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Diagnosis & Assessment of Concussion/mTBI

What is a concussion/mild Traumatic Brain Injury (mTBI)?

A **concussion/mTBI** is an injury that can affect how your brain works. It is caused by a direct hit or force to the head, face, neck, or other part of the body that makes the brain move inside the skull. The brain can become injured if this happens. Falls, collisions, contact in sports, or being hit by an object or person are some examples of actions that can cause concussion.

If you suspect a concussion, it is important to have a full and proper **assessment** and **diagnosis** right away.

Who can diagnose a concussion/mTBI?

A **physician, nurse practitioner, or neuropsychologist** is qualified to make a diagnostic decision. You will go through a detailed medical examination to help find out if there is any damage to your brain, neck, or spine that may need urgent attention. Your primary healthcare provider will decide if further testing needs to be done.

Who can help me with my concussion/mTBI?

Other healthcare providers can suspect you have a concussion/mTBI and can help you manage certain symptoms. They will send you to your family physician or the emergency department for a diagnosis.

A team of healthcare professionals can help identify symptoms and provide treatment and management suggestions with the knowledge of your primary healthcare provider. Other providers cannot medically diagnose a concussion/mTBI.

Your team of healthcare providers will play a role in:

- Giving you information on concussion and what to do to get better
- Keeping your primary healthcare provider up to date about your care
- Referring or connecting you to other healthcare providers when needed
- Communicating with each other to develop an appropriate treatment plan and tracking your progress
- Making sure you have help getting back to day-to-day life



Here is a list of the different healthcare providers and their roles:

Medical treatment decision and clearance:	Physical treatment:	Cognitive, behavioural, or emotional concerns:
<ul style="list-style-type: none"> • Family Doctor • Neurologist • Neuropsychologist • Neurosurgeon • Nurse Practitioner • Physiatrist • Psychiatrist • Sports Medicine Doctor 	<ul style="list-style-type: none"> • Chiropractor • Nurse • Optometrist • Physiotherapist • Registered Massage Therapist • Vestibular Therapist 	<ul style="list-style-type: none"> • Clinical Psychologist • Neuropsychologist • Nutritionist • Occupational Therapist • Psychiatrist • Social Worker • Speech-Language Pathologist

How is concussion/mTBI diagnosed?

Primary healthcare providers diagnose a concussion/mTBI by ruling out more severe types of injury to the brain or spine. They will assess your abilities to see, walk, think, and remember. They will also examine your balance, reflexes, muscle strength, sleep patterns, and mood. If necessary, tests can include scans of your head and neck.

The primary healthcare provider will ask you about the following:

- Current symptoms and health concerns
- Mechanism of injury and date of incident
- Severity and duration of symptoms
- Other injuries sustained from the accident
- Any medical and mental health conditions
- External factors that may affect your recovery
- Ability to retain and recall information
- History of previous concussion/mTBI
- Use of prescription medications, over-the-counter medications, supplements
- Use of alcohol, marijuana, and/or other recreational drugs

Many factors can influence how a person will recover. Recent studies have shown that a person’s sex & gender can influence recovery and treatment outcomes. For example, males and females may experience different symptoms, where females typically experience more symptoms and may take longer to recover.

It is important to tell your primary healthcare provider if you have or had mental health problems. This may affect your symptoms and recovery. Some symptoms of concussion/mTBI are like other conditions, such as chronic pain, depression, anxiety disorders, or sleep disorders.



Your primary healthcare provider will monitor the following symptoms from the start:

- Physical pain
- Changes in thinking, emotions, and behavior
- Communication difficulties

What else do I need to know about recovery?

Most people recover from a concussion/mTBI after a brief period of rest and gradual resumption of activities. You can be safely discharged from the clinic or hospital after initial observation if you have normal mental status with improved symptoms, no clinical risk factors, are under 65 years old, and no presence of concurrent medical problems.

It is important to keep in mind that symptoms are not synonymous to gender and both males and females can experience the same symptoms. Each concussion/mTBI is unique and should still be considered on a case-by-case basis.

All patients should be provided written and verbal advice/information on their concussion/mTBI that will cover:

- Signs and symptoms (worsening or new symptoms)
- When to seek follow-up
- Lifestyle advice to assist recovery
- Typical post-concussive symptoms and reassurance about anticipated recovery

Key Terms

- **Assessment:** An evaluation of your health based on medical history and physical examinations.
- **Concussion/mild Traumatic Brain Injury (mTBI):** Brain injury that can affect how your brain works; caused by a direct hit to the head, face, neck, or other part of the body that makes the brain move abruptly inside the skull.
- **Diagnosis:** Identifying the cause or nature of a condition.
- **Disorders:** A disturbance or abnormality of function.
- **Primary healthcare provider:** the person you see most often for your medical issues that can make a diagnostic assessment about a suspected concussion.



Key Guideline Recommendations for Healthcare Providers

The following key guideline recommendations for healthcare providers have been included here so you can see what the guideline recommends healthcare providers do in assessing and treating patients after concussion/mTBI.

1.1	Concussion should be recognized and diagnosed as soon as possible to improve positive health outcomes for patients. Concussion can be recognized in the community by a non-medical professional, whereas diagnosis should be made by a healthcare practitioner.
1.2	On presentation, the primary care provider should conduct a comprehensive review of every patient who has sustained concussion/mTBI. The assessment should include taking a history, examination and cognitive screen for post-concussive symptoms, and review of mental health.
1.3	The need for early neuroimaging should be determined according to the Canadian CT Head Rule . For patients who fulfill these criteria, CT scanning is the most appropriate investigation for the exclusion of neurosurgically significant lesions, such as haemorrhage. Plain skull x-rays are not recommended.

Additional Resources

Concussion recovery pathway

<http://concussionsontario.org/wp-content/uploads/2018/04/ONF-PatientPathway-Tearaway-WEB-1.pdf>

Standards for post concussion care

<https://onf.org/knowledge-mobilization/acquired-brain-injury/standards-for-post-concussion-care/>

Standards for post concussion services

<http://concussionsontario.org/standards/standards-for-high-quality-post-concussion-services-and-concussion-clinics/>

Pink Concussions: Female brain injury from sports, violence, military service

<http://www.pinkconcussions.com>

Concussion: Symptoms and treatment

<https://www.canada.ca/en/public-health/services/diseases/concussion-sign-symptoms.html>

Abused and brain injured

<http://www.abitoolkit.ca>



Cautionary Note to Users

The content of the *Guideline for Concussion/mTBI & Prolonged Symptoms, 3rd Edition: for Adults over 18 years*, is based on the status of scientific knowledge available at the time of their finalization (2017) as well as on the consensus of the experts who participated in the guideline development.

This guideline has been created to provide recommendations and help with management of concussion/mild traumatic brain injury (mTBI). It is only for management for adults over 18 years of age. This guideline is not intended for use by people who have sustained or are suspected of having sustained a concussion/mTBI for any self-diagnosis or treatment.

The guideline can be used by patients when speaking with healthcare providers about their care. It covers getting a diagnosis, managing symptoms in the early phase (acute) and management in the longer recovery phase (prolonged symptoms). Patients may wish to bring their healthcare and other providers' attention to this guideline. It is based on up-to-date, quality research evidence, the expertise of providers and the input of patients.

