

Recommendations for policy development regarding sport-related concussion prevention and management in Canada

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ABSTRACT

The Canadian Concussion Collaborative (CCC) is composed of health-related organisations concerned with the recognition, treatment and management of concussion. Its mission is to create synergy between organisations concerned with concussion to improve education and implementation of best practices for the prevention and management of concussions. Each of the organisations that constitute the CCC has endorsed two recommendations that address the need for relevant authorities to develop policies about concussion management in sports. The recommendations were developed to support advocacy for regulations, policies or legislation to improve concussion prevention and management at all levels of sport.

INTRODUCTION

Concussion in sport is a recognised public health problem. International experts meet on a periodic basis to update clinical recommendations about concussion management in sports based on the best available evidence. The past two international consensus conferences stated that “all athletes, regardless of the level of participation, should be managed using the same treatment and return to play (RTP) paradigm.”^{1,2} However, reaching that objective at the level of mass participation remains a challenge for the sport, academic and healthcare communities in Canada and around the world.

The organisations that constitute the Canadian Concussion Collaborative (CCC)³ support the recommendations of the International Consensus Conference on Concussion in Sport,² and therefore the aim of this document is not to review the body of knowledge related to concussion management in sports. Rather, the objective of this document is to make recommendations regarding the need for relevant authorities to develop policies about concussion management in sports. The recommendations can be used to advocate for regulations, policies or legislation to improve concussion prevention and management at all levels of sport.

BARRIERS TO IMPLEMENTATION OF BEST PRACTICES FOR CONCUSSION MANAGEMENT

For a number of years, several Canadian organisations invested significant efforts towards the important objective of knowledge translation and dissemination about concussion to diverse target populations including healthcare providers, athletes, coaches, teachers, parents and sport organisations. Although such efforts have most likely

increased the general awareness, knowledge and attitudes about concussion, successful knowledge implementation requires more than dissemination of knowledge. In other words, improving knowledge about concussion is necessary for implementation, but it does not ensure that each individual involved in sport has access to optimal preventive approaches, nor that, in the event of a concussion, they will have access to proper care. The application of the knowledge-to-action framework to concussion⁴ tells us that, among a number of characteristics, knowledge transfer should be user-specific, context-specific, impact-oriented and an interdisciplinary process. Accordingly, for the efficient implementation of proper concussion prevention and management at all levels of participation, user-specific, context-specific and impact-oriented processes (or protocols) should be required when sports or events carry a risk of concussion.

RECOMMENDATIONS

Recommendation 1: Organisations responsible for operating, regulating or planning sport and sporting events with a risk of concussion should be required to develop/adapt and implement a concussion management protocol, based on current best practices, that is customised for their context and available resources.

Sport-organising bodies including school-based and non-school-based, amateur and professional, should analyse not only the recommendations about concussion management but also how these recommendations can be implemented in their specific context. For example, the implementation of recommendations related to cognitive rest and return to school/learning will need the involvement of academic resources to identify the optimal ways to achieve academic accommodations following a concussion. Likewise, obtaining medical clearance before return to unrestricted (collision or contact) training/practice will raise the issue of timely access to the relevant medical expertise. A required process of protocol development will not only have great implicit educational value for all the relevant organisations, but will also help identify context-specific issues that will lead to innovative and contextualised solutions for better concussion prevention and management. This recommendation implies the development of regulations or legislation by national, provincial and territorial regulating bodies for amateur and professional sport, public health organisations and governments to define these responsibilities. The process for

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Box 1 Developing or adapting a concussion management protocol

The process for developing or adapting a concussion management protocol should aim to achieve the following outcomes:

1. An environment that will minimise the incidence of concussions through multidimensional preventive considerations such as: age limitations for contact sport participation, safe rules of play, encouragement of fair play and respect, adequate protective equipment, safe environment, adequate facilities and reduced contact during training.
2. An environment that will optimise the early identification of possible concussions by everyone involved including athletes, coaches, teachers, parents and healthcare professionals.
3. Optimised management of concussed athletes in the sport, academic, family, work and personal spheres of their life based on current best practices and contextually available resources.
4. Access to proper expertise and tools that can guide the gradual return to normal physical work and academic activities and minimise the chances of persistent, recurrent or chronic consequences of concussions. Again, contextually available resources will determine specifics, but the goal is to optimise the use of available resources and eventually dedicate additional resources to improve concussion management.
5. A periodic process for protocol review and a communication/education strategy that will keep all stakeholders involved and informed.

developing or adapting a concussion management protocol should aim to achieve the outcomes listed in [box 1](#).

Material developed to support many aspects of concussion education and protocol development is available on or through links from the CCC webpage.³ This webpage contains links to the websites of organisations that have contributed to the body of knowledge about concussion prevention and management in Canada and elsewhere. Collectively, these websites have concussion-specific resources for players, parents, coaches, teachers, organisations and others. Questions regarding protocol development can be addressed to the CCC through the Canadian Academy of Sport and Exercise Medicine.³

Recommendation 2: In situations where timely and sufficient availability of medical resources qualified for concussion management is not available, multidisciplinary collaborative approaches should be used to improve concussion management outcomes while facilitating access to medical resources where appropriate.

Current recommendations related to gradual RTP following a concussion state that ‘medical clearance’ must be obtained prior to participation in unrestricted (collision or contact) training.² In higher levels of participation such as professional or varsity sports, timely and direct access to expert medical evaluation can most likely be achieved. However, meeting that requirement ‘at all levels of participation’ remains a challenge. It has been suggested that ‘this principle may not be achievable in remote regions, where responsibility should be delegated to other trained healthcare professionals’.⁵ Requiring that a concussed

athlete be cleared unilaterally by a physician, regardless of concussion-related expertise, may result in less than optimal RTP decisions than those involving other properly trained licensed healthcare professionals in the context of a medically supervised concussion management protocol. If improved concussion management outcomes are expected, multidisciplinary participation in decision-making under medically supervised concussion management protocols that comply with locally applicable legislation is a desirable and acceptable option that meets the objective of the current best practice recommendations. Such innovative approaches should not only aim to provide timely access to adequate RTP decisions by properly trained licensed health professionals but also facilitate access to physicians with relevant expertise in situations that necessitate medical care.

CONCLUSION

Healthcare organisations as well as governments have an important role to play to ensure access to the appropriate care providers for those suffering from concussion and related sequelae. Public positions on their expectations on the management and treatment of concussion in sport will improve the delivery of care. The CCC believes that these two recommendations should guide the development of policies, regulations and legislation about concussion prevention and management. All stakeholders involved in organised sport including athletes, parents, coaches and educators should be made aware of the recommendations. Implicit is the need for the relevant tools and supporting material that will guide organisations through the process of contextualised protocol development and implementation. Whenever possible, evaluative research approaches should be used to assess the impact of implementation efforts related to the recommendations made in this statement. A current list of supporting organisations can be found on the CCC webpage.³

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Collaborators Canadian Academy of Sport and Exercise Medicine (CASEM); Canadian Association of Emergency Physicians (CAEP); Canadian Center for Ethics in Sports (CCES); Canadian Medical Association (CMA); Canadian Paediatric Society (CPS); Canadian Physiotherapy Association (CPA); College of Family Physicians of Canada (CFPC); Ontario Medical Association (OMA); Parachute Canada (formerly Think First).

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REFERENCES

- 1 McCrory P, Meeuwisse W, Johnson K, *et al*. 2009 Consensus statement on concussion in sport: 3rd International Conference on Concussion in Sport Held in Zurich, November 2008. *Br J Sports Med* 2009;43(Suppl 1):i76–90.
- 2 McCrory P, Meeuwisse W, Aubry M, *et al*. Consensus statement on concussion in sport—the 4th International Conference on Concussion in Sport Held in Zurich, November 2012. *Br J Sports Med* 2013;47:250–8.
- 3 The Canadian Concussion Collaborative (CCC) webpage. <http://casem-acmse.org/education/ccc> (accessed Sep 2014).
- 4 Providenza C, Engsbretsen L, Tator C, *et al*. From consensus to action: knowledge transfer, education and influencing policy on sports concussion. *Br J Sports Med* 2013;47:332–8.
- 5 Tator CH. Concussions and their consequences: current diagnosis, management and prevention. *Can Med Assoc J* 2013;185:975–9.