Concussion Education for Primary Care Physicians
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Concussion Nova Scotia
• This speaker has been asked to disclose to the audience any involvement with industry or other organizations that may potentially influence the presentation of any educational material.

• Receiving evaluations is critical to the accreditation process. After the program please provide feedback at https://surveys.dal.ca/opinio/s?s=45514
Concussion NS

- Concussion Nova Scotia is a group of healthcare professionals working to develop, adapt and implement guidelines and resources to assist with the diagnosis, education and management of individuals with concussion/mild Traumatic Brain Injury in Nova Scotia

- CNS (Concussion Nova Scotia) Advisory Committee Members: Dr. Kevin Gordon (Pediatric Neurologist), Dr. Simon Walling (Neurosurgeon), Dr. Brett Taylor (ER Physician), Dr. David Cudmore (Sports Medicine), Dr. Tina Atkinson (Sports Medicine), Dr. Erica Baker (Psychologist), Dr. Joan Backman (Psychologist), Natalie Thornley (OT), and Lynne Fenerty (RN/osteopath)

- Working group and hold biannual meetings open to anyone

- Website launch in 2016 www.concussionns.com
What is a Concussion?

- An alteration in thinking and behaviour as a result of brain trauma
- Caused by a direct blow to the head or an impact to the body causing a sudden severe movement to the head
- May or may not result in loss of consciousness
- May be sports-related but may also be due to falls, car and bike crashes, fights etc..

- Consensus Statement on Concussion in Sport 2016 [bjsm.bjm.com](http://bjsm.bjm.com)
- ACRM- American Congress of Rehabilitation Medicine - Definition of Concussion 1993 [acrm.org](http://acrm.org)
Diagnosis

- History and Physical including neck exam and neurology screen - must have mechanism of injury
- Tools are available - there is not one test, they should be used in conjunction with clinical judgement
- Used in my clinic
  - SCAT 5
  - King-Devick
  - Buffalo Treadmill Test
  - Vestibular Ocular Motor testing (VOMS)
  - ImPact (not for everyone)
  - PHQ-9 screen for depression/anxiety
- If cognitive symptoms predominate may refer for full neuropsychological testing
- if concerned about dementia use MoCA - Montreal Cognitive Assessment
Concussion Symptoms

- Rivermead Concussion Questionnaire
- Concussion Symptom Inventory
- ACE - Acute Concussion Evaluation - CDC
- SCAT 5 - Sport Concussion Assessment Tool
Recovery

- Most people with a concussion recover quickly and fully
- 85-90% of concussions resolve within 3 weeks
- For children/adolescents, symptoms often take longer usually resolve within 4 weeks
- 10-15% may have persistent symptoms (months to years)
Prolonged recovery

- Red flags for risk of prolonged recovery include
- Pre-existing history of:
  - Learning or attention problems
  - Migraine headaches
  - Anxiety, depression and other mental health issues
  - Repeated concussions (particularly with progressively longer recovery times)
  - Higher symptom scores right after injury
Other Red Flags for Prolonged Recovery

- Female gender
- Older adult, teens
- More severe symptoms initially, including
  - Mental fogginess
  - Visual/balance disturbance
  - Persistent headache
  - Fatigue
  - Sensory sensitivity
Persistent Symptom Categories

- Headache
- Sleep/wake disturbance
- Emotional / Mental Health
- Cognitive
- Vestibular/Vision
- Fatigue
- Autonomic
Examples of Return to Learn/Work and Return to Physical Activity Protocols

• Graduated process of increasing cognitive or physical exertion without making symptoms worse

• Return to Learn comes first, before Return to Play!
  • New Brunswick: NB Trauma (2015)
  • Canadian Guidelines for Concussion in Sport (2017)
Canadian Guideline on Concussion in Sport

Funded by Public Health Agency of Canada
Concussion Recovery Pattern

Greater service involvement

Follow-up with primary care provider – majority will recover over a few days to weeks, with education about symptom management.

Follow-up required, further assessment may be required if symptoms are not resolving fully or considered as higher risk for a prolonged recovery.

2-4 weeks (≥2 weeks for adults, >4 for children/youth)

Time post-concussion

Persistent symptoms, interdisciplinary care required
<table>
<thead>
<tr>
<th>Stage</th>
<th>Aim</th>
<th>Activity</th>
<th>Goal of each step</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Symptom-limiting activity</td>
<td>Daily activities that do not provoke symptoms.</td>
<td>Gradual re-introduction of work/school activities.</td>
</tr>
<tr>
<td>2</td>
<td>Light aerobic activity</td>
<td>Walking or stationary cycling at slow to medium pace. No resistance training.</td>
<td>Increase heart rate.</td>
</tr>
<tr>
<td>3</td>
<td>Sport-specific exercise</td>
<td>Running or skating drills. No head impact activities.</td>
<td>Add movement.</td>
</tr>
<tr>
<td>4</td>
<td>Non-contact training drills</td>
<td>Harder training drills, i.e. passing drills. May start progressive resistance training.</td>
<td>Exercise, coordination and increased thinking.</td>
</tr>
<tr>
<td>5</td>
<td>Full contact practice</td>
<td>Following medical clearance.</td>
<td>Restore confidence and assess functional skills by coaching staff.</td>
</tr>
<tr>
<td>6</td>
<td>Return to sport</td>
<td>Normal game play.</td>
<td></td>
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<tr>
<td>1</td>
<td>Daily activities at home that do not give the student-athlete symptoms</td>
<td>Typical activities during the day as long as they do not increase symptoms (i.e. reading, texting, screen time). Start at 5-15 minutes at a time and gradually build up.</td>
<td>Gradual return to typical activities</td>
</tr>
<tr>
<td>2</td>
<td>School activities</td>
<td>Homework, reading or other cognitive activities outside of the classroom.</td>
<td>Increase tolerance to cognitive work.</td>
</tr>
<tr>
<td>3</td>
<td>Return to school part-time</td>
<td>Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day.</td>
<td>Increase academic activities.</td>
</tr>
<tr>
<td>4</td>
<td>Return to school full-time</td>
<td>Gradually progress.</td>
<td>Return to full academic activities and catch up on missed school work.</td>
</tr>
</tbody>
</table>
Rowan’s Law

• On May 8th, 2013, Rowan Stringer took to the field near Ottawa, Ontario, to do one of the things she loved most: to play rugby. Rowan was captain of her varsity high school team. However, for several days prior to that fateful game, she had suffered from headaches. She did not seem quite herself. This was because twice in the previous six days, Rowan had played rugby and been hit in the head. For the third time in six days, she was tackled and hit in the head. She went down on the field, sat back up briefly, and then collapsed. She was taken to the Children’s Hospital of Eastern Ontario where, four days later, on May 12th, 2013, she died. Rowan Stringer was 17.
When she was hit again in her last game, she suffered what is known as **Second Impact Syndrome** – catastrophic swelling of the brain caused by a second injury that occurs before a previous injury has healed. A coroner's inquest was convened in 2015 to look into the circumstances of Rowan's death. The coroner's jury made 49 recommendations for how the federal government, as well as Ontario's government ministries, school boards and sports organizations should improve the manner in which concussions are managed in this province.

The Rowan’s Law Advisory Committee was created through a private member’s bill in the Ontario legislature, with all-party support. Its mandate was to review the jury recommendations, as well as the broader concussion landscape, and to provide advice to government on how to implement the jury’s recommendations. In addition, our Committee was empowered to make other recommendations intended to prevent, mitigate and create awareness of head injuries in sport in Ontario.
Rowan’s Law

Awareness

12 Inclusion of concussion prevention, detection and management in all teacher education training

13 Re-branding of the existing Ontario.ca Concussion Portal under the name "Rowan’s Law," to serve as a repository for tools, resources and links related to concussion; and efforts to increase public awareness and use of this site

14 Investment in a sustained public awareness campaign related to concussion

15 Annual concussion education in our schools at all levels

16 An annual concussion awareness education event for all Ontario schools, on or around Rowan’s Law Day

17 Mandatory annual concussion education for all teachers and administrators at the start of each school year

18 Enhanced education for health professionals around concussion detection, diagnosis and management, to ensure the use of a consistent, evidence-based approach and to increase capacity in our health care system to support the legislation and other Actions
New Information in Concussion Management

- Complete rest for longer than 48-72 hours is no longer advised

- Early return to light activity that does not increase symptoms (sub threshold aerobic exercise) can lead to faster resolution of symptoms and possibly prevent persistent post concussive symptoms


https://www.ncbi.nlm.nih.gov/pubmed/30095546#

Resources

- Concussion Nova Scotia www.concussionns.com
- 2017 Berlin Concussion consensus bjsm.bmj.com
- Ontario Neurotrauma Foundation onf.org - Guidelines for Concussion/mTBI & Persistent Symptoms 3rd Edition, Guidelines for Diagnosing and Managing Pediatric Concussion
- ACRM.org American Congress of Rehabilitation Medicine
- Canadian Concussion Collaborative https://casem-acmse.org/resources/canadian-concussion-collaborative/
- Parachute Canada; www.parachutecanada.org
- Rowans Law mtc.gov.on.ca
Future Steps

• Education for physicians

• Standardized diagnosis and management

• Know when to manage and when to refer, who to refer to

• Improve financial compensation for diagnosis and management of concussion

• Nova Scotia School Board Policy and Protocol

• Regionals Centres of Excellence - access for all not just those with insurance coverage

• Get ready for Legislation - Rowans Law