Consistent with general expectations of both patients and healthcare professionals, symptoms following mTBI are anticipated to resolve in a timely fashion in the majority of cases; evidence is emerging that some people (15% or greater) continue to have persistent symptoms.\(^1\)-\(^3\) There is wide variation in how people recover after concussion/mTBI\(^4\) even when experiencing similar injuries.\(^2\) This guideline has been developed to assist in managing those individuals who continue to have persistent symptoms or delayed recovery following concussion/mTBI.

While there are few treatments for the early stage of concussion recovery, it is notable that providing psychoeducational intervention and supportive reassurance about concussive symptoms, expectations of recovery and strategies for symptom reduction are highly effective for reducing persisting symptoms.\(^5\)-\(^7\) Furthermore there is evidence that complete rest exceeding 48 to 72 hours may slow recovery. Primary care providers must carefully monitor for patients who do not follow the anticipated pattern of recovery. For those who have had complete symptom resolution, no intervention apart from the provision of injury prevention strategies is required. However, for those with persistent symptoms or decline in function, emphasis needs to be placed on regular monitoring by healthcare professionals and identification of potentially treatable symptoms.

Obtaining a history of medical problems, performing a careful physical examination, an extensive review of concussion symptoms, and considering the response to exertion testing is essential when developing the differential diagnosis of persistent post-concussion symptoms.\(^8\),\(^9\) Through this process, the primary care provider may be able to link symptoms of persistent post-concussion symptoms to one or more definable post-concussion disorders.\(^10\) An interdisciplinary process is often helpful and referrals to appropriate specialists should be considered if available.\(^9\)

Development of complications post mTBI, such as depression, can also occur and further alter the course or pattern of recovery. In turn, efforts to update the patient’s family on the chosen intervention strategies should be considered, as their support is often a key component to maximizing patient independence and psychosocial adjustment. It is also important to approach the patient’s tolerance towards activity with vigilance, as going beyond his or her threshold may result in the worsening of symptoms. Periodic re-evaluation of the patient for worsening of symptoms or presence of new symptoms/problems following mTBI is important for those with a more chronic course of recovery.

While patients with persisting symptoms following mTBI are sometimes portrayed as making claims solely for secondary gain (i.e., disability benefits or litigation), it should be noted that in fact many factors can affect symptom expression and accentuation, including levels of emotional distress, fatigue, and pain, as well as pre- and post-injury coping abilities.\(^11\),\(^12\) Accordingly, suspected symptom exaggeration or perceived compensation seeking should only reinforce the need for a comprehensive assessment and evidence-based treatment with evaluation of outcomes.

Persistent symptoms describe a constellation of nonspecific symptoms that may be linked to other conditions such as depression, pain, headache, sleep disturbance, vertigo, irritability, anxiety, difficulty with concentration and chronic fatigue, which do not necessarily reflect ongoing physiological brain injury.\(^1\),\(^3\)-\(^5\) Symptoms associated with persistent post-concussion symptoms are also common in populations who have not sustained a mTBI.\(^15\) Nonetheless, patients are often functionally affected by these symptoms, and therefore they should be addressed. This guideline has been designed to provide an approach that focuses on optimizing management of individual symptoms to enhance function following mTBI. By addressing symptoms in a coordinated manner, improvement in outcome can be achieved. See Algorithm 5.1, which outlines the key steps to management of persistent symptoms following mTBI.
### GENERAL RECOMMENDATIONS REGARDING MANAGEMENT OF PERSISTENT SYMPTOMS

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Section 5. General Recommendations Regarding Management of Persistent Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5.1 A patient with a first-time concussion/mTBI should be advised through early education, support and/or assurance that a full recovery of their symptoms, including cognitive functioning, is typically seen within as early as a few days up to 1 to 3 months post-injury.**</td>
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<tr>
<td>A</td>
<td>5.2 Persistent symptoms after concussion/mTBI should lead primary care providers to consider that many factors may contribute to the persistence of post-concussive symptoms (see Table 1.1). All relevant factors (medical, cognitive, psychological and psychosocial) should be examined with regards to how they contribute to the patient’s symptom presentation and considered in the management strategies.a</td>
</tr>
<tr>
<td>B</td>
<td>5.3 Persons with concussion/mTBI and identified factors typically associated with persistent symptoms (see Table 1.1) should be considered for early referral to an interdisciplinary treatment clinic including a physician with expertise in concussion/mTBI where available or interdisciplinary formal network of providers (see Appendix 2.1) capable of managing post-concussive symptoms because these factors have been associated with poorer outcomes.</td>
</tr>
<tr>
<td>C</td>
<td>5.4 If necessary for support, communication with healthcare professionals or understanding information provided, a support person accompanying the patient with post-concussive symptoms to assessment and treatment sessions is recommended.b</td>
</tr>
<tr>
<td>C</td>
<td>5.5 After a brief period of rest during the acute phase (24–48 hours) after injury, patients can be encouraged to become gradually and progressively more active as tolerated (i.e., activity level should not bring on or worsen their symptoms).c***</td>
</tr>
<tr>
<td>C</td>
<td>5.6 New onset pain and concussive injuries are often comorbid. Comprehensive evaluation and management of pain is important as it can be a factor in maintaining persistent symptoms or can overlap/exacerbate concussion/mTBI symptoms.</td>
</tr>
<tr>
<td>A (a-d)</td>
<td>5.7 On presentation to healthcare professionals, patients and their support person should be provided with educational material that includes a verbal review and written information (see Appendices 1.3 and 1.4). This information should be provided at the initial assessment and ongoing as required. Education should be tailored based on the patient’s history and symptoms and include information on: a. Symptoms and expected outcomes b. Normalizing symptoms (education that current symptoms are expected and common after injury event) c. Reassurance about expected positive recovery d. Gradual return to activities and life roles e. Techniques to manage stress***</td>
</tr>
<tr>
<td>A</td>
<td>5.8 It is not recommended to use Hyperbaric Oxygen to treat symptoms post-concussion.</td>
</tr>
</tbody>
</table>

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** NOT AN ORIGINAL RECOMMENDATION - REPEAT OF 2.3  
*** NOT AN ORIGINAL RECOMMENDATION - REPEAT OF 4.5  
**** NOT AN ORIGINAL RECOMMENDATION - REPEAT OF 2.6

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a. Adapted from the Motor Accidents Authority NSW, Guidelines for Mild Traumatic Brain Injury following a Closed Head Injury (MAA, NSW, 2008).  
References

Management of Persistent Symptoms Following concussion/mTBI*

Person diagnosed with concussion/mTBI and has persistent symptoms beyond 4 weeks is not responding to initial treatment. Remind patient it is normal for symptoms to persist.

Complicating health-related or contextual factors?

Yes

Consider early referral to a interdisciplinary treatment clinic capable of managing post concussive symptoms.

No

1. Re-assess symptom severity and functional status, complete psychosocial evaluation (Sidebar 1).
2. Begin bi-weekly re-assessments for worsening/new symptoms.

Are symptoms and functional status improved?  
[Include family member/friend to help describe observed symptoms]

Yes

Encourage and reinforce. Monitor for comorbid conditions.

No

(At 1 month post-injury) Supervised exercise and activity as tolerated should be implemented. Manage pain symptoms to avoid negatively influencing other symptoms.

Any mental health disorders diagnoses established? (e.g., depression, anxiety, etc.)

Yes

Manage comorbidity according to Section 8 in the current guideline for mental health conditions. Consider referral to mental health specialist for evaluation and treatment.

No

Any persistent symptoms? (physical, cognitive, emotional)

Yes

Refer for further evaluation and treatment to a specialized brain injury environment.

No

Consider referral to occupational/vocational therapy and community integration programs.

For a narrative description and guideline recommendations related to this algorithm, please refer to Section 5.