

About the Concussion Policy Toolkit

The purpose of this toolkit is to assist municipalities in the development and/or implementation of a concussion policy. The toolkit aligns with the *Ontario Physical Education Safety Guidelines* for school boards which includes protocols to reduce the incidence and severity of concussions by supporting prevention, identification and proper management of suspected and/or diagnosed concussions (Ontario Physical Health and Education Association, 2014). The toolkit provides policy recommendations with accompanying rationale, and a list of resources to support the development and/or successful implementation of a concussion policy.

Acknowledgements

This toolkit was created by the Grey Bruce Health Unit to support Grey Bruce municipalities and Indigenous communities in the development and/or implementation of a concussion policy.

The Grey Bruce Health Unit would like to acknowledge municipalities and Indigenous communities who participated in a 2016 survey conducted by the Grey Bruce Health Unit in order to better understand the current state of municipal policies on concussions within Grey Bruce.

Authors:

Lisa Prowd, Public Health Nurse

Sarah Milne, Health Promoter

Tim Duivesteyn, Health Promoter

Contributors:

Amber Schieck, Program Evaluator

Lynda Bumstead, Public Health Manager

Recommended Citation:

Grey Bruce Health Unit. Municipal Concussion Policy. Owen Sound: Author; 2017.

Table of Contents

Table of Contents	
Introduction	4
Municipal Concussion Policies in Grey Bruce	5
Why Consider a Concussion Policy?	6
Policy Development	7
Policy Components	8
Adoption of the Policy	17
Implementing the Policy	17
Monitoring and Evaluation of the Policy	18
Tools and Resources	19
Additional Support	19
References	20

Introduction

A concussion is a traumatic brain injury that may be caused by either a direct blow to the head, face, neck or by a blow elsewhere on the body with an impulsive force transmitted to the head (e.g., a blow to the head because of a fall or while playing a sport). This causes a short-lived impairment of brain function, which can result in a variety of signs and symptoms that may differ from person to person. Impairment typically resolves spontaneously; however, in some cases, signs and symptoms may be prolonged. With a concussion there is no visible injury to the structure of the brain, meaning that tests like MRI or CT scans usually appear normal (McCrory, et al., 2017; Parachute Canada, 2017).

Concussions represent 21% of treated injuries among students within Ontario (Ontario Ministry of Education, Healthy Schools Unit, 2016). According to the Canadian Institute for Health Information (2016), there was an increase in the number of emergency department visits for sport-related brain injuries between 2010-2015, including a 78% increase for children ages 0-9 years. The top four activities responsible for concussions and brain injuries in Canadian male children ages 5-9 years include playground equipment, ice hockey, children's active games (e.g., hide and seek, tag, Red Rover) and soccer. For females ages 5-9 years, the top activities are playground equipment, sledding/tobogganing, children's active games and bicycling (Public Health Agency of Canada, 2017). Injuries related to participation in sports, physical activity and recreation account for 64% of hospital emergency department visits among 10-18 year olds (Government of Canada, 2016).

A standard approach to concussion awareness, identification and management is an important part in ensuring the health, safety and overall wellbeing of those participating in sport, recreation and physical activity (Ontario Ministry of Tourism, Culture and Sport, 2017). Policies can support this approach by providing guidance and mechanisms to control behaviour at the individual and organizational level in order to reduce the risk and severity of concussions. Raising awareness about concussions among all stakeholders also supports the creation of a safe sport and recreation culture within our communities (Centres for Disease Control and Prevention, 2015).



Source: Urgent Care Physiotherapy Clinic & Rehabilitation Center, 2017

Municipal Concussion Policies in Grey Bruce

The Grey Bruce Health Unit is committed to taking a *Health in All Policies* approach to address key public health issues. Strong strategic partnerships are forged by building on existing collaborations with upper and lower tier municipalities in order to implement public health interventions and develop policies that positively impact the health of the population (Grey Bruce Health Unit, 2017; World Health Organization, 2013).

In 2016, the Grey Bruce Health Unit developed and conducted a survey to gather information about concussion policies within Grey Bruce municipalities and Indigenous communities. The survey expanded upon information gathered from a brief environmental scan which was completed the previous year. The 2016 survey was conducted over the phone with municipal staff to gain a better understanding of municipal concussion policies from those directly involved in sports and recreation programming and/or responsible for managing recreation programming or facilities. All 17 municipalities and two Indigenous communities were contacted to participate in the survey. There was a 74% response rate from municipal staff in both counties. Four municipalities did not participate in the survey. Two municipalities had council approved policies in place and one municipality had a policy in draft since 2015. Two additional municipalities indicated they had drafted a policy as of October 2016.

Based on survey data, five recommendations were proposed for public health to support municipal concussion policies in Grey Bruce:

1. Develop a *Municipal Concussion Policy Toolkit* to assist in the development and/or implementation of a concussion policy consistent with the Ministry of Tourism, Culture and Sport (MTCS) *Ontario Sport and Recreation Communities Fund* (Ministry of Tourism, Culture and Sport, 2017).
2. Collaborate with municipal leaders early in the policy development process to ensure full participation and buy in
3. Communicate new or revised concussion guidelines and protocols to ensure policy recommendations are current
4. Collaborate with municipal staff, user groups, schools and community members to support concussion awareness for those directly involved in sport and recreation programming
5. Build relationships with municipal users to support the implementation of concussion policies

Why Consider a Concussion Policy?

Grey Bruce municipalities play a vital role in providing community sport and recreation opportunities. The following are reasons why a municipality should consider implementing a concussion policy:

- 1) A policy complete with protocols, reference tools and resources improves knowledge, awareness, attitudes and behaviours among stakeholders thus reducing the incidence and severity of injuries in Grey Bruce.
- 2) Jury recommendations made in the inquest of the death of Rowan Stringer suggest that community sport and recreation providers have concussion protocols which are consistent with those required by the Ontario School Boards in *Policy/Program Memorandum (PPM) No. 158* (Ministry of Community Safety and Correctional Services, 2015; Ministry of Education, 2014).
- 3) The Ministry of Tourism, Culture and Sport (2017) introduced the requirement for municipalities to have a council approved *Concussion Awareness and Management Policy* to apply for the MTCS *Ontario Sport and Recreation Communities Fund*.
- 4) A policy would support a more consistent approach towards concussion prevention, identification and management among municipalities, schools and licensed health care professionals.

Figure 1 highlights the levels in which sport, recreation and physical activities may take place within municipalities and identifies the key stakeholders involved. It is through this collaborative framework that a municipal concussion policy would be developed, implemented and supported.

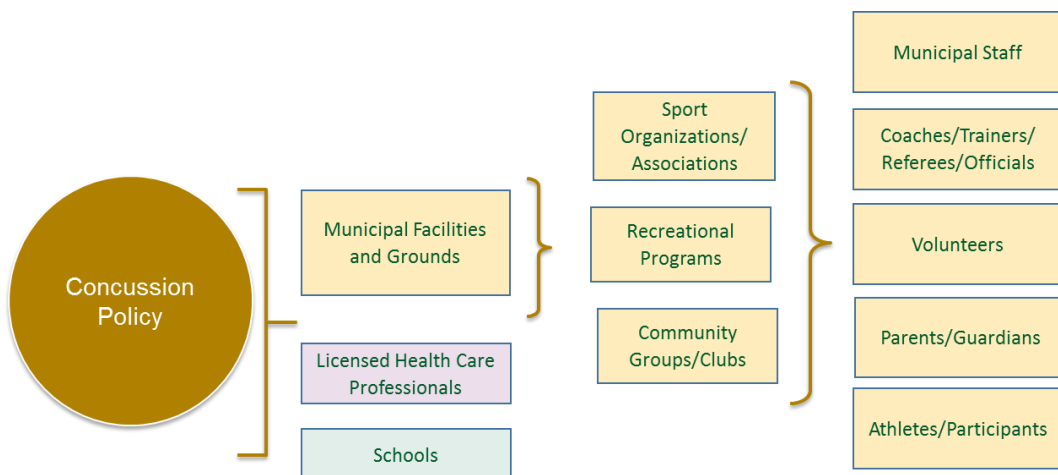


Figure 1. A collaborative framework to support a municipal concussion policy.

Policy Development

Considerations for drafting a policy

1. Create a list of municipal facilities and grounds (e.g., ball fields, arenas, pools, playgrounds, trails, skateboard parks, banquet halls)
2. Create a list of current and/or potential stakeholders who will be affected by the policy (e.g., municipal staff, coaches, volunteers, parents, participants)
3. Determine who should be involved in the development of the policy
4. Form a small committee of *champions* to support policy development and to raise awareness among stakeholders
5. Work closely with council to ensure support for the development and adoption of the policy
6. Review each policy recommendation and rationale in the *Policy Components* section (page 8)
7. Determine how each policy recommendation may be applied within the municipality
8. Draft the written policy
9. Review and update relevant forms, agreements and existing policies (e.g., incident report forms, event forms, rental agreements, facility manuals, coaching manuals) to ensure alignment with the concussion policy

Considerations for updating an existing policy

1. Review and update list of municipal facilities and grounds
2. Review and update list of current and/or potential stakeholders who will be affected by the policy
3. Use the *Policy Components* section (page 8) to review the existing policy
4. Identify new components, policy recommendations and rationale that may need to be considered
5. Revise existing components as necessary based on policy recommendations
6. Review and update relevant forms, agreements and existing policies to ensure alignment with the revised concussion policy

Policy Components

Policy Statement

Policy Recommendations

To support the health, safety and well-being of all those involved in sport, recreation and physical activities.

To support concussion prevention, identification, and management.

To ensure municipal staff and stakeholders have proper instruction in order to take appropriate action in the event of a suspected and/or diagnosed concussion.

Rationale

To identify the issue being addressed (concussions) and provide a clear sense of direction for the development of the policy.

To indicate specific regulations, practices or guidelines to create positive change in the health of the population.

Policy Purpose

Policy Recommendations

To provide concussion education and raise awareness amongst municipal staff and stakeholders involved in recreational programs, sport organizations/ associations and community groups/ clubs using municipal facilities and grounds to help create an environment that will promote safe play and minimize the incidence of concussions.

To support early identification of suspected concussions by municipal staff and stakeholders.

To ensure concussion management protocols (i.e. *Removal from Play* and *Return to Play*) are in place for municipal staff and stakeholders using municipal facilities and grounds (Ministry of Tourism, Culture and Sport, 2017).

Rationale

To outline why the municipality is issuing the policy, and the desired impact or outcome of the policy.

To align with the Ministry of Education's requirement that all school boards in Ontario develop and maintain a policy on concussions (Ministry of Education, 2014).

Policy Scope

Policy Recommendations

This policy applies to all municipal staff and stakeholders involved in municipal sport, recreation and physical activities.

All stakeholders under 'conditions of use' or 'facility user agreements' should be made aware that there is a policy.

Rationale

To identify the target population for which the policy applies.

Definition of Concussion

Policy Recommendations

A concussion is a traumatic brain injury that may be caused either by a direct blow to the head, face, neck or by a blow elsewhere on the body with an impulsive force transmitted to the head. This causes a short-lived impairment of brain function, which can result in a variety of signs and symptoms that may differ from person to person (McCrory, et al., 2017).

Rationale

To provide a clear and consistent definition of the term "concussion".

Causes of a Concussion

Policy Recommendations

A concussion may be caused either by a direct blow to the head, face or neck or a blow to the body that transmits a force to the head that causes the brain to move rapidly within the skull.

A concussion can occur even if there has been no loss of consciousness (in fact most concussions occur without a loss of consciousness).

With a concussion, there is no visible injury to the structure of the brain; a concussion cannot normally be seen on X-rays, standard CT scans or MRIs (McCrory, et al., 2017).

Rationale

To understand the main causes of concussions.

Signs and Symptoms of a Concussion

Policy Recommendations

Concussion signs and symptoms can be different between individuals as not everyone reacts the same way. Signs and symptoms of a concussion may emerge up to 48 hours after the impact and may change over time. The presence of any one or more signs and symptoms as shown in Figure 2 may suggest a concussion.

Rationale

Anyone who is observing, supervising and/or coaching a participant should learn to recognize the signs and symptoms of a concussion in order to ensure the participant receives immediate support and appropriate action.

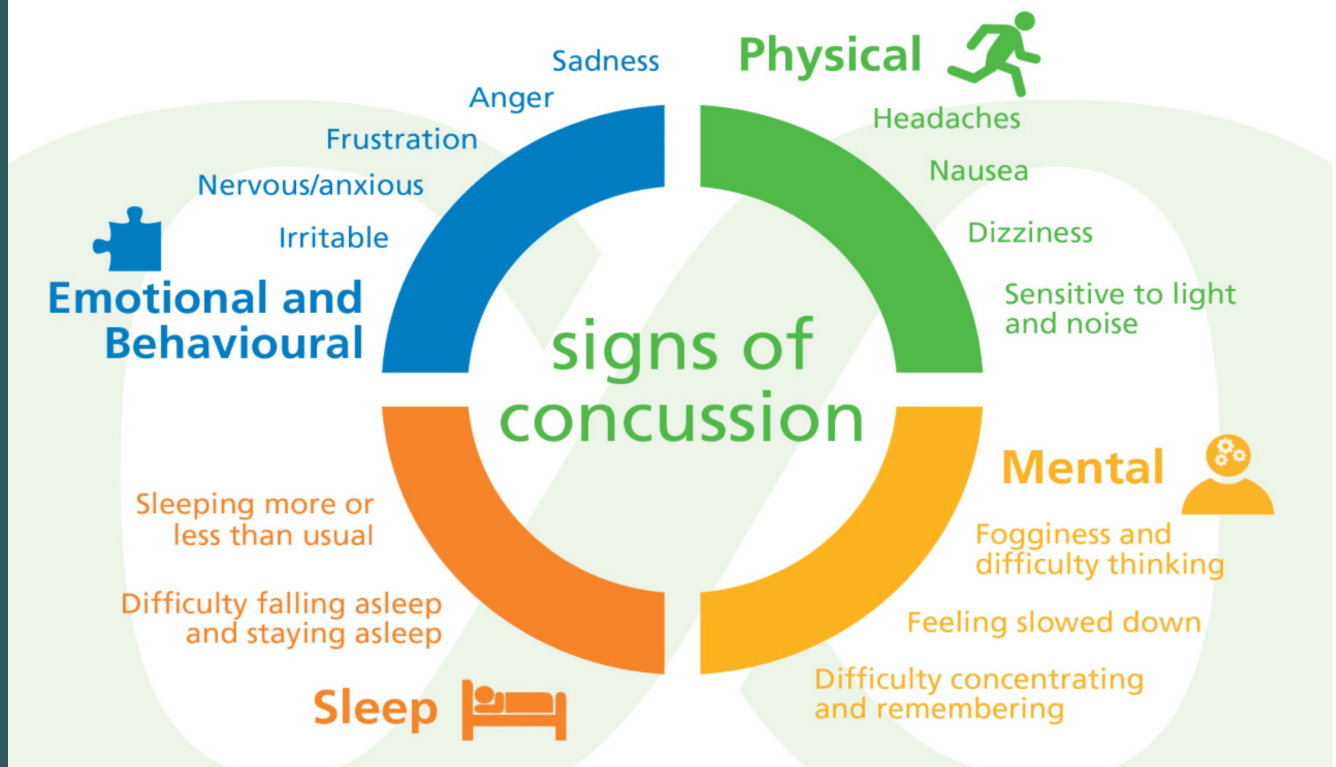


Figure 2. Signs of concussion (Holland Bloorview, 2017).

For more information:

[Ministry of Tourism Culture and Sport Concussion Guidelines](#)

[Concussion Recognition Tool \(Pocket CRT\)](#)

Preventative Strategies

Policy Recommendations

Limit contact during practices and games, in particular for younger participants.

Modify rules to limit the use of certain drills or techniques to help reduce the risk of injury.

Check equipment often. Make sure equipment fits well, is in good condition, is stored properly, and is replaced according to manufacturers' instructions.

Fair play and respect for opponents are ethical values that should be encouraged in all sport, recreation and physical activities.

Rationale

To ensure strategies are implemented for safe play to help reduce the risk of injury.

All stakeholders play an important part in ensuring values of fair play and respect for opponents are implemented (McCrary et al, 2017).

Training and Education

Policy Recommendations

All municipal staff shall complete and provide proof of training in the prevention and recognition of sports-related head injuries and associated health risks.

Concussion education is also available for stakeholders, including parents and coaches (e.g., online training, video lessons).

Consider including a concussion education sheet that can be reviewed and signed by stakeholders at the time of sport registration or before the beginning of the sport season.

Rationale

Concussion training will allow municipal staff and stakeholders to be well informed about concussion prevention, identification and management.

To ensure key information on concussions has been received by all participants.

For more information:

[Pre-Season Concussion Education Sheet](#)

[E-Learning Training](#)

[Coaching Association of Canada Concussion Quiz](#)

Roles and Responsibilities

Policy Recommendations

Stakeholders have a role to play in ensuring the safety of those participating in sport, recreation or physical activity. This includes encouraging and motivating participants to assume responsibility for their own safety and the safety of others.

The municipality will:

- Ensure all municipal staff and stakeholders involved in sport, recreation or physical activity are made aware of the policy
- Provide information on concussion prevention, identification and management
- Recommend training to all stakeholders directly involved in sport, recreation or physical activity
- Ensure an annual review of the policy

All stakeholders directly involved in sport, recreation or physical activity will:

- Review the policy
- Follow *Removal from Play* guidelines for a suspected and/or diagnosed concussion
- Follow the *Return to Play* guidelines when a participant has been diagnosed with a concussion by a doctor or nurse practitioner
- Consider online education and training

Participants and/or parents/guardians will:

- Notify an employee/coach/volunteer about any current or previous concussions or concerns, and ensure ongoing communication throughout the *Return to Play* process
- Consider online education and resources to learn how to effectively prevent, identify and manage concussions

For more information:

[Parachute Concussion Guidelines](#)

[Player Code of Conduct](#)

Rationale

To identify roles and responsibilities for municipalities and stakeholders as they relate to the implementation of the policy.

Removal from Play (Suspected Concussion)

Policy Recommendations

If a participant is conscious and suspected of having a concussion, the participant should be removed immediately from play/activity – “when in doubt, sit them out”.

Parent(s) and/or guardians of the participant should be notified of the suspected concussion and advised to seek medical advice.

Following removal from play, a participant suspected of having a concussion should be assessed by a medical doctor or nurse practitioner.

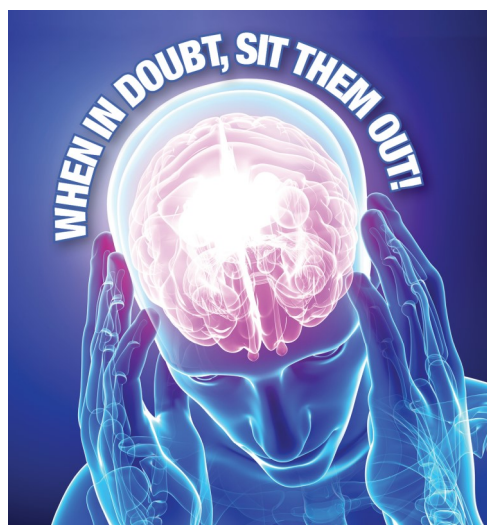
An individual who has sustained a concussion that has been cleared to return to play will provide written documentation by a medical doctor or nurse practitioner.

A school principal should be contacted if the participant diagnosed with a concussion is under the age of 18 and is currently attending a publicly funded elementary or high school in Ontario (Ministry of Tourism, Culture and Sport, 2017).

Rationale

The key to the initial management of concussion is physical and cognitive rest, which allows symptoms to resolve.

Removal of a participant prevents any further risk of injury. Recognizing and responding properly when a concussion first occurs can help prevent further injury or even death.



Source: Brain Injury Association of Michigan, 2017

Return to Play Protocol (Diagnosed Concussion)

Policy Recommendations

If an athlete/participant has been diagnosed with a concussion, stakeholders of the recreation program, sport organization/association or community group/clubs must follow the *Return to Play* protocol:

Step 1: Limit physical activities which provoke symptoms. Proceed to step 2 only when all symptoms are gone and cleared by a medical doctor or nurse practitioner.

Step 2: Light aerobic physical activity. Monitor for signs and symptoms.

Step 3: Sport-specific exercise. No body contact. Monitor for signs and symptoms.

Step 4: Activities with no body contact, such as training drills. Medical clearance is required before step 5.

Step 5: Activities with body contact following medical clearance.

Step 6: Full return to game play and contact sports.

(The earliest a concussed athlete should return to play is one week).

Each step must take a minimum of one day but could last longer, depending on the participant and their specific situation. If symptoms reappear at any stage, go back to the previous stage until symptom-free for at least 24 hours. Children and adolescents may require a longer recovery time.

For more information:

[Return to Play Guidelines](#)

Rationale

All stakeholders should be ready to act decisively if they suspect that a participant has sustained a concussion.

Diagnosis by a medical doctor or nurse practitioner ensures that the participant receives the necessary treatment to promote recovery as well as rule out other potentially serious injuries.

Studies show that too many athletes return to play too soon following a suspected and/or confirmed concussion. This gradual return to play protocol promotes optimal recovery and is the best way to make sure participants remain symptom free when successfully returning to play (Parachute Canada, 2017).

Emergency Management Procedures

Policy Recommendations

If a participant is unconscious or has experienced any loss of consciousness, initiate emergency action plan and call 911. Follow standard first aid protocols in the event of an incident.

Rationale

Communicating an emergency medical plan supports all stakeholders to be ready for an emergency.

Documentation

Policy Recommendations

In the event that a suspected and/or diagnosed concussion occurs within municipal facilities and grounds, an incident report and/or concussion documentation form will be completed and submitted to the appropriate personnel within the organization or municipality.

Return to Play: The participant will provide documentation from a medical doctor or nurse practitioner stating that they have been cleared to return to play/activity.

Rationale

Documentation supports a consistent approach for communication and management of concussions for all stakeholders including the athlete/participant, parent/guardian, coach/trainer/referee/official, licensed health care professional and school staff.

Documentation and reporting of all injuries will support the collection, monitoring and analysis of information on head injuries.

For more information:

[Concussion Documentation Form \(Concussion Response Tool\)](#)

[Sample Documentation for a Diagnosed Concussion—Return to Learn/Return to Physical Activity Plan](#)

[Concussion Management Protocol for Educational Institutions and Recreational and Sports Activities](#)

Compliance

Policy Recommendations

All municipal staff and stakeholders who participate in organized sport, recreation and physical activity are responsible for understanding their roles and obligations under this policy.

All municipal staff and stakeholders who fail to comply with the provisions of this policy may be subject to discipline, exclusion from participation, and/or revocation of facility permit.

Rationale

To ensure all municipal staff and stakeholders are informed and comply with the concussion policy in order to reduce the risk and severity of concussions.

Municipalities should ensure that a process is in place to support ongoing implementation and compliance with the concussion policy.

Related Forms and Policies

Policy Recommendations

Consider including related forms, policies and/or records as appendixes:

- Incident/Accident Report Forms
- Health and Safety Policies
- Emergency and First Aid Protocols
- Municipal Act
- Municipal Freedom of Information and Protection of Privacy Act
- Occupation Health and Safety Act

Consider incorporating concussion education under first aid requirements and training in organizational health and safety policies.

Rationale

To ensure all relevant municipal forms are included and adapted as needed to support policy measures for concussion prevention, identification and management.

Adoption of the Policy

Prior to adopting the policy, it may be helpful to:

- Educate stakeholders and identify gaps in understanding the issue of concussions
- Invite relevant stakeholders to review the draft policy and provide written comments
- Consider the necessity of a legal review
- Make modifications based on feedback and accompanying rationale

In order for the policy to be adopted, it must be approved by the municipal council. During the approval process, it may be helpful to:

- Emphasize the importance of guidelines and protocols to reduce the incidence and severity of concussions
- Obtain and share letters of support from various organizations, user groups and community stakeholders
- Emphasize opportunities through the *MTCS Ontario Sport and Recreation Communities Fund*
- Emphasize alignment with the requirement that all Ontario school boards develop and maintain a policy on concussions
- Highlight how a concussion policy may reduce liability risks

Implementing the Policy

Considerations when implementing the approved policy:

- Distribute the policy to all stakeholders who use municipal facilities and grounds
- Provide orientation to employees, municipal council members and relevant stakeholders
- Provide concussion policy information at sport and recreation registrations, public events and community presentations
- Post the policy in a visible location
- Develop a communication strategy to introduce the new or updated policy to the community (i.e., media release, social networks)

Monitoring and Evaluating the Policy

To ensure that the policy is effective in achieving its goal, it should be continually monitored and evaluated. The evaluation plan could include questions, indicators and data sources to help determine whether or not intended outcomes and impacts can be attributed to the policy. Further, it may provide important information about the facilitators and barriers of policy implementation. Findings from the evaluation may be shared with other municipalities currently implementing a policy focused on concussions.

<i>What question(s) do you want to answer?</i>	<i>What information or measurements will help to answer the evaluation question?</i>	<i>What tools or sources will collect the information you need?</i>
Was the policy implemented as designed?	<p>List components of the policy that are not used or implemented as planned</p> <p># and description of activities done to increase awareness</p> <p># of resources distributed</p>	<p>Training Records</p> <p>Interviews with staff or stakeholders</p> <p>Facility User Agreements</p> <p>Incident Reports/Concussion Response Tool</p>
What is the policy's impact on the identification and the proper management of participants with suspected and/or diagnosed concussions?	<p># of reported incidents (suspected concussions) identified</p> <p># of reported incidents properly managed as per policy guideline</p>	<p>Staff Attendance Records</p> <p>Stakeholder Survey (Coaches, Parents, School Staff, Health Care Professionals)</p>
What is the policy's impact on reducing the incidence and severity of concussions?	Change in % of participants with diagnosed concussions over five years	Incident Report/Concussion Response Tool

Tools and Resources

Grey Bruce Health Unit

A list of updated concussion resources for parents, professionals, coaches and teachers can be found on the website.

Ministry of Tourism, Culture and Sport

Provides concussion guidelines/protocols for use by provincial/multi-sport organizations and recreation providers.

Parachute Canada

Provides various resources to help keep kids safe, including a comprehensive web-based tool kit on concussions.

Canadian Guideline on Concussion in Sport

Concussion Ed is a free mobile app designed to give Canadians free access to critical concussion resources.

Concussion Awareness Training Tool (CATT) includes a Concussion Clinical Toolkit for Medical Professionals and Concussion Awareness Training for Parents, Players and Coaches.

A Primer for Kids and Parents (Video) Concussion 101

A six-minute YouTube video (Dr. Mike Evans) explaining causes, possible symptoms, the *6-Step Return to Play* protocol, and the importance of communicating how you are feeling.

Ontario Neurotrauma Foundation

A concussion tool containing information on the signs and symptoms of a concussion and what to do when a student is suspected of sustaining a concussion.

Sunnybrook Health Sciences Centre - Play Safe

Play Safe Resources: Developing a Concussion Policy.

Additional Support

For additional support in the development or implementation of a concussion policy for your municipality, contact the Population Health Team at the Grey Bruce Health Unit:

Phone: 519-376-9420 or 1-800-263-3456

Email: publichealth@publichealthgreybruce.on.ca

References

- Canadian Institute for Health Information. (2016, July 26). *CIHI.ca*. Retrieved January 10, 2017, from Canadian Institute for Health Information: <https://www.cihi.ca/en/how-many-er-visits-for-sport-related-brain-injuries-receive-a-concussion-diagnosis>
- Centres for Disease Control and Prevention. (2015). *Concussions at Play: Opportunities to Reshape the Culture Around Concussion*. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Atlanta: Center for Disease Control and Prevention. Retrieved from https://www.cdc.gov/headsup/pdfs/resources/concussion_at_play_one_pager-a.pdf
- Government of Canada. (2016). *Concussions*. Retrieved November 2016, from <http://canada.pch.gc.ca/eng/1465244566173>
- Grey Bruce Health Unit. (2017). *Strategic Direction*. Retrieved July 2017, from <https://www.publichealthgreybruce.on.ca/About-Us/Strategic-Plan>
- McCrory, P., Meeuwisse, W., Dvorak, J., & al, e. (2017) Consensus statement on concussion in sport-the 5th international conference on concussion in sport held in Berlin, October 2016. *BMJ*, 0, 1-10.
- Ministry of Community Safety and Correctional Services. (2015). *Verdict of Coroner's Jury; Office of the Chief Coroner Stringer*. Ottawa: MCSCS. Retrieved from http://www.mcscs.jus.gov.on.ca/english/DeathInvestigations/office_coroner/PublicationsandReports/AllReports/OCC_pubs.html
- Ministry of Education. (2014, March 19). School Board Policies on Concussion. Retrieved March 2017
- Ontario Ministry of Education, Healthy Schools Unit. (2016, 2017 March). Concussion in Ontario. Retrieved from http://www.health.gov.on.ca/en/public/programs/concussions/docs/infographic_concussion.pdf
- Ontario Ministry of Tourism, Culture and Sport. (2017). *Concussion Guidelines*. Retrieved from http://www.health.gov.on.ca/en/public/programs/concussions/docs/mtcs_concussion_guide_en.pdf
- Ontario Ministry of Tourism, Culture and Sport. (2017). *Ontario Sport and Recreation Communities Fund Application Guide*. Retrieved from http://www.grants.gov.on.ca/prodconsum/groups/grants_web_contents/documents/grants_web_contents/prdr016283.pdf
- Ontario Physical Health and Education Association. (2014, March 20). PPM 158: School Board Policies on Concussion. OPHEA. Retrieved from <http://www.ophea.net/blog/ppm-158-school-board-policies-concussions#.WOKvvmx1oxv>
- Parachute. (2017). *Canadian Guideline on Concussion in Sport*. Toronto: Parachute.
- Parachute. (2017). Retrieved from Concussions FAQ: <http://www.parachutecanada.org/injury-topics/item/concussion-faq>
- Public Health Agency of Canada. (2017, January 12). *Concussion and Brain Injuries in Canadian Children and Youth*. Retrieved March 29, 2017, from PHAC: <https://infobase-phac-aspc.github.io/head-injury-infographic.html>
- World Health Organization. (2013). Helsinki Statement on the Health in All Policies. *WHO 8th Global Conference on Health Promotion* (p. 2). WHO. Retrieved from http://apps.who.int/iris/bitstream/10665/151788/1/9789241507981_eng.pdf?ua=1