Primary care pathway: Acute concussion (0–12 weeks post-injury)

Quick links: Pathway primer | Expanded details | Provider resources | Patient resources

1. Mechanism of injury

- Head struck with an object
- Head striking a hard object or surface
- Brain undergoing an acceleration/deceleration movement without direct contact between head and an object or surface
- Forces generated from a blast or explosion

Intimate partner violence?

Unless this is a first presentation, if patient is still symptomatic at >12 weeks since injury, follow Persisting Post-Concussion Symptoms pathway

Yes

2a. Red flags:

- Declining level of consciousness
- Progressively declining neurological exam
- Seizures
- Repeated vomiting
- Pupillary asymmetry
- Neurological deficit (motor or sensory)
- Double vision
- Worsening headache
- Slurred speech
- Unusual behaviour
- Disorientated to time and place

Yes → **Referral to Emergency Department:**
- Call RAAPID (NORTH 1-800-282-9911/ SOUTH 1-800-661-17000) or 911

For C-spine red flag(s), observe C-spine precautions

No

2b. Cervical spine red flags:

- New onset neck pain with appropriate mechanism of injury with one or more of the following c-spine symptoms:
  - Radicular pain with new onset
  - Numbness involving limb
  - New onset weakness
  - Loss of bowel and bladder function
  - Wide base gait
  - Saddle anesthesia

Yes → **Referral to Emergency Department** (see above)

No

3. Assessment/Diagnosis

- An mTBI/ concussion results from a biomechanically plausible mechanism of injury (Box 1) with one or more of the criteria listed below are met: i. One or more clinical signs (Box 3a) attributed to brain injury, OR ii. At least 2 acute symptoms (Box 3b) and at least one clinical finding (Box 3c). In addition, other factors (Box 3d) do not fully account for the clinical signs, acute symptoms, and clinical and laboratory findings that are necessary for the diagnosis.

3a. Clinical signs (1 or more)

- Lost consciousness
- Alteration of mental status
- Complete or partial amnesia
- Other acute neurological sign(s)

No → 3b + 3c

Yes → 3d

3b. Acute symptoms (2 or more within 72 hours)

- Acute subjective alteration in mental status
- Physical symptoms
- Cognitive symptoms
- Emotional symptoms

3c. Clinical examination (1 or more)

- Cognition impairment
- Balance impairment
- Oculomotor impairment
- Orthostatic impairment
- Cervical impairment
- Neurological impairment

Yes

3d. Differential diagnosis for symptoms

- Musculoskeletal pain
- Physiological trauma
- Alcohol or substance intoxication
- Syncope prior to fall
- Pulmonary or circulatory disruption

Sports-related concussion

4. Acute management

- **Important: Rest is no longer suggested as a treatment for concussion**
- Graduated return activity starting 48 hrs post-injury
- Early (2-10 days post-injury) symptom based gradual return to work/school and activity: CATTonline return to work, return to school and return to activity
- Assess and advise if safe to drive
- Refrain from alcohol, tobacco, cannabis and caffeine
- Encourage good sleep hygiene
- Manage acute pain using acetaminophen prn and ice packs
- If headaches, dizziness, neck pain 5-10 days, consider referral for physiotherapy

Based on assessment findings, continue to monitor, and reassess as needed, until symptoms have resolved and patient has returned to work/school and activity. If symptoms persist for >12 weeks follow the Persisting Post-Concussion Symptoms pathway

Persisting post-concussion symptoms pathway

5. Consider specialist advice/referral

- For sport or exercise-related head injuries and concussions:
  - Call Specialist Link (Sports Medicine)
  - See Acute Sport Concussion Clinic (ASCC) or Innovative Sport Medicine Clinic Rapid Access Sport Injury Clinic
- If ≥ 1-month post-injury and not a MVA see community accessible rehabilitation
- For MVA, see automobile collisions and insurance

Specialist Link

aged 18+. The advice herein also applies to geriatric patients and those who are pregnant.

A concussion follows an acute neurophysiological event related to blunt impact or other mechanical energy applied to the head, neck or body (with transmitting forces to the brain) such as from sudden acceleration, deceleration or rotational forces.[1] Approximately 450,000 Canadians will sustain a concussion each year.[2]
Immediate symptoms can include:

- **Physical** (headache, nausea, vomiting, balance problems, dizziness, visual problems, fatigue, sensitivity to light, sensitivity to noise, numbness/tingling),
- **Cognitive** (feeling mentally foggy/slowed down, difficulty concentrating/remembering),
- **Emotional** (irritability, sadness, more emotional, nervousness), and
- Problems with **sleep** (drowsiness, sleeping more or less than usual, trouble falling asleep).

The diagnostic label 'concussion' may be used interchangeably with 'mild Traumatic Brain Injury' (mTBI) when neuroimaging is normal or not clinically indicated.[1]

This pathway was developed to guide the diagnosis of concussion and provide recommendations for management if mTBI and concussion in the initial 4 weeks following injury. Unless this is a first presentation, if patient is still symptomatic at >12 weeks post-injury, please see Persisting Post-Concussion Symptoms pathway for management. Patients can enter the pathway shortly following injury or when concussion-like symptoms are not resolving and diagnosis, assessment and management are essential. This pathway was developed, reviewed and approved by specialty care and primary care physicians in the Calgary Zone.

EXPANDED DETAILS

1. History

A comprehensive history from every patient who has sustained a concussion should be taken which includes:

- Mechanism (motor vehicle accident, pedestrian vs. motor vehicle, fall, assault, work-place accident, sports or other)
- Injury description (Date of injury, location of impact, if appropriate were they wearing a helmet, was there a direct or indirect blow to the head)
- Any concurrent injuries?
- Amnesia (retrograde or anterograde, duration)
- Loss of consciousness (duration, was it witnessed, did they fall or potentially hit their head
- Glasgow Coma Scale, at present and at time of the injury **if amnesia for > 1 hour and loss of consciousness > 30 minutes, or GCS <13, more severe traumatic brain injury and should consider urgent care**
- Previous concussions (how many, when did they occur, mechanisms of previous concussions, time loss from activities/sport/work from previous concussion (time loss of >7-10 days is predictive of who will move on to develop persisting symptoms), what symptoms did they experience and had they resolved prior to current concussion)
- Pre-existing or concurrent medical conditions

- Evaluation for concurrent comorbid conditions should be considered including but not limited to depression, anxiety, post-traumatic stress disorder, and functional neurological disorder.
- Social history: Employment, hobbies, pre-injury activity levels, drug, and alcohol use

Reported or suspected intimate partner violence:

- The world health organization estimates that up to 1/3 of women worldwide have experienced intimate partner violence (IPV).[3] Between 35-80% of women affected by IPV experience symptoms of a traumatic brain injury and is often underreported for reasons such as shame and stigma associated with IPV, fear of not being believed, desire to keep the family together and a lack of recognition as to what constitutes abuse.[4]
- The HELPS questions from the Supporting Survivors of Abuse and Brain Injury through Research group provides prompts to talk about brain injury in the context of IPV, although should not be used to diagnose concussion.

2. Red flags

Acutely following injury (<24-48 hours), patients should be screened for red flags which may indicate a more severe brain injury, cervical spine injury or other neurological disorders.[5, 6]

2a. Red flags

- Declining level of consciousness
- Progressively declining neurological exam
- Seizures
- Repeated vomiting
- Pupillary asymmetry
- Neurological deficit (motor or sensory)
- Double vision
- Worsening headache
- Slurred speech
- Unusual behaviour
- Disorientated to time and place

If there is a red flag, call 911 or call RAAPID (NORTH 1-800-282-9911/ SOUTH 1-800-661-17000).

Neuroimaging is not recommended to diagnose a concussion, however, may be indicated if more serious injury is suspected. Indicators for imaging referral are shown in the table below for information purposes.

Indicators for imaging referral
(If a mild TBI is suspected, imaging is not indicated. However, if any of the following criteria for section B are met, a moderate or severe TBI may be suspected and referral for imaging is indicated)

Criteria	**A) Mild TBI - Imaging not indicated**	**B) Potentially a moderate or severe TBI - Referral for imaging indicated**	
Loss of Consciousness (LOC)	0-30 min	>30 min and <24 hours	>24 hours
Alteration of Consciousness/ mental state (AOC)	Up to 24 hours	>24 hours; severity based on other criteria	
Posttraumatic Amnesia	0-1 day	>1 and <7 days	>7 days
Glasgow Coma Scale (GCS) (best available score in 24 hours)	13 – 15	9. – 12	<9

- Alteration of mental status must be immediately related to the trauma to the head. Typical symptoms would be looking and feeling dazed and uncertain of what is happening, confusion, difficulty thinking clearly or responding appropriately to mental status questions, and/or being unable to describe events immediately before or after the trauma injury event.
- In April 2015, the DoD released a memorandum recommending against the use of the GCS in diagnosing TBI.

Adapted from the VA/DOD Clinical Practice Guideline for the Management of Concussion-Mild Traumatic Brain Injury; The management of Concussion-mild Traumatic Brain Injury Working Group, 2021. [7,8]

2b. Cervical spine red flag(s):

- New onset neck pain with appropriate mechanism of injury WITH one or more of the following c-spine symptoms:
  - Radicular pain with new onset
  - Numbness involving limb
  - New onset weakness
  - Loss of bowel and bladder function
  - Wide base gait
  - Saddle anesthesia

If c-spine red flags are positive, call RAAPID (NORTH 1-800-282-9911/ SOUTH 1-800-661-17000) or 911) and observe c-spine precautions.

3. Assessment/Diagnosis

- A mild Traumatic Brain Injury (mTBI) is diagnosed using the 2023 American Congress of Rehabilitation Medicine Diagnostic Criteria for mTBI.[1]
  - *Sport-related concussion* is conceptually defined as a traumatic brain injury caused by a direct blow to the head, neck or body that occurs in sports and exercise-related activities and results in an impulsive force being transmitted to the brain.[9]
- An mTBI/ concussion results from a biomechanically plausible mechanism of injury with *one or more* of the criteria listed below are met:
  i. One or more clinical signs (see 3a. below) attributed to brain injury, OR
  ii. At least 2 acute symptoms (see 3b. below) and at least one clinical finding (see 3c. below).
- In addition, confounding factors do not fully account for the clinical signs, acute symptoms, and clinical and laboratory findings that are necessary for the diagnosis (see 3d. below).

3a. Clinical Signs (1 or more)

The initial or the acute examination should identify any alarming features or indicators for immediate referral e.g., more severe TBI, cervical spine injuries and neurologic conditions. Physical limitations should be documented at initial assessment for subsequent comparative analysis in the event of prolonged symptoms.

Assessment tools:

- Non-sport-related concussions:
  - Centre for Effective Practice (CEP) concussion diagnosis and management tool (Section C)
  - Living concussion guidelines core components to include in a neurologic or musculoskeletal exam
- Sport-related concussion:
  - If <72 hours Sport Concussion Assessment Tool (SCAT6)
  - If > 72 hours Sport Concussion Office Assessment Tool (SCOAT6)

Findings should be considered when planning acute management of the patient. If limited on time, complete sections of the assessment relevant to the patient's complaints.

Note that a clinical sign may qualify as a diagnostic criterion only when it is not better accounted for by acute musculoskeletal pain, psychological trauma, alcohol or substance intoxication, syncope prior to fall, pulmonary or circulatory disruption, or other confounding factors.[1]

3b. Acute symptoms (2 or more with 72 hours)

Acute concussion symptoms			
Physical	**Cognitive**	**Emotional**	**Sleep**
• Headache • Dizziness/vertigo • Balance Problems • Nausea • Fatigue • Sleep disturbances • Sensitivity to light • Visual disturbances • Tinnitus • Severity to noise	• Attention • Concentration • Memory • Speed of Processing • Judgement • Executive functions • Speech and language • Visual-spatial function	• Depression • Anxiety • Agitation • Irritability • Impulsivity • Aggression	• Drowsiness • Sleeping more or less than usual • Trouble falling asleep
Symptom assessment tools	• The Rivermead Post-Concussion Symptoms Questionnaire (RPQ) • Post-concussion Symptom Scale in SCAT/SCOAT • If <72 hours Sport concussion assessment tool (SCAT6) • If > 72 hours Sport concussion office assessment tool (SCOAT6)		

Recreated from the VA/DOD Clinical Practice Guideline for the Management of Concussion-Mild Traumatic Brain Injury; The management of Concussion-mild Traumatic Brain Injury Working Group, 2021.[7,8]

Note that symptoms should be counted only when they are not better accounted for by confounding factors such as drug, alcohol, or medication use; co-occurring physical or psychological conditions; pre-existing health conditions; or symptom exaggeration.[1]

3c. Clinical examination (1 or more)

Physical assessment of acute concussion	
Cognition testing	• Saint Louis University Mental Sate Exam
Balance assessment/ postural stability	• Modified BESS • Double, single tandem leg stance • Timed Tandem Gait (3m then return, >14s abnormal) • Complex Tandem Gait (eyes open and closed, forward and backward) • Dizziness Handicap Inventory (DHI)

Vestibular and oculomotor screening	• Brief Vestibular Ocular Motor Screening (VOMS) Note: This test is an effective screening tool for concussion when looking at symptom reproduction of greater than 2 points but does NOT determine whether that individual has vestibular or oculomotor dysfunction specifically i. Smooth pursuits ii. Horizontal and vertical saccades iii. Horizontal vestibulo-ocular reflex iv. Visual motion sensitivity • Nystagmus • Visual acuity • Pupillary reactivity • Head thrust test (video)
Orthostatic vital signs	• Supine and standing (after 1min) heart rate and blood pressure • Did this reproduce any symptoms e.g., ○ Dizziness ○ Fainting ○ Blurred or fading vision ○ Nausea ○ Fatigue ○ Lack of concentration
Cervical assessment	• Range of movement (active and following the remaining cervical spine assessments, passive ROM) • Muscle spasm • Head and neck tenderness • Rule out Base of skull fracture (hemotympanum, raccoon eyes, cerebrospinal fluid otorrhea/ rhinorrhea, Battle's sign
Neurological examination	• Reflexes • Cranial nerve assessment • Manual muscle testing • Tone • Sensation • Cerebellar function

Note that findings of clinical examination must not be better accounted for by drug, alcohol, or medication use; co-occurring physical injuries or psychological conditions; pre-existing health conditions; or factors influencing the validity of the symptom reporting or test results.[1]

3d. Differential diagnosis for symptoms

Diagnosis first requires consideration to determine that confounding factors, including pre-existing and co-occurring health conditions, do not fully account for the signs, symptoms and examination/laboratory findings. Consider if the following better accounts for symptoms:

- Musculoskeletal pain
- Physiological trauma
- Alcohol or substance intoxication
- Syncope prior to fall
- Pulmonary or circulatory disruption

Sport-related concussion

Sport-related concussions can occur in any population, playing any type of sport and at all levels of participation (i.e., amateur to professional). A sport-related concussion can be suspected in the community by all sport stakeholders

(athletes, parents, coaches, teachers etc.), however, a formal diagnosis should be made by a physician following a thorough medical assessment.

Sport-related concussions can be complex and potentially difficult to assess and manage:

- Often present without neurological signs and can cause a variety of symptoms.
- More likely to occur when the force or impact suffered is not anticipated by the athlete.
- More likely to occur in contact sports

Given the complexity of sport-related concussion, specific guideline advice regarding acute and subacute management should be consulted. See: Consensus Statement on Concussion in Sport: The Sixth International Conference on Concussion in Sport held in Amsterdam, October 2022

4. Acute management

Following an acute concussion, a management plan for each patient should be initiated. Rest is no longer suggested as a treatment for concussion and graduated return to activity should be starting 48 hours post-injury. Management plans should include:

- Education on expected symptoms and course of recovery
- Monitoring for potential acute complications
- Recommendations for healthcare follow-up post injury

Acute management of concussion	
Patient education, reassurance, and management of expectations	• Reassure patients that most people experiencing a concussion will make a full recovery, with symptoms lasting 1-4 weeks but may last longer. Set expectations for recovery. • Advise on a short period of relative rest during the acute phase (24-48 hours) including screen time, cognitive tasks and physical activity based on symptom exacerbation • Reducing screen time in the first 48 hours below symptom exacerbation following injury is suggested, however, greater screen time is not associated with worse concussion outcomes.[9] If screens are provoking symptoms beyond 48 hours, then gradually increase screen time based on symptom exacerbation. Can follow the CATTonline Return to School or Return to Work strategy for advice and tools for graded exposure to screens/cognitive tasks. • Evaluate if safe to drive. Advised that patients should not drive the first 24 hours following concussion. After 24 hours, if the patient is experiencing symptoms which may impact ability to drive, such as blurred vision, dizziness, fatigue, impaired cognition or headache, advise to only return to driving once these symptoms have subsided sufficiently to permit safe driving.[10] • Recommend limiting the use of caffeine/tobacco/alcohol.[7] • Avoid activities with any risk of contact, collision or fall until concussion-related-symptoms and signs resolve at rest and with physical exertion. • Even if patients are stills symptomatic after the first 48 hours, activity (as tolerated) has been shown to improve recovery.[10] • Empower patient to self-manage their symptoms and progress with activities as able

Symptom management[7]	• If symptoms of dizziness, neck pain and headaches and signs not resolved in 5-10 days post-concussion, consider referral for cervical/vestibular physiotherapy.
	• Headache
	  ○ Non-opioid analgesia (limit to fewer than 10 days per month to avoid medication overuse headache)
	• Address other bodily pain which significantly interferes with patient functioning
	  ○ Appropriate investigations
	  ○ Treated concurrently with concussion-related symptoms
	• Emphasize non-pharmacological interventions as there is limited evidence to support medication use for acute concussion.[10]
	• Before prescribing, review all current medications including over-the-counter medicines and supplements and rule out social factors (abuse, neglect, environmental issues).
	• Assess regularly as patients with a history of TBI can be more sensitive to side effects
	• Limit the use of medications when there is a high risk for suicide.
	• Advise on sleep hygiene practices e.g., fixed bedtime routine and wake up time, good sleep environment (no TV, blue lights, dark and comfortable etc.,), avoiding caffeine, large meals, or alcohol close to bedtime, and avoiding naps in the post-acute injury phase. See Sleepwell for resources.
	• If symptoms persist ≥4-12 weeks, consider multidisciplinary interventions (see Persisting Post-concussion Symptoms pathway).

Early physical activity	Pre-injury physical activity should be taken into consideration for the following recommendations: • Spontaneous light physical activity within 48 hours of injury, e.g., activities of daily living and walking facilitate recovery. • Early light to moderate levels of physical activity (within 2-14 days) has been shown to facilitate recovery and reduce persisting post-concussion symptoms. This can include walking, stationary bike or introductory strength exercises. • Consider concussion symptoms of headache, nausea, visual symptoms, dizziness, etc. when looking at early physical activity. All symptoms should be rated on a 1-10 scale with 10 being most severe. Symptoms can increase 0-2 points as long as they decrease within one hour. Aim to keep symptoms less than 3/10. When symptoms are 3/10 or higher they tend to become persistent and significantly noticeable when exercising. • Initial exercise should be prescribed at 55% of the age-predicted maximum heart rate (220-age) for 15-20 minutes, stopping if there is a 2/10 increase in symptom scores which last beyond 1 hour. The following day, provided that their symptoms were mild and brief, the exercise level can be increased to 70% of age-predicted maximum heart rate. • This prescription can be gradually increased based on symptom exacerbation, can follow the CATT Return to Sport Strategy for advice and tools for graded return to exercise. • A time frame of 24 hours is recommended for each incremental activity step. If symptoms worsen substantially after initiating, increasing intensity or duration, advise to step back to the previous level for another 24 hours before trying again.[10]
Explain to patients that transient symptom worsening with increased activity is common. If symptom worsening is more than mild or prolonged then a monitored, slower progression of returning to normal activity should be implemented.	
Return to work/ school	• Not everyone will require a return to learn strategy but if required, see CATT Return to School Strategy • Medically unnecessary delays in return to work or school should be avoided provided it does not pose risk of re-injury. • Communicate the specific medical restrictions, limitations, and abilities to the employer/ stakeholder to facilitate temporary accommodations where necessary (with consent). • Gradually increasing daily activities such as screen time or physical and mental activities that do not cause a major worsening of symptoms. See CATT Return to Sport Strategy • There is no common return to work template, an individualized plan should be made with the patient and the employer to support the reintegration and rehabilitation back to the workplace. See Return to Work Considerations Algorithm

Explain to patients that transient symptom worsening with increased activity is common. If symptom worsening is more than mild or prolonged then a monitored, slower progression of returning to normal activity should be implemented.

5. Consider specialist advice/referral:

- For sport or exercise-related head injuries and concussions, call Specialist Link (Sports Medicine). Patients can also self-refer to the Acute Sport Concussion Clinic (ASCC) at the University of Calgary or to the Innovative Sport Medicine Clinic Rapid Access Sport Injury Clinic (see table below for details).
- If not a motor-vehicle accident and ≥ 1-month post-injury, refer to Community Accessible Rehabilitation.

Below is a list of examples of resources in the Calgary zone based on the information available at the time of creation. This is not an exhaustive list and other referral resources may be available.

Publicly funded resources		
Resource	**When to refer**	**How to refer**
The Acute Sport Concussion Clinic (ASCC) at the University of Calgary Sport Medicine Centre or Innovative Sport Medicine Clinic	**Who to refer (self-referral):** ○ The injury occurred **while participating in a sport or exercise activity**. ○ Between the ages of 5 and 60 years ○ The injury occurred within the last six weeks **Who you can see:** sports-medicine physician, physiotherapy, athletic therapist **When not to refer to this resource:** ○ Concussion/injury from motor vehicle accident ○ WCB related injury	If injury occurred within 6 weeks of injury apply online: • ASCC: https://sport-med.ucalgary.ca/clinics/ascc • Innovative Sport Medicine Rapid Access Sport Injury Clinic: https://www.innovativesportmedicine.ca/ If injury occurred more than 7 weeks ago, referral should be made to the first available sport medicine physician via fax at: • ASCC Fax: 403-282-6170 • Innovative Sport Medicine Clinic Fax: 403-452-3757
College of Physicians & Surgeons of Alberta (CPSA)	There are many sports injury clinics throughout Calgary. Physicians can search the CPSA for a sports medicine doctor or somebody who will see motor vehicle collisions.	Website: https://search.cpsa.ca/
Calgary Brain Injury Program	**Who to refer:** ○ Patients with persistent symptoms beyond 3 months post-injury not improving. ○ 18 years or older ○ For comprehensive clinical care through multidisciplinary team **Who you can see:** Physicians and social work	Fax referral/letter to the clinic 403-283-2526 For more information Phone: 403-944-4224 Online: https://www.albertahealthservices.ca/findhealth/Service.aspx?id=1796&serviceAtFacilityID=1046526#contentStart

Motor vehicle accident

The **Automobile Collisions and Insurance** information can be shared with patients. The webpage provides a summary and other information including a collision worksheet form, tips to remember and steps to follow after an automobile collision.

References

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BACKGROUND

About this pathway

The pathway is designed for adult patients with acute concussion (0-12 weeks post-injury). It is not indicated for acute concussion in the pediatric/youth populations as this subpopulation may have unique considerations -- consider a Specialist Link call (Sports medicine) for advice on this population.

Authors and conflict of interest declaration

This pathway was developed by leveraging the collective knowledge, experience and expertise of several individuals. See a full list below. For more information, please email info@calgaryareapcns.ca.

- Monica Sargious MD CCFP FCFP
- Lori Montgomery MD CCFP FCFP CHE
- Chantel Debert MD MSc FRCPC CSCN
- Kathryn Schneider PT PhD DipManiPT
- Christina Campbell MSc
- Business Support:
  - Melissa Worrell – Medical Writer, Calgary and Area Primary Care Networks
  - Keith Bradford – Director of Communications, Calgary and Area Primary Care Networks
  - Val Kiss – Project Manager, Alberta Health Services

Pathway review process, timelines

Primary care pathways undergo scheduled review every three years, or earlier if there is a clinically significant change in knowledge or practice. The next scheduled review is January 2028. If you have any questions or concerns about this pathway, please email info@calgaryareapcns.ca with “Acute Concussion Pathway” in the subject line.

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DISCLAIMER

This pathway represents evidence-based best practice but does not override the individual responsibility of health care professionals to make decisions appropriate to their patients using their own clinical judgment given their patients’ specific clinical conditions, in consultation with patients/alternate decision makers. The pathway is not a substitute for clinical judgment or advice of a qualified health care professional. It is expected that all users will seek advice of other appropriately qualified and regulated health care providers with any issues transcending their specific knowledge, scope of regulated practice or professional competence.

PROVIDER RESOURCES

Advice options

- Non-urgent telephone advice connects family physicians, nurse practitioners and specialists in real time via a tele-advice line. Family physicians, nurse practitioners and specialists can request non-urgent advice (sports medicine) including at specialistlink.ca or by calling 403-910-2551. This service is available from 8 a.m. to 5 p.m. Monday to Friday (excluding statutory holidays). Calls are returned within two (2) hours.
- Non-urgent advice is available for chronic pain or neurology across the province via Alberta Netcare eReferral Advice Request (responses are received within five calendar days). View https://www.albertanetcare.ca/eReferral.htm for more information.

Alarm Features	
Canadian CT head rules	https://sjrhem.ca/wp-content/uploads/2017/09/1748-5908-8-25-S1.pdf
Diagnostic Criteria	
2023 American Congress of Rehabilitation Medicine Diagnostic Criteria for Concussion	https://www.archives-pmr.org/article/S0003-9993(23)00297-6/fulltext
Sport Related Concussion	
Consensus Statement on Concussion in Sport: The Sixth International Conference on Concussion in Sport held in Amsterdam, October 2022	https://bjsm.bmj.com/content/57/11/695?
Introducing the Sport Concussion Office Assessment Tool 6 (SCOAT6)	https://bjsm.bmj.com/content/bjsports/57/11/648.full.pdf
Sport Concussion Assessment tool 6 (SCAT6)	https://bjsm.bmj.com/content/bjsports/57/11/622.full.pdf
Evolving the SCAT5 for Ruling Out Higher-Severity Traumatic Brain Injuries—Can Decision Rules Developed for Emergency Settings Help?	https://pubmed.ncbi.nlm.nih.gov/36484358/
What tests and measures accurately diagnose persisting post-concussive symptoms in children, adolescents and adults following sport-related concussion? A systematic review	https://bjsm.bmj.com/content/57/12/780
Acute evaluation of sport-related concussion and implications for the Sport Concussion Assessment Tool (SCAT6) for adults, adolescents and children: a systematic review	https://bjsm.bmj.com/content/57/11/722
Targeted interventions and their effect on recovery in children, adolescents and adults who have sustained a sport-related concussion: a systematic review	https://bjsm.bmj.com/content/57/12/771
Definition of sport-related concussion: the 6th International Conference on Concussion in Sport	https://bjsm.bmj.com/content/57/11/617
Canadian Guideline on Concussion in Sport.	https://parachute.ca/en/professional-resource/concussion-collection/canadian-guideline-on-concussion-in-sport/

Intimate partner violence	
SOAR HELPS brain injury screening tool	https://soarproject.ca/wp-content/uploads/2020/04/help1-merged.pdf
Brain Injury Canada – Intimate partner violence and brain injury	https://braininjurycanada.ca/en/caregiver/issues-advocacy/intimate-partner-violence/
Abused and brain injured toolkit	https://www.abitoolkit.ca/traumatic-brain-injury/brain-injury-basics/
SOAR information sheet	https://soarproject.ca/wp-content/uploads/2022/06/Intimate-Partner-Violence-and-Brain-Injury.pdf
CATTonline: Intimate partner violence traumatic brain injury medical provider resource	https://resources.cattonline.com/files/intimate-partner-violence-traumatic-brain-injury-medical-provider-resource
Physical assessment	
Non sport-related concussions	
Centre for Effective Practice (CEP) concussion diagnosis and management tool (Section C)	https://cep.health/media/uploaded/CEP_ConcussionTool_20191125.pdf
Living concussion guidelines core components to include in a neurologic or musculoskeletal exam	https://concussionsontario.org/sites/default/files/2023-03/appendix-3-4.pdf
Sport-related concussions	
If <72 hours Sport Concussion Assessment tool (SCAT6)	https://carolinasportsconcussionclinic.com/wp-content/uploads/2023/06/SCAT6.pdf
If > 72 hours Sport Concussion Office Assessment tool (SCOAT6)	https://concussionphysio.com.au/wp-content/uploads/SCOAT6.pdf
Symptom assessment tools	
The Rivermead post-concussion symptoms questionnaire (RPQ)	https://mississaugahalton.rehabcareontario.ca/Uploads/ContentDocuments/Rivermead_Post_ConcussionSymptoms_Questionnaire_(RPC)1.pdf
Post-concussion symptom scale in SCAT/SCOAT	https://impacttest.com/wp-content/uploads/Post-Concussion-Symptom-Scale.pdf
Balance Error Scoring System (BESS)	https://quicktest.impacttest.com/how-to-check-for-concussion/bess-concussion/
Dizziness Handicap Inventory (DHI)	https://southampton.stonybrookmedicine.edu/sites/default/files/Dizziness_Hanicap_Inventory_-_English.pdf
Head thrust test	https://www.youtube.com/watch?v=KYI7eHhwhwk
Brief vestibular ocular motor screening (VOMS)	https://impacttest.com/wp-content/uploads/VOMS-Scorecard-and-Instructions.pdf
Acute management of concussion	
Living Concussion Guidelines: Referral indicators	https://concussionsontario.org/concussion/resources/tools-resources/referral-indicators/
AHS concussion tools and resources	https://www.albertahealthservices.ca/info/Page17877.aspx

Return to work algorithm	https://concussionsontario.org/sites/default/files/2023-03/algorithm-12-1.pdf
MyHealth.Alberta: Returning to play after a head injury at a sporting event	https://myhealth.alberta.ca/Health/pages/conditions.aspx?hwid=tv6824#:~:text=The%20first%20treatment%20for%20a,the%20following%20levels%20of%20activity%3A&text=Limited%20activity
CATTonline Return to Sport	https://resources.cattonline.com/files/return-to-sport-strategy
CATTonline Return To School	https://resources.cattonline.com/files/return-to-school-strategy
Return to work accommodation list	https://concussionsontario.org/sites/default/files/2023-03/Table_12.3._Return_to_Work_Accommodation_List.pdf

PATIENT RESOURCES

Intimate Partner Violence	
Head injury booklet to help support survivors of TBI and IPV	https://www.odvn.org/wp-content/uploads/2020/04/ODVN_Resource_InvisibleInjuries_web.pdf
Calgary Police Service victim resources – domestic violence	https://www.calgary.ca/cps/community-programs-and-resources/victims-of-crime/victim-resources-domestic-violence.html
Calgary women's emergency shelter 24-hour helpline	https://www.calgarywomensshelter.com/index.php/programs/24-hour-family-violence-helpline
Ending violence: Association of Canada	https://endingviolencecanada.org/getting-help/
Education	
Living concussion guidelines: Concussion info for patients, families	https://concussionsontario.org/sites/default/files/2023-04/ONF-Concussion-Booklet CLEAN_revised.pdf
Manitoba adult concussion network post-concussion education sheet	https://macn.ca/wp-content/uploads/2020/02/Post-concussion-information-sheet_MACN.pdf
Initial Management of mTBI handout	https://concussionsontario.org/sites/default/files/2023-03/2.Initial_Management_PV_.pdf
Concussion care instructions	https://myhealth.alberta.ca/health/pages/conditions.aspx?Hwid=custom.ab_concussion_ac_adult
AHS concussion resources	https://albertahealthservices.ca/info/Page17877.aspx
Concussion education module	https://myhealth.alberta.ca/Learning/modules/Early-Concussion
Return to work/school	
The Parkwood pacing graphs	https://concussionsontario.org/sites/default/files/2023-03/appendix-2-2.pdf
CATTonline Return To Work	https://resources.cattonline.com/files/return-to-work-strategy
CATTonline Return To School	https://resources.cattonline.com/files/return-to-school-strategy
Return To Work accommodation List	https://concussionsontario.org/sites/default/files/2023-03/Table_12.3._Return_to_Work_Accommodation_List.pdf
Sleep hygiene	
Sleep hygiene checklist	https://mysleepwell.ca/cbti/hygiene-of-sleep/
Sleep hygiene program	https://concussionsontario.org/sites/default/files/2023-03/appendix-7-4.pdf
Behavioural recommendations for optimal sleep	https://concussionsontario.org/sites/default/files/2023-03/appendix-7-5.pdf
Recreating time and place for sleep	https://concussionsontario.org/sites/default/files/2023-03/appendix-7-8.pdf
Limiting the time spent in bed to actual sleep time	https://concussionsontario.org/sites/default/files/2023-03/appendix-7-7.pdf
'Sleep Habits' Zoom class	https://www.albertahealthservices.ca/info/Page16878.aspx
Physical activity	
CATTonline Return to sport	https://resources.cattonline.com/files/return-to-sport-strategy