive information, just ask them. You could try:

- ☐ teaching aids (e.g. slides, case examples)
- ☐ social media (e.g. Twitter, Facebook)
- ☐ summaries
- ☐ videos
- ☐ other: _____

Planning notes:

_____

_____

_____

_____

2. Grimshaw, J.M., Eccles, M.P., Lavis, J.N., Hill, S.J. & Squires, J.E. (2012). Knowledge translation of research findings. Implementation Science, 7:50

GUIDELINE: PLANNING FOR ACTION TOOL

The Living Guideline for Diagnosing and Managing Pediatric Concussion has many recommendations. Some recommendations may validate your practice, while others may challenge it. Know that changing practice requires a plan. Try using these steps to help you (or your team) see where you are at in your practice.

Step 1: Reflect (planning for use)

Domains: This guideline has 14 domains. Review and select a domain (see page 5) that interests you (or your team) and that you want to focus on.

Recommendations: Print the list of recommendations for your selected domain (see pages 6-20).
As you (or your team) review the recommendations, **reflect** on your current practice.

Need help selecting a domain to focus on as a team? Try using **Dot Voting**.[3] Here's how:

- List the options (e.g. domains) on a large sheet of paper
- Tell everyone how many times they can vote and any other rules (e.g. voting more than once for a single domain)
- Tell everyone to cast their vote by placing a 'dot' using coloured markers or stickers beside their option
- Tally the votes and discuss the results

Step 2: Identify (planning for use)

For your selected domain, **identify** if you (or your team) are currently putting the recommendations (see pages 6-20) into practice:

- All of the time (green)
- Some of the time (yellow)
- Not at all (red)

Fill in the green, yellow or red circles for each recommendation.

Step 3: Prioritize (planning for use)

Compare your current practice with the recommendations. Ask yourself (or your team) what care practices should you:

- **Keep** doing
- **Stop** doing
- **Start** doing

Look at the recommendations that are put into practice **'some of the time'** and **'not at all.'** Where should you (or your team) begin? What recommendations are relevant or matter to you or the team? Prioritize by choosing 1-3 recommendations that can be put into action within the next 6 months to a year.

Try using Dot Voting[3] as a strategy to prioritize recommendations.

Step 4: Plan (use)

Putting recommendations into practice requires time, planning, and resources. Refer to the **Planning for Guideline use: Getting started!** sheet to help you **plan** as you put the recommendations into your clinical practice. This sheet does not provide an exhaustive list of questions to guide implementing the recommendations. Rather, it provides a subset of questions for your or your team to consider, to help you get started.[4]

3. Guinn, J. (2017). Human-Centered Methods for Designing in Healthcare.

4. Gagliardi, A.R., Marshal, C., Huckson, S., James, R. & Moore, V. (2015). Developing a checklist for guideline implementation planning: review and synthesis of guideline development and implementation advice. Implementation Science 10:19

Planning for Guideline use: Getting started!

Introduction

To put the guideline recommendations into practice, you need a plan. This information sheet provides general information, which is based on evidence, to help you create your plan. While it is a good place to start, there are evidence-based implementation theories and models available to guide you as you create a more fulsome plan for using this guideline.

Looking for more information about implementation? Here are some resources you can look at:

- The Center for Implementation
- A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems

WHAT do you need to do?

As you or your team prepare to use the guideline and put the selected recommendations into practice, think about what you need to do to be successful.

- How can the environment (e.g. clinic) support practice change?
- How can other stakeholders (e.g. leaders, colleagues) be engaged and involved?
- What might be some barriers to practice change?

☐ Confidence ☐ Skills ☐ Attitude ☐ Access to resources
☐ Financial support ☐ Technology ☐ Space ☐ Time

- Think about what supports or tools you need. Use strategies that address your barriers. These strategies could include:

☐ Education ☐ Training
☐ Algorithms ☐ Tools
☐ Reminders
☐ Electronic medical record
☐ Patient and caregiver resources

Celebrate the recommendations that are currently in practice. How did you achieve success? What were some of the challenges? What will success look like moving forward? Use your key learnings to help develop your plan for new recommendations you want to put into practice.

WHO can help?

Think about who can help with implementing the recommendation(s) and what role individuals can play (e.g. education lead)?

- Should anyone outside of your environment be involved?
- Are there colleagues you can reach out to?
- Are there other environments similar to yours that are also putting recommendations into practice? Maybe there is an opportunity to learn from them or work together!

Changing behaviour takes time. Practice recommendations need to be put into action properly and consistently. It is important to track and evaluate the process for putting the recommendation into practice.

- Did you or your team pilot test your plan?
- What worked? What didn't work? Were you or the team able to modify the plan?
- Think about the great work you have done and how to maintain your practice change efforts. What can be done now, in the short-term or in the future to sustain practice change?

Living Guideline for Diagnosing and Managing Pediatric Concussion: **DOMAINS**

Section	Domain	Number of recommendations
> Concussion Recognition, Initial Medical Assessment, and Management	*Domain 1:* Concussion Recognition and Directing to Care	5
	Domain 2: Initial Medical Assessment and Management	22
	Domain 3: Medical Follow-up and Management of Prolonged Symptoms	10
	Domain 4: Medical Clearance for Full-Contact Sport or High-Risk Activity	3
	Domain 5: Sport Concussion Considerations	3
> Managing Concussion Symptoms	*Domain 6:* Headache	13
	Domain 7: Sleep	7
	Domain 8: Mental Health	3
	Domain 9: Cognition	2
	Domain 10: Vision, Vestibular, and Oculomotor Function	10
	Domain 11: Fatigue	5
	Domain 12: Return-to-school and Work	6
> Biomarkers	*Domain 13:* Biomarkers - Neuroimaging	2
	Domain 14: Biomarkers - Serologic	1

For the next 6 months – 1 year, I or my team will focus on putting the following domain(s) into action:

- _____
- _____
- _____

Living Guideline for Diagnosing and Managing Pediatric Concussion:

RECOMMENDATIONS

Section: Concussion Recognition, Initial Medical Assessment, and Management

Domain 1. Concussion Recognition and Directing to Care

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
1.1a School boards, sports organizations, and community centres should provide pre-season concussion education and conduct a review of all concussion policies in effect within the school or sport setting.	○	○	○
1.1b School boards, sports organizations, and community centres should ensure updated policies are in place to recognize and accommodate a child/adolescent who has sustained a concussion.	○	○	○
1.2 Remove the child/adolescent from the activity immediately if a concussion is suspected for immediate assessment and to avoid another injury.	○	○	○
1.3 Recommend an emergency medical assessment for a child/adolescent with any of the "red flag" symptoms.	○	○	○
1.4 Concussion should be suspected and diagnosed as soon as possible to maintain health and improve outcomes. Concussion can be suspected in the community by healthcare professionals, parents, teachers, coaches, and peers. Those with a suspected concussion should be referred to a physician or nurse practitioner to perform a thorough medical assessment to exclude more severe injuries, consider a full differential diagnosis, and confirm the diagnosis of concussion.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____
- _____

Section: Concussion Recognition, Initial Medical Assessment, and Management
Domain 2. Initial Medical Assessment and Management

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
2.1 Physicians or nurse practitioners should perform a comprehensive medical assessment on all children/adolescents with a suspected concussion or with acute head or spine trauma.	○	○	○
2.1a Take a comprehensive clinical history.	○	○	○
2.1b Note common modifiers that may delay recovery and use a clinical risk score to predict risk of prolonged symptoms.	○	○	○
2.1c Perform a comprehensive physical examination.	○	○	○
2.1d Consider CT of the brain or cervical spine only in patients with acute head trauma in whom, after a medical assessment, a structural intracranial or cervical spine injury is suspected; do not conduct routine neuroimaging for the purpose of diagnosing concussion.	○	○	○
2.2 Provide verbal information and written (electronic) handouts regarding the course of recovery and when the child/adolescent can return-to-school/activity/sport/work.	○	○	○
2.3 Recommend graduated return to cognitive and physical activity to promote recovery.	○	○	○
2.3a Recommend an initial 24-48 hour period of rest with limited physical and cognitive activity.	○	○	○
2.3b Recommend that low to moderate level physical and cognitive activity be gradually started 24-48 hours after a concussion at a level that does not result in recurrence or exacerbation of symptoms. Activities that pose no/low risk of sustaining a concussion should be resumed even if mild residual symptoms are present or whenever acute symptoms improve sufficiently to permit activity.	○	○	○
2.3c Recommend that patients avoid activities associated with a risk of contact, fall, or collisions such as high speed and/or contact activities and full-contact sport that may increase the risk of sustaining another concussion during the recovery period.	○	○	○
2.4 Provide education and guidance regarding strategies to promote recovery.	○	○	○
2.4a Advise on the importance of sleep and discuss sleep hygiene.	○	○	○
2.4b Advise on maintaining social networks and interactions as tolerated beyond a brief initial period of cognitive and physical rest (24-48 hours after injury).	○	○	○
2.4c Advise on the use of computers, phones, and other and other devices with screens. Beyond an initial period of cognitive and physical rest (24-48 hours after injury), use of devices with screens may be gradually resumed at a level that does not result in recurrence or exacerbation of symptoms.	○	○	○

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
2.4d Advise on avoiding alcohol and other recreational drugs after a concussion.	○	○	○
2.4e Advise to avoid driving during the first 24-48 hours after a concussion. Advise patients to begin driving when they are feeling improved, can concentrate sufficiently to feel safe behind the wheel, and when the act of driving does not provoke significant concussion symptoms.	○	○	○
2.5 Over-the-counter medications such as acetaminophen and ibuprofen may be recommended to treat acute headache. Advise on limiting the use of these medications to less than 15 days a month and avoiding "around-the-clock" dosing to prevent overuse or rebound headaches (i.e., advise that children/adolescents avoid using over the counter medications at regular scheduled times throughout the day).	○	○	○
2.6 At present, there is limited evidence to support the administration of intravenous medication to treat acute headaches in pediatric concussion patients in the Emergency Department setting.	○	○	○
2.7 After assessment, nearly all children/adolescents with concussion may be safely discharged from clinics and Emergency Departments for observation at home.	○	○	○
2.8 Recommend a medical follow-up in 1-2 weeks to re-assess and monitor clinical status. Recommend an immediate medical follow-up in the presence of any deterioration.	○	○	○
2.9 Consider referral to an interdisciplinary concussion team in the presence of modifiers that may delay recovery.	○	○	○
2.10 Provide post-concussion information and a written medical assessment to the child/adolescent and the parent/caregiver prior to sending the child/adolescent home.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____
- _____

Section: Concussion Recognition, Initial Medical Assessment, and Management
Domain 3. Medical Follow-up and Management of Prolonged Symptoms

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
3.1 Perform a repeat medical assessment on all patients presenting with post-concussion symptoms 1-2 weeks following acute injury.	○	○	○
3.1a Take a focused clinical history based on symptoms described.	○	○	○
3.1b Examine the child/adolescent and perform a focused physical examination.	○	○	○
3.1c Recommendation 2.1d: Consider diagnostic brain or cervical spine MRI imaging for those with focal or worrisome symptoms.	○	○	○
3.2 Provide patients with general education and guidance that outlines mental health considerations, non-pharmacological strategies to minimize symptoms including sleep hygiene, activity modifications, limiting triggers, information on screen time, the importance of social interaction, and how to work with the school team to facilitate school success.	○	○	○
3.3 Encourage patients with post-concussion symptoms to engage in cognitive activity and low-risk physical activity as soon as tolerated while staying below their symptom-exacerbation thresholds. Activities that pose no/low risk of sustaining a concussion (no risk of contact, collision, or falling) should be resumed even if mild residual symptoms are present or whenever acute symptoms improve sufficiently to permit activity.	○	○	○
3.4 Refer to specialized care with an interdisciplinary concussion team if post-concussion symptoms do not gradually resolve by 4 weeks.	○	○	○
3.5 Consider early referral (prior to 4-week post-injury) to an interdisciplinary concussion team in the presence of modifiers that may delay recovery.	○	○	○
3.6 Consider initiating treatment for specific symptoms or concerns while waiting for a referral to an interdisciplinary concussion team or sub-specialist.	○	○	○
3.7 Recommend regular medical follow-up if a child/adolescent is still experiencing post-concussion symptoms, or has not completed the return-to-school or return-to-sport/activity stages. Recommend an immediate medical follow-up in the presence of any deterioration.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Concussion Recognition, Initial Medical Assessment, and Management
Domain 4. Medical Clearance for Full-Contact Sport or High-Risk Activity

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
4.1 Consider patients for medical clearance to return to full-contact activities and sport/game play if clinical criteria have been met.	○	○	○
4.2 Provide patients with a letter indicating medical clearance to return to all activities when medically cleared.	○	○	○
4.3 Advise medically cleared patients to seek immediate medical attention if he or she develops new concussion-like symptoms or sustains a new suspected concussion.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Concussion Recognition, Initial Medical Assessment, and Management
Domain 5. Sport Concussion Considerations

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
5.1 Refer a child/adolescent with multiple concussions or baseline conditions associated with concussion-like symptoms to an interdisciplinary concussion team to help with return to full-contact sports or high-risk activities, or retirement decisions from full-contact sports or high-risk activities.	○	○	○
5.2 Baseline testing on children/adolescents using assessment tools or tests (or any combination of tests/tools) is not recommended or required for concussion diagnosis or management following an injury.	○	○	○
5.3 Special considerations regarding baseline testing.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Managing Concussion Symptoms
Domain 6. Headache

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
6.1 Perform a repeat medical assessment on all patients presenting with post-concussion headaches 1-2 weeks following acute injury.	○	○	○
6.1a Take a focused clinical history.	○	○	○
6.1b Perform a focused physical examination.	○	○	○
6.1c Consider diagnostic brain or cervical spine MRI imaging for those with focal or worrisome symptoms.	○	○	○
6.1d Classify and characterize the headache subtype based on the clinical history and physical examination findings.	○	○	○
6.2 Provide general post-concussion education and guidance on headache management.	○	○	○
6.2a Advise on non-pharmacological strategies to minimize headaches including sleep hygiene, activity modifications, limiting triggers, and information on screen time.	○	○	○
6.2b Encourage patients with headaches to engage in cognitive activity and low-risk physical activity as soon as tolerated while staying below their symptom-exacerbation thresholds. Activities that pose no/low risk of sustaining a concussion (no risk of contact, collision, or falling) should be resumed even if mild residual symptoms are present or whenever acute symptoms improve sufficiently to permit activity.	○	○	○
6.2c Consider suggesting the use of a headache and medication diary in order to monitor symptoms and medications taken. Use clinical judgment and an individualized approach on use or duration of this strategy.	○	○	○
6.2d Over-the-counter medications, such as acetaminophen and ibuprofen may be recommended to treat acute headache. Advise on limiting the use of these medications to less than 15 days a month and avoiding "around-the-clock" dosing to prevent overuse or rebound headaches (i.e., advise that children/adolescents avoid using over the counter medications at regular scheduled times throughout the day).	○	○	○
6.3 Refer patients who have prolonged post-concussion headaches for more than 4 weeks to an interdisciplinary concussion team or to a sub-specialist for further evaluation and management.	○	○	○
6.4 Consider initiating pharmacological therapy to treat and manage prolonged headaches while waiting for the interdisciplinary concussion team or sub-specialist referral.	○	○	○
6.5 Recommend a medical follow-up to reassess clinical status if headaches persist. Recommend an immediate medical follow-up in the presence of any deterioration. Consider early referral (prior to 4-weeks after the acute injury) to an interdisciplinary concussion team in the presence of modifiers that may delay recovery.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation(s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Managing Concussion Symptoms
Domain 7. Sleep

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
7.1 Perform a repeat medical assessment on all patients presenting with post-concussion sleep disturbances 1-2 weeks following acute injury.	○	○	○
7.2 Provide general education and guidance on sleep hygiene that outlines non-pharmacological strategies to improve sleep.	○	○	○
7.2a Continue to encourage patients with sleep disturbances to engage in sub-symptom threshold cognitive activities and physical activities that pose no/low risk of sustaining a concussion (no risk of contact, collision, or falling) as soon as tolerated.	○	○	○
7.3 Consider managing patients who experience sleep-wake disturbances for more than 4 weeks with cognitive behavioural therapy, treat with daily supplements, and/or refer to an interdisciplinary concussion team.	○	○	○
7.4 Refer patients with prolonged post-concussion sleep disturbances (more than 6 weeks) to a sleep specialist or an interdisciplinary concussion team if the interventions introduced at 4 weeks have been unsuccessful and sleep issues persist.	○	○	○
7.5 Consider prescribing medication on a short-term basis if sleep has not improved after 6 weeks following the acute injury.	○	○	○
7.6 Recommend a medical follow-up to reassess clinical status if sleep disturbances persist. Recommend an immediate medical follow-up in the presence of any deterioration. Consider early referral (before 4 weeks) to an interdisciplinary concussion team in the presence of modifiers that may delay recovery.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Managing Concussion Symptoms
Domain 8. Mental Health

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
8.1 Assess existing and new mental health symptoms and disorders.	○	○	○
8.2 Assess the child/adolescent's broader environment, including family and caregiver function, mental health, and social connections.	○	○	○
8.3 Treat mental health symptoms or refer to a specialist in pediatric mental health.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Managing Concussion Symptoms
Domain 9. Cognition

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
9.1 Evaluate a child/adolescent for cognitive symptoms that interfere with daily functioning following the acute injury.	○	○	○
9.2 Manage cognitive symptoms that interfere with daily functioning for more than 4 weeks following acute injury.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Managing Concussion Symptoms
Domain 10. Vision, Vestibular, and Oculomotor Function

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
10.1 Perform a repeat medical assessment on all patients presenting with dizziness, blurred or double vision, vertigo, difficulty reading, postural imbalance, or headaches elicited by prolonged visual or vestibular stimulation 1-2 weeks following acute injury.	○	○	○
10.2 Screen for oculomotor or vision deficits.	○	○	○
10.3 Screen for benign paroxysmal positional vertigo (BPPV) if the patient reports vertigo or dizziness that occurs for seconds following position changes and consider targeted particle re-positioning manoeuvres.	○	○	○
10.4 Screen for vestibulo-ocular deficits.	○	○	○
10.5 Screen for balance deficits.	○	○	○
10.6 Screen for and consider underlying psychosocial causes of vestibular, vision, and oculomotor dysfunction.	○	○	○
10.7 Provide general post-concussion education that outlines symptoms of concussion, provides suggestions regarding activity modification and includes academic accommodations to manage visual, vestibular and oculomotor symptoms.	○	○	○
10.8 Encourage patients with post-concussion vestibular, vision or oculomotor symptoms to engage in cognitive activity and low-risk physical activity as soon as tolerated while staying below their symptom-exacerbation thresholds. Activities that pose no/low risk of sustaining a concussion (no risk of contact, collision, or falling) should be resumed even if mild residual symptoms are present or whenever acute symptoms improve sufficiently to permit activity.	○	○	○
10.9 Refer patients with prolonged post-concussion vestibular functioning, balance or visual dysfunction (more than 4 weeks following the acute injury) to an interdisciplinary concussion team with appropriate experience. Consider early referral (before 4 weeks) to an interdisciplinary concussion team in the presence of modifiers that may delay recovery.	○	○	○
10.10 Recommend a medical follow-up to reassess clinical status if vestibular functioning, balance or visual dysfunction symptoms persist. Recommend an immediate medical follow-up in the presence of any deterioration.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation(s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Managing Concussion Symptoms
Domain 11. Fatigue

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
11.1 Perform a repeat medical assessment on all patients presenting with post-concussion fatigue 1-2 weeks following acute injury.	○	○	○
11.2 Provide patients with post-concussion fatigue with general education and guidance that outlines non-pharmacological strategies to help cope with fatigue symptoms and set expectations.	○	○	○
11.3 Encourage patients with post-concussion fatigue to engage in cognitive activity and low-risk physical activity as soon as tolerated while staying below their symptom-exacerbation thresholds. Activities that pose no/low risk of sustaining a concussion (no risk of contact, collision, or falling) should be resumed even if mild residual symptoms are present or whenever acute symptoms improve sufficiently to permit activity.	○	○	○
11.4 Consider referral to an interdisciplinary concussion team for patients with prolonged post-concussion fatigue (more than 4 weeks following the acute injury) to learn pacing techniques.	○	○	○
11.5 Recommend a medical follow-up to reassess clinical status if fatigue symptoms persist. Recommend an immediate medical follow-up in the presence of any deterioration. Consider early referral (before 4 weeks) to an interdisciplinary concussion team in the presence of modifiers that may delay recovery.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Managing Concussion Symptoms
Domain 12. Return-to-school and Work

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
12.1 Recommend a stepwise return-to-school plan and monitor once the student is ready to start a graduated return-to-school. Include temporary accommodations based on symptoms and recommendations from the healthcare professional. Modify the return-to-school plan based on ongoing assessment of symptoms.	○	○	○
12.2 Assess for school difficulties using clinical judgment.	○	○	○
12.3 Manage school difficulties.	○	○	○
12.4 Encourage patients with school difficulties to engage in cognitive activity and low-risk physical activity as soon as tolerated while staying below their symptom-exacerbation thresholds. Activities that pose no/low risk of sustaining a concussion (no risk of contact, collision, or falling) should be resumed even if mild residual symptoms are present or whenever acute symptoms improve sufficiently to permit activity.	○	○	○
12.5 Return-to-school and return-to-sport strategies can be performed simultaneously. Recommend that the child/adolescent returns to school full-time at a full academic load, including writing exams without accommodations, before returning to full-contact sport or high-risk activities.	○	○	○
12.6 Prioritize return-to-school before return-to-work.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Biomarkers
Domain 13. Biomarkers – Neuroimaging

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
13.1 At this stage, advanced neuroimaging biomarkers are not yet ready for clinical implementation/management.	○	○	○
13.2 When conventional MRI is performed in the clinical management of concussion patients, the inclusion of susceptibility-weighted images (SWI) sequences could be considered as it may be useful for detecting small hemorrhages. The clinical significance of small hemorrhages on SWI is not clear at present.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____

Section: Biomarkers
Domain 14. Biomarkers – Serologic

Recommendations	Recommendations in practice		
	All of the time	Some of the time	Not at all
14.1 The use of serologic biomarkers is not clinically indicated. Presently there is no validated "concussion blood test" that can be used to accurately detect concussion in children/adolescents.	○	○	○
TOTAL			

I or the team will:

KEEP doing: _____

_____

STOP doing: _____

_____

START doing: _____

After reviewing current care practices, I or my team will focus on putting the following 1-3 recommendation (s) into practice during the next 6 months-1 year:

- _____
- _____