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Mr. Peter Fonseca

Subcommittee on Sports-Related Concussions in Canada of the Standing Committee on Health

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● (1730)

[*English*]

The Chair (Mr. Peter Fonseca (Mississauga East—Cooksville, Lib.)): I'll call this meeting to order. It's great to have everybody back.

This is the Subcommittee on Sports-Related Concussions in Canada of the Standing Committee on Health.

Today we have, from the College of Family Physicians of Canada, Pierre Frémont, chair of the sport and exercise medicine committee. From the Canadian Academy of Sport and Exercise Medicine, we have Elisabeth Hobden, president-elect.

We're going to have an opportunity to hear from our witnesses now. For all those who may be following these proceedings, through our portal there is also an opportunity to make submissions to our committee.

We look forward to hearing from our witnesses. Witnesses, you're going to make your statements. Then we will hear questions from the members. We'll do this in a rotational manner, so you'll hear from all parties.

We will start with Mr. Frémont.

Dr. Pierre Frémont (Chair of the Sport and Exercise Medicine Committee, College of Family Physicians of Canada): Thank you very much.

On behalf of the College of Family Physicians of Canada, I would like to thank you for the privilege and opportunity to present the family medicine perspective around concussion.

I would also like to acknowledge the close collaboration of the Canadian Academy of Sport and Exercise Medicine and the Canadian Medical Association in developing the brief that was jointly submitted to this committee.

First, I would like to explain my experience with concussion from a broad spectrum of perspectives.

Personally, I have sustained three concussions in alpine skiing, soccer and playing water polo. I also have a bunch of kids who have sustained quite a number of concussions.

As a sport medicine team physician, I was involved in concussion management from the international level of competition all the way down to varsity and grassroots-level sports. I am also involved in a number of current initiatives around concussion, including the Canadian Concussion Collaborative and the Sport Canada working group on concussion.

As an academic, I have been studying the implementation of concussion management protocol in high school-level sports programs. I've also been involved in the use of an innovative strategy, namely massive open online courses, to disseminate the good way to deal with concussions and to support sports in school settings in the implementation of protocols.

Finally, as a physician, I have seen patients with concussions from all causes, in all age groups and at all stages of this injury.

Now, before I can discuss the potential contribution of family medicine to address this issue, I would like to remind you of some key background information.

First of all, the simple principles of initial concussion management are clearly within the scope of family practice.

Second, these simple principles, which are removal from danger, initial rest and gradual return to cognitive and physical activity, allow the vast majority, that is, 80% to 90% of concussion patients, to evolve favourably within seven to 10 days. That's a very good reason to start with primary care. As well, over 85% of Canadians have access to a family physician. That's not a perfect score, but that's a pretty good one.

The question is this: Can family physicians play such a role?

Over the last decade, with increasing awareness around concussion, there have been constant medical education opportunities about concussion for family physicians. There was a rapid increase.

Again, it's not perfect but it's available and expertise is increasing to deal with the aspects of early concussion management. These are the initial assessment and diagnosis associated with the standard initial recommendations, which I alluded to. Then there is the decision, once things are going well, about returning to an activity at risk for concussion. Finally, there is assessment in the presence of persistent symptoms. That can involve referral, at this point, if you get out of any given physician's expertise with concussions.

The bottom line message here is to not be afraid to build strategies with a central primary care role for family physicians.

Another key aspect of how we can address the issue of concussion is empowerment. In the joint statement from the Canadian Academy of Sports Medicine and the College of Family Physicians, we state that key aspects of concussion prevention, detection and management occur prior to as well as after the medical encounter, namely, in sports and school settings. Therefore, we need to develop public health strategies that aim to support and empower school and sports settings in dealing with the day-to-day management of concussion. Sport medicine physicians and family physicians can play a role in supporting the implementation of such strategies.

Also, as a family physician, I want to emphasize that Canadians of all age groups suffer from concussions that occur in contexts often unrelated to organized sports, such as leisure, work or car accidents. These Canadians should also be considered in the way we address this issue.

● (1735)

In conclusion, I'd like to leave you with three key messages. The first one is that now that high-level sports and national sports organizations have received significant support to do better about concussions, the next steps should aim to improve concussion by prevention and management at every level of sport participation all the way to the grassroots level. Also, we should consider concussion occurring in every context and age group. Finally, don't forget that family physicians can and should play a key role.

Thank you very much.

The Chair: Thank you, Dr. Frémont.

Now, we're going to hear from Ms. Hobden.

Dr. Elisabeth Hobden (President Elect, Canadian Academy of Sport and Exercise Medicine): I would like to thank you for having me here today to speak before the committee.

I'm a sport and exercise medicine physician. We're uniquely qualified and experienced in concussion management.

Sport and exercise medicine physicians have been founding members of the Canadian Concussion Collaborative. They've played key roles in the international consensus statement on concussion in sport. This is an international gold standard that physicians look towards when they're looking to treat a sport-related concussion or return a patient to play. They are also experts in the design and implementation of medical systems and protocols for sporting events. A diploma in sport medicine is granted after examination ensuring competence.

Unfortunately, there are still many barriers for Canadians who have a concussion. I see too many patients like the following one: a young girl who was required to travel over an hour to see me. Her expectation and her mother's expectation was that she was simply going to walk in, get a note saying she could return to hockey for the weekend, play her playoff game and head back home. A concussion assessment takes 45 minutes or more. During this assessment, we discovered that this young lady, who is very intelligent and was expecting a scholarship from MIT to become an engineer, was unable to subtract seven from 100 and get the right answer. She really had no idea of her deficit, nor did her family.

Sport and exercise medicine and family physicians are able to safely manage most concussions like this one because they do indeed get better. What these patients do need is time. They need time to understand their injury and they need extra support that we often don't see with other patients because they have a brain injury, which means they can miss appointments or they can have difficulty coordinating their care. That puts an extra burden on physicians who are trying to manage a full waiting room and have the financial reality of the increasing burden of overhead.

Qualified, multidisciplinary treatment in their own area is extremely effective for these patients because the burden of travelling can actually increase concussion symptoms, so it's very important that they have treatment that's close to home.

Appropriately designed community-based clinics with evidence-based care could help to alleviate many of these barriers. However, the reality is that there are only 531 physicians in Canada with a sport and exercise medicine diploma, but all Canadians can benefit from their expertise through a public health-style approach. There's no doubt that community sport medicine and family physicians are excellent resources for patients with concussions. However, using the integration of sport and exercise medicine physicians in the planning of sport events can empower people to have prevention, detection and management of concussion at all levels. We've done a fairly good job at the elite level, so that's coming along, but most of our participants are at a recreational level. Some of our pediatrics, or our children, are at the most risk from concussions, so it's important that we hit all levels.

The legislated requirements of medical expertise in concussions for the planning of sporting events and protocols at all levels would greatly benefit the health and safety of all Canadians.

I recall a young patient that I had who suffered a tackle in a community football league. At the time, he didn't know he was concussed; his teammates didn't know he was concussed and there was no protocol in place to address this within his context. I saw him several weeks later, after his academic performance had started to decline and he'd been suffering from headaches and feeling dazed and confused for several weeks. Unfortunately, this is all too common to see in my practice.

The reality is that sport culture changes slowly and it often does not include medical considerations. It's important that we bring this to light at all levels of sport in Canada. The medical involvement in planning gives credibility to change within the sport and to sporting bodies or community bodies to say, “Do you know what? We know we haven't done things this way in the past, but this is why we feel it's important to make these changes.”

● (1740)

I want to make it very clear that I believe participation in sports should not be discouraged. It should be encouraged. It's important for Canadians' health. Any requirements should not create an undue burden so that people are unable to participate in organized sport. Canadians need to be active. They need to know that they are safe being active and that if they should suffer an injury, they can get the best possible care.

Thank you for your attention. I look forward to the discussion.

The Chair: Thank you very much, Dr. Hobden and Dr. Frémont.

We're going to have an opportunity now to hear some questions from the members.

Members, we're going to have a vote later this evening, and bells should start ringing at about 6:05 p.m. I understand there is a consensus that we will stay here until about five minutes before the vote. Then we'll just scoot up, vote and come back down to committee.

I see everybody is in the affirmative. That's great.

We are going to start our questions with the Liberals and Dr. Eyolfson.

Mr. Doug Eyolfson (Charleswood—St. James—Assiniboia—Headingley, Lib.): Thank you, Chair.

Thank you to both witnesses for coming. It's nice to be among my peeps. I was an emergency physician for 20 years before doing this.

You made a great point about the number of concussions that happen in non-sport settings, but we often tend to forget that. We use the word “concussion”, for the most part, only when someone comes in injured from a sporting event. When someone comes in having been knocked over the head and had their wallet taken or having fallen and broken their hip at home, we don't tend to think about concussion, but it is a consideration. Although this is about sports-related concussions, I think there's much that's applicable to the overall treatment of concussion.

Do you know if there are any public health approaches to concussions that are not related to sports? Has there been any concerted effort to get that out there, or is the science still concentrating on the sports-related concussions?

Dr. Pierre Frémont: There are two solitudes that we are trying to connect at this point. T

here's the world of mild traumatic brain injury, which is often the term used to describe those concussions that occur in non-sport contexts. The definition of that is linked to some objective criteria, such as loss of memory, loss of consciousness, things like that. It's a challenge to get people comfortable with the management of that kind of injury, the recognition of it, in non-sport contexts as much as it is in sports-related contexts. There's a lot of work to do. We often see people who get a hip injury, and the concussion that comes with it is not identified. We need to do better with all of those cases.

There is no scientific indication that the physiopathology of the injury is different if you get hit by a soccer ball or you fall on the ice. It's the same problem, and we need to do better on both fronts. I'm not aware that there is specifically a strategy to address that as a public health issue, but there certainly are grounds, in the numbers I gave you, for addressing it in a stepwise manner, starting with primary care. In so many of those cases, if you do the basic simple stuff, they will heal, just by keeping them safe and having them gradually resume their activities.

That can be the basis.

● (1745)

Mr. Doug Eyolfson: Dr. Hobden, I know there's a lot of communication that goes from sports medicine physicians to places where sports are done, whether it's in community athletic clubs, semi-professional teams, professional teams, or schools.

What would you say is the current level of knowledge in the sporting community among the clubs? Is their knowledge good generally? Would you say it's poor? What's the general trend?

Dr. Elisabeth Hobden: I think it's very sport- and club-specific, to be honest with you. There are some pockets where people have adopted it. They've looked at what they can do to prevent concussion. But there are a lot—I hesitate to say "most"—that probably don't address it; it doesn't even cross their radar. It's not unusual for me to get an email asking if I can cover an event because it can't be run without a doctor, and it's the first anybody has thought of medical...or concussion. These clubs don't have anything in place, and unfortunately, that's really not uncommon.

At the elite level, we're getting there. Where the national sporting organizations have their policies, it is filtering down. One of the difficulties is that even if you have a national sporting organization, let's say for volleyball, not every volleyball tournament is sanctioned by the national sporting organization. They would fall outside of that and wouldn't get that education. I think our schools are in that hole as well. They don't necessarily get that information coming to them.

Mr. Doug Eyolfson: Okay, that's good.

What is the state of knowledge on these head injury guidelines among primary care physicians? That would include family doctors, emergency physicians. Would you say that throughout Canada, there is a reasonably consistent level of knowledge from the physicians' point of view?

Do we have a long way to go in making sure that all physicians understand when a primary physician says they can manage this, or no, they need to refer that one?

Dr. Frémont, you might want to chime in on this as well.

Dr. Elisabeth Hobden: I'll speak from the emergency medicine perspective because I am an emergency physician also. I'll let Pierre speak to family medicine.

We're getting there. I think the challenge in emergency medicine is most of the doctors have the knowledge and the ability to initially manage a concussion. It's not complicated. It's to make sure nothing worse is going on and then advise about rest and follow-up.

The challenge in emergency medicine is what Pierre alluded to, that it's often forgotten. They come in with a primary injury. It's very obvious they have a broken hip, and it doesn't come to light until later that they're having headaches because they may not have them right away. So we're missing people there.

Mr. Doug Eyolfson: Thank you.

The Chair: We feel very safe in the committee here and with the witnesses. We have many doctors here with us today.

We're moving to our next resident doctor, and that's Dr. Kitchen from the Conservatives.

You have seven minutes.

Mr. Robert Kitchen (Souris—Moose Mountain, CPC): Thank you, Mr. Chair.

Thank you both for being here. I appreciate it.

Dr. Hobden, you talked about protocols and the issue.... I think it's important that we address that because the reality is that when we're looking at people knowing the level they're at, they may not see that concussion come in until four or five days after the event, and they may have forgotten about the event. We see that all the time in practice, whether it's a sport or an everyday concussion.

What would you tell us that the sporting bodies need to do?

I come from a regulatory background, so I would look to see how we regulate these bodies to make certain they put in these protocols. I'm wondering if you could expand on that.

● (1750)

Dr. Elisabeth Hobden: I think they need to have a hard look at their own sport and look where the injuries are happening and what rules can be changed. I think where sport and exercise medicine physicians can add to that is looking to help with education: What do we do when we think we have a concussion? What is our policy for following that?

As I said, the reality is a lot of sporting organizations don't have medicine at the top of their thoughts, and then all of a sudden, they come up with a policy or a protocol that has had no input from anybody with expertise in concussion.

Pierre, I don't know if you wanted to add to that.

Mr. Robert Kitchen: Dr. Frémont.

Dr. Pierre Frémont: Sorry, go ahead.

Mr. Robert Kitchen: Okay, I'll let you come back to that.

One of the things we see, for example, the CAHA came out with mandatory trainers for every team, so we have them on the benches. The reality is that training program sometimes doesn't provide more than basic first aid. That's a challenge when you're asking somebody who doesn't have the medical background or any type of health care background to all of a sudden assess someone who's been injured on the ice and make that decision. Granted, usually the statement is they should see their family doctor.

As I've mentioned to you earlier, I come from rural Saskatchewan, and we don't have access to those doctors. As you mentioned, all of a sudden, they call you up because they can't run this program because they need a doctor there. Those are big challenges for rural Canada, so we want to make certain that when we talk about things here, we encompass not only the urban settings but also the rural settings.

Dr. Pierre Frémont: About that, I'd like to loop back to the previous question.

The CCC made a recommendation about that. The CCC cannot make laws, but we made a clear recommendation that was published. If you organize an activity at risk for concussion, you should implement a way to manage concussion, in the same way you should have a security and prevention strategy in general.

You should consider your resources and ask, “How can I do as best as is possible for concussion?” Those levels of resources will not be the same. Suppose you are on the world cup tour in alpine skiing or at a little ski club on the mountain by the city. You will have a doctor and an expert physiotherapist on the world cup tour and you will not have any health care providers at the little ski club. But you can still do very well. You can implement awareness. You can find a way to consider...if the kid was able to return to school prior to returning to sport.... There's a way you can address every aspect and ask, with consideration for the resources of any setting, “How well can I do?” I think that's the process we are looking for.

We will never be able to have sport therapists and even fewer physicians present everywhere a sport event is occurring and there's a risk for concussion.

Mr. Robert Kitchen: We have a lot of primary health care practitioners—and we chatted a bit earlier about this—who set up programs and specialties within those primary health care programs. They recognize that aspect, for example, for sports injuries, in particular, when we deal with concussions, etc., not only in the assessment process but also in the treatment and the return to play process. For a lot of those, unfortunately, we're finding today, we don't have the data to say how many injuries, how we are affecting it.

As we move forward with this, would you not agree that we need to recognize there are professions that do have those specializations? Should they also regulate within their bodies to make certain that those people are the ones being discussed and brought into the fold?

Dr. Pierre Frémont: If we were able to screen from the whole denominator of all concussions that occur, the 10% to 20% who will evolve with persistent symptoms, we would focus on those efficiently, right after two weeks, to make sure that before they make it to three weeks or a month, they are seen by those specialists, those with expertise, whether they are physiotherapists with vestibular and cervical expertise, chiropractors.... We need to have a multidisciplinary team who will provide the individualized treatment that people need at this point.

What we are suggesting is to have a stepwise process, where we screen for those who are not doing well. We make a good decision at the right time to return to play those who are doing well. But we need to improve access to the experts. We need to safeguard access to these experts by not overloading them with a whole bunch of concussion cases. There are not enough such experts. There will never be.

● (1755)

Dr. Elisabeth Hobden: I would like to add to that. I agree with what you said, Pierre, completely. We have to look at the reality that many Canadians don't have coverage for some of these allied health professionals, who are invaluable, and that is a barrier, for sure.

The Chair: Thank you.

We're going to be moving over to the NDP and Ms. Hardcastle for seven minutes.

Ms. Cheryl Hardcastle (Windsor—Tecumseh, NDP): Thank you very much.

Can you elaborate, Dr. Hobden, on the kinds of things that are being recognized as perhaps a standard of care for people with concussion, certain specialities that are not covered but that you can see as emerging?

Dr. Elisabeth Hobden: As Pierre said, at the beginning, rest and then gradual return to activity is good for about 90% of patients, but there is about 10% who, after two weeks, still have symptoms. There are chiropractors, physiotherapists, occupational therapists, athletic therapists—am I missing anyone, Pierre?—who all have great expertise in specific areas of concussion and know how to help people with specific problems, whether it be that they're having trouble with memory, with balance, or with their neck. They have the expertise to deal with that.

As a physician, I do not give very many complicated exercises for balance. I can give simple ones, but when you fail that first two weeks, you need something a bit more. Unless you have a private insurance plan, often that's not covered.

Ms. Cheryl Hardcastle: Do you want to add anything to that, Dr. Frémont?

Dr. Pierre Frémont: The public care for brain injuries is very limited. I'm talking mostly in rehabilitation. All the resources are taken by the moderate and severe brain injuries. There is very little left for mild traumatic brain injuries or concussion, so that is a barrier to accessing care. That is something that should be addressed, improving that access to care when you evolve with persistent symptoms.

Ms. Cheryl Hardcastle: Going back to your organization, it's collaborative. Tell me what your experience has shown where we need, as a government, to facilitate more the evidence gathering or the data sharing so that you have effective regulations even down the road.

We've had various testimony already. One group, Parachute, for example, did the guideline for concussion.

That information, that evidence, is evolving all the time. Then you have these silos. Then you have which stakeholders should be included. When you set regulations, I know that everyone is most comfortable when they are evidence based.

Where do you think we could be facilitating that data gathering, data sharing and evidence sharing? Where are there opportunities?

● (1800)

Dr. Pierre Frémont: What was initiated with the Canadian concussion protocol harmonization project, which was led by Parachute with funding from the Public Health Agency of Canada, was the start of creating a centralized, validated and hopefully continuously updated hub of information. Hopefully there will be more federal funding to keep that going and keep that updated.

What we used to have before that was the international consensus, which is updated every four years. The next one will be in Paris in 2020. Then we need Parachute to have the resources to work with the experts and contextualize the new updated recommendation at that point and maintain that central hub.

The next challenge you have is transfer of that information and contextualization to a broad spectrum of contexts that go from the very resourceful elite sports to the non-resourceful grassroots sports. They still can do well if they are supported to do the best they can with the resources they have.

The next challenge is knowledge transfer and implementation while keeping support for the harmonization project which I think made big progress towards avoiding the problem of googling “concussion” and getting 2,000 results and you didn't know what was good or bad.

Ms. Cheryl Hardcastle: It's interesting you say that, because if you go online to sports at the Government of Canada, it's a very different mandate for concussions in sport from what there is under health when it's sport and concussion. I think it's maybe “sport and concussion”, and then the other one is “concussion in sport”. There are these nuances of language.

I think it's been pointed out that ultimately it doesn't matter where the concussion came from, but we're starting with sport. We have what I'll call this social infrastructure. These stakeholders are here and have been working in elite sport. Can we leverage that? What do you think we could be leveraging?

Dr. Elisabeth Hobden: I agree with everything Pierre said.

I think we have the knowledge. I think we have the evidence. I think we have to keep that coming so that it keeps getting updated and renewed.

Then the challenge is really getting that down to more recreational levels without missing anybody. When you think of who is doing recreational sports, if you're in rural Saskatchewan, it might be your community association. If we just consider the national sporting organizations, we're going to miss a lot of sports. We have to think of schools, community groups and recreation centres and how we are going to bring that knowledge we have down to a grassroots level.

The Chair: Thank you.

We're going to be moving over to the Liberals now with Madame Fortier for seven minutes, and that will conclude our first round with the members.

[*Translation*]

Mrs. Mona Fortier (Ottawa—Vanier, Lib.): Thank you, Mr. Chair.

I'm sorry that I missed the witnesses' opening remarks. I hope that my questions won't force them to repeat themselves, since that's not my intention.

Here in the subcommittee, we're trying to determine what we can do and suggest, as members of Parliament and legislators, to ensure that the government can support all the initiatives under way and work with the provinces. I gather that the issue is complex, and that both the federal and provincial governments must play a role.

I know that you've already proposed some ideas. Since we're in the final round of discussions, I'd like you to say what you think that we, as legislators, should do. You specifically talked about the need to increase funding, and I want to hear what you haven't had the chance to tell us yet.

Mr. Frémont, you may begin.

Dr. Pierre Frémont: I'll start by repeating a point that I've already mentioned. We must continue to support the positive steps that have already been taken by asking the Department of Health and the Department of Sport and Persons with Disabilities to work together to develop a national strategy on concussions. The project needs to continue. The strategy must be constantly updated and it must have a decades-long impact if we want to successfully resolve the concussion issue.

The first step was obvious because the way forward was clear. We needed to work with national sports associations. The second step is to successfully carry out the same thing, but at the base of the pyramid, at all stages of sport development. I've already referred to this challenge. It involves an ongoing transfer of the application of knowledge for which new methods must be explored. I've already mentioned one method that we're currently applying, which is open online courses. This is an example of a very good strategy that suits this type of activity.

● (1805)

Mrs. Mona Fortier: Are the courses also provided in French?

Dr. Pierre Frémont: The first course was provided four times in French at the Université Laval.

Mrs. Mona Fortier: Is the training provided in both official languages?

Dr. Pierre Frémont: The French course showed very conclusively that the concept is feasible. We're in the process of developing the English version of the course together with the University of Calgary. We've already received 4,000 registrations in two weeks.

Mrs. Mona Fortier: That's excellent. Thank you.

Dr. Pierre Frémont: These are examples of new strategies.

A final issue has been clearly identified through the work of the groups in which I've participated. The issue is the need for better data collection and for a monitoring system that uses new sources. We've traditionally relied on data from the health care system. This data includes hospital visits, hospitalizations and, to a lesser extent, clinic visits. However, we must try to obtain data where the concussions occur, meaning in the sports environments. This additional challenge requires evaluative research. However, research involves funding.

Mrs. Mona Fortier: Do you have anything to add, Ms. Hobden?

[*English*]

Dr. Elisabeth Hobden: I completely agree with Pierre.

The only thing that I would emphasize is that I think we need help in some ways getting the attention of some of these sporting organizations. I don't think they think about it, and it's not because they don't think it's important; it's just that they've always done it this way, and it's the way it's done. It get's a bit into sporting culture and bringing that evidence down to them. I think sometimes you knock at the door and the answer is, “No, we don't need that.” A little bit of a nudge in that direction might be helpful.

Mrs. Mona Fortier: Thank you. I understand.

[*Translation*]

Do I have any time left, Mr. Chair?

[*English*]

The Chair: You have two minutes.

[*Translation*]

Mrs. Mona Fortier: I just want to know whether there are any best practices or different measures in other parts of the world that Canada may not have taken into account and that it should adopt or study more closely.

Dr. Pierre Frémont: I don't want to be biased, but I would say that Canada is recognized as a world leader in the area of concussions.

Mrs. Mona Fortier: I'm happy to hear you say that.

Dr. Pierre Frémont: A significant percentage of international experts come from Canada, and advances often begin in Canada. That said, some major sports federations occasionally make good moves. For example, the conservative rugby community agreed to disregard its traditional culture and change an absolutely fundamental rule. A player can now be withdrawn for assessment purposes.

These good examples will ensure that we agree to examine how we play certain sports in order to avoid making mistakes and to identify whether concussions have occurred. Great things are being done, and there are great examples to follow, even though we're a leader in this area.

Mrs. Mona Fortier: That's good to hear. Thank you.

Do you have anything to add, Ms. Hobden?

[*English*]

Dr. Elisabeth Hobden: I would echo that. The Canadian equestrian federation is actually being held up as an example in the international federation for its concussion protocol. That goes greatly against the culture of the sport where you get back up on your horse again. It has accepted that you come out, you sit out and you need clearance to go back in. I think we are leaders, yes.

● (1810)

[*Translation*]

Mrs. Mona Fortier: Thank you.

[*English*]

The Chair: I want to move into the second round starting with Mr. Webber from the Conservatives, but before doing that, I have a quick question.

Dr. Hobden, you brought up that you would like to see some rule changes when it comes to sports. Do you have any clear examples of what rules need to be changed, what rules sports should be changing?

Dr. Elisabeth Hobden: It has to be done by the sport, and each sport has to look at this.

My background is in equestrian sports. I'm the national team physician and it took 10 years for us to change that rule. It's the culture; it's slow moving, but it really has to come from within the sport. Sports organizations need to be nudged to look at it and to ask why this is happening in the sport. Why are athletes coming in with the most injuries and the most concussions into the emergency rooms?

For somebody from the outside to come in and say you're going to change your sport like this, I'm not sure how successful that would be.

The Chair: Mr. Webber, you have five minutes.

Mr. Len Webber (Calgary Confederation, CPC): Thank you, Mr. Chair. Doctors, thank you for coming today to present.

I'll start with you, Dr. Hobden, on a comment you made in your presentation of a young man who got hurt and didn't know he was concussed. Of course, his academics declined, and his headaches and confusion were evident.

An individual nowadays has that avenue. Back in my day, in the late 1970s and early 1980s.... I know for a fact that I've been concussed numerous times, maybe not as many as you, Dr. Frémont. I don't know whether or not I was dealt a concussion, but I was certainly knocked out.

Being someone who assesses patients—again, this is my first time at this committee so other committee members have probably heard this before but I have not—how do you assess whether someone has had a concussion or not? Being knocked out does not necessarily mean you've had a concussion, correct?

Dr. Elisabeth Hobden: Not being knocked out doesn't mean you don't have a concussion, okay?

Mr. Len Webber: Yes, okay.

Dr. Elisabeth Hobden: It's a two-way street. It's a complex clinical assessment. You have to take into account the injury. Is it a mechanism that could potentially lead to a concussion? Are there signs and symptoms that are consistent with a concussion.

It's really important to note there's no one test we can do to say that yes, you have a concussion. We can do CT scans and all sorts of magical things to make sure you don't have a more serious brain injury, but there's no one test that we can do.

Mr. Len Webber: You've assessed then that this patient has had a concussion. I'm sorry, and again, you've probably heard this before, but would the treatment be just rest and relaxation? What would the treatment be for someone who has suffered a concussion?

Dr. Elisabeth Hobden: For the first three days, it's definitely rest and relaxation. Then we try to increase the activity level gradually. In 90% of patients, in about seven to 10 days, they will be asymptomatic. They'll be able to start a gradual return to sport, learning or work, whatever that is. There's a group that does not progress beyond that and they're the people Dr. Frémont was speaking about before, who need to be triaged to some further care and specialists.

Mr. Len Webber: I see.

Dr. Frémont, can you describe what that care would be then? What would you do for these serious questions?

Dr. Pierre Frémont: At this point, when you have persistent symptoms, you need to have a careful assessment of different spheres, like the mood disorders that quickly can be part of a concussion. It's very stressful and anxiety can go on to depression. You can have cognitive problems in the cognitive sphere. You can have problems with vision and balance. You can have components that come from cervical injuries. Whether that is a different injury or an associated injury is still being explored and studied.

At this point, the key message is that you need to have the properly composed group of experts design and individualize a treatment plan. The message that comes with that is there is no one specialist or one technology that can take care of every concussion with persistent symptoms.

● (1815)

Mr. Len Webber: Dr. Hobden, you had mentioned also that there's about 531 Canadians who have the speciality that you both have. That sounds quite low to me, of course.

I'll go back to this young man who experiences a concussion. I guess he would just go to his family doctor and they would recommend that he see a specialist, which would then be you. Of course, the wait to get in to see you would probably be quite long, I would think.

Dr. Elisabeth Hobden: It depends.

Mr. Len Webber: Yes.

The Chair: Thank you, Mr. Webber.

We're going to be moving over to the Liberals now. We are very lucky today. This is a subcommittee of the Standing Committee on Health. We have with us today, Mr. Casey, the chair of the health committee, who will be asking a few questions.

Mr. Bill Casey (Cumberland—Colchester, Lib.): Thanks very much.

I don't know anything about concussions. What happens in somebody's head when they get a concussion? What actually happens?

Dr. Pierre Frémont: You know that first period of rest that we recommend—that 48 to 72 hours? The studies on the brain during that period, using animal models and fancy imaging, show that there is a metabolic storm in the brain. There is a problem with the flow of ions in and out of the neurons. There's no focal anatomical bleeding or disruption, but there is disruption at the cellular level and there is a metabolic storm. There is high energy consumption at that point.

It's complex, but the understanding of what's happening is evolving rapidly. Hopefully, at some point we might have ways to act at that very acute stage through intervention, but that's not really possible at this point. The only thing we know that's right to do at this point is to respect that initial period where we limit the physical and cognitive demand on the brain during that storm.

Mr. Bill Casey: When I slipped on the ice about a month ago and fell and hit my head on the back, it could have affected my whole brain, theoretically. It's not just where I hit.

Dr. Pierre Frémont: Yes. It could have been a very bad injury. Some people die from a fall like that because they develop a brain haemorrhage that can sometimes be slow or sometimes fast. Most people will have a concussion with that type of more diffused cellular perturbation, which will last for a few days with the related symptoms.

Mr. Bill Casey: What about the cumulative effect if a person has one concussion and then a second one? If the event is the same, is the concussion worse for the second one, for the third one and the fourth one?

Dr. Pierre Frémont: I would say that mostly depends on how well you were able to heal from the first one. The worst-case scenario is when you get injured prior to full recovery from the first injury. That's when you see the very dramatic and sad cases of kids who die from recurrence of a head injury after returning to play before being asymptomatic. That's what we don't want.

There is more and more information on the spectrum of what I just described. Without dying, you get those very bad and long-lasting episodes of concussions when you get reinjured prior to healing properly.

On the other side, there's no real indication that if you sustain one concussion, heal from it very well, and make a successful return to the sport you love that you will have residual weakness.

● (1820)

Mr. Bill Casey: It's really important to get the diagnosis right at the time of the first injury. If it's not diagnosed right, then the second concussion could be much worse.

Dr. Pierre Frémont: Yes.

Mr. Bill Casey: You said you had concussions. What is the impact of those concussions now? Do you have an impact now from them?

Dr. Pierre Frémont: I probably had the chance to be quite well informed as a physician, except maybe for the one I had when I was younger, playing water polo. I don't remember any consequence of that. I was probably able to heal. I had the chance not to get reinjured after that first injury. The two subsequent concussions just healed because I made sure that I didn't get reinjured and I rested and then I gradually resumed activities. I don't feel that I have sequelae from the three concussions.

Mr. Bill Casey: Thanks very much. That's good.

The Chair: Thank you, Bill.

We will now move to the Conservatives and Dr. Kitchen.

Mr. Robert Kitchen: Thank you.

I appreciate your comments regarding the questions from Mr. Webber and Mr. Casey. I think a lot of times on this committee there are a lot of people who don't understand how we walk ourselves through the injuries and what we see. While Dr. Eyolfson and I might have some experience in that avenue, a lot of our colleagues don't, so I appreciate those comments.

As we roll with that—I want to keep on that subject—one of the things that we see in sports now is the aspect that we're dealing with the SCAT5 and the child SCAT5. While I may understand it, I would ask if you could relay to my colleagues your approach to the SCAT5 and the child SCAT5.

Dr. Elisabeth Hobden: The SCAT5 is the sport concussion assessment tool. It's not actually the fifth version, but they call it the SCAT5 for other reasons.

The document comes out of the international consensus statement on concussion in sport. There's a narrative that you can read with evidence behind it and all that kind of thing, but the SCAT is what we as physicians use to assess a sporting concussion.

It starts out with very simple things: What's your name? What's the date? What sport were you playing? What's the score? What quarter are you in? It moves on to more complex things like asking you to do some tests of short-term and long-term memory. It asks you to do some balance tests to see how your balance is affected, because that is very often affected in concussion. Then there are some concentration aspects where you ask them to subtract seven from 100, and keep going. Lots of people have difficulty doing that with a concussion, or saying the months of the year backwards. When you've tested this, you can test some of their movement as well.

Essentially you come up with a score. The score doesn't tell you whether or not you have a concussion, but it can help me as a physician.

Another thing that's part of it is that the patient rates their symptoms. As a physician, I can say that overall, I think things are improving. It's designed really only for the initial assessment to see where you're at. But certainly the self-reporting of symptoms is important as you go along.

Mr. Robert Kitchen: Thank you.

You both made an important point that no one concussion is (a) the same, (b) treated the same, and (c) comes out with the same results. I appreciate those comments, because that's an awareness thing that we need to know, and that we need to get out for the sporting bodies to understand that as well, because they extrapolate that all into saying....

In my day, when I had my concussion, they'd say, “Your bell was rung. Get back out there. It's a long way from the heart.” Today, we need to be very well aware of that aspect of it because of the implications of it, and no one ever recovers exactly the same way. I was the victim of a hit-and-run when I was 16. I was riding a bicycle and was hit by a drunk driver. I was unconscious for 10 days. The reality is that I've come back from it but it took time. You see everyone recovering on those aspects.

When we deal with children, they're reliant upon the people around them to make decisions for them. That goes back to, as you talked about earlier, recreational sporting before they get to that elite level. As they get to the elite level, they usually have a lot more professional help that's providing that for them.

What can we say to those who might be listening today, the parents who might be listening today, as to how they approach that aspect? A lot of parents will panic and maybe overdiagnose it themselves because they read it on the Internet, or they may not do anything. I'd like some suggestions from you, if possible.

● (1825)

Dr. Elisabeth Hobden: If I understand your question correctly, it is what does the mom do who has a child participating in a sport and is worried about the risk of concussion.

The first thing I'd suggest is for her to talk to the sporting organization, talk to the coach, about what education the coach has. There are free online courses that sporting organizations give. Does the coach have anything? I think that's a good place to start.

The second thing is there's a lot of good information for parents on the Internet from groups like Parachute about concussions, how to recognize them and what's going on. The reality is, if you're concerned about the health of your child, if you're concerned about a concussion, we always say that when in doubt, sit them out until you can get a proper assessment to understand what their health status really is.

The Chair: Thank you.

We're going to be moving over to the New Democrats for about two minutes or so before we take a little break and scoot out for votes and that will conclude our first witnesses.

Ms. Hardcastle.

Ms. Cheryl Hardcastle: We have a Canadian standards organization that has the authority to constantly monitor and to regulate or to set standards.

Do you think we need to be exploring that kind of concept of monitoring or assessing, I don't know, at some point down the road...? Are you concerned that the more you learn and the more you...? There are a lot of silos. How do we bring this together? Do you think maybe we should be looking at a central organization or something? Just finish up with your thoughts on where you think this really needs to go.

Dr. Pierre Frémont: I think that notion of a central hub of information with tools to support every type of setting in the implementation of those recommendations is the key here. Implementing formal expectations, whether it's through regulation or legislation, those are different means, and I'm not the one who will choose.

I think it's okay, for example, for Sport Canada to associate funding.... They do it for harassment. If you don't have a harassment policy, you don't get the funding. Why not do it with concussions? Why couldn't we say that if they want to organize a sport at risk for concussions, they must have a rule or they will not get that type of support?

There are different ways to reach that, but this has to come with the support to meet the expectations, which is often a problem. If you just pass a law and you don't support people in meeting the requirements of the law and you don't have the resources to verify the application of the law, then you just have a sword of Damocles hanging there to be able to say someone is guilty when a kid dies, which is not right. If you implement an expectation, you need to have the support.

Dr. Elisabeth Hobden: I think that's important too, because Canadians aren't active enough. What you don't want to see happen is that regulations are put in place that people can't meet and then there is less participation in sport. They really have to have the support so that they can achieve these goals.

The Chair: Excellent. Thank you for the questions and thank you for the answers and recommendations from our witnesses.

We want to thank Dr. Frémont and Dr. Hobden for being with us today. We are looking to have this report ready to be tabled by the end of spring.

We thank you for appearing here and for your testimony.

We're going to break now for about 20 minutes.

● (1830)

(Pause)

● (1850)

The Chair: I'm glad everybody is back. I apologize for that break for the vote.

We are back now with our second panel of witnesses. From the Canadian Concussion Centre, University Health Network, Toronto Western Hospital, we have Dr. Charles Tator. We also have with us, from the University of Ottawa Brain and Mind Research Institute, Shawn Marshall, division head, physical medicine and rehabilitation. From the Centre for Rehabilitation Research and Development, we have Dorothyann Curran, who is research associate at the Ottawa Hospital.

We are going to start with Dr. Charles Tator. Just in case something happens with our video conference, we want to ensure that we get Dr. Tator's statement and testimony here for the members to hear. Then we'll move to our other witnesses. Then we'll have questions from the members.

Dr. Charles Tator, the floor is yours.

● (1855)

Dr. Charles Tator (Director, Canadian Concussion Centre - University Health Network, Toronto Western Hospital): Thank you, Mr. Fonseca.

I'd like to thank the committee for inviting me to speak. I'm very pleased, in fact, that this committee of Parliament is putting so much energy into the field of concussion.

I've been focusing on this field in my practice and research for the past 20 years. I think it's great that our country feels that this is a major concern. It has been my view for a long time that concussions are a major public health issue in our country, for a number of reasons. We generate a lot of concussions because of the way we live. We drive quickly. We play a lot of high-risk sports. In fact, we generate about 200,000 concussions annually. I can tell you that our research shows that about 20% do not recover within the usual time of about a month. In fact, some never recover.

We've learned quite a bit about concussions. We're impressed with the fact that they are often followed by significant issues, such as major mental health disorders. In fact, some end up with brain degeneration, as I'm sure you are aware.

I think it's important for this committee to have a perspective. I'm probably the oldest person who is going to speak to you, and from my perspective, a lot really has gone on in the last 20 years. I welcome this committee to the team to deal with concussions, but I really feel that it's important for you to be aware of this perspective.

In about 2000, the Canadian Academy of Sport and Exercise Medicine—you just heard from representatives of that committee—put out one of the first concussion guidelines of any country, so Canada was really quite forward in saying in the year 2000, for example, that every concussed athlete should be removed from the game or practice and should see a medical doctor. In the following year, and for about the next 10 years, there were concussion road shows that went across the country and visited all the major cities. They were sponsored by a number of organizations, including Hockey Canada and ThinkFirst.

In about 2010, we opened what I think is Canada's first comprehensive concussion centre focusing on concussion care and concussion research. There are now several others across the country in major cities and even in some smaller cities such as Barrie, Ontario. From 2011 until 2019, the present time, CASEM has had a Canadian concussion collaboration with a number of organizations, which now includes Parachute Canada, Canada's injury prevention agency.

In 2012, in the Ontario legislature, for the first time a concussion law was given first reading, but it did not pass. To put that into perspective, by 2014 all 50 states in the U.S. had already enacted some form of concussion legislation.

Next, 2013 was an important year, because the first Canadian cases of CTE, the dreaded brain degeneration related to repetitive concussions, was first reported in Canada. That same year, in 2013, Rowan Stringer died in Ottawa from concussion-induced second impact syndrome following concussions in school-based rugby.

In 2014, the following year, the Ontario Ministry of Education enacted PPM No. 158, which was a concussion policy procedure for school-based sports. It only covered school-based sports, but it was very important to do that.

● (1900)

In 2015, Prime Minister Trudeau sent mandate letters to the federal ministers of health and sport, Jane Philpott and Carla Qualtrough, respectively, to support a national strategy to raise awareness for parents, coaches and athletes on concussion management. It was a very important initiative. That same year, the Rowan Stringer inquest was held and established that that was a concussion-related death. The jury recommended 49 measures to prevent further deaths in sports.

In the following years the Public Health Agency of Canada awarded Parachute Canada a contract to harmonize concussion education and guidelines for our country. From 2016 to 2019 the federal Ministry of Sport's working group on concussions, headed by Jocelyn East and Michel Fafard, began its work. That has been an excellent committee with representatives from sport, health, education and prevention, with great committee work on harmonization and dissemination of guidelines.

In 2017, the Rowan Stringer committee formally called for concussion legislation, and I'm very pleased to say that was ultimately enacted in 2018 in Ontario. That's very recent, and now we are aware of other provinces, especially Manitoba, that are moving in that direction.

Parachute Canada and PHAC introduced these excellent guidelines so we now have guidelines written by Canadians for Canadians for all sports. It is important for your committee to know and appreciate that.

The Chair: Thank you, Dr. Tator.

We have come a long way over 20 years, but we still have much work to do, as we know from the witnesses we've heard on this committee.

We're going to move to Dr. Marshall for five minutes.

Dr. Shawn Marshall (Division Head, Physical Medicine and Rehabilitation, University of Ottawa Brain & Mind Research Institute): Thank you, Dr. Tator, that was a great presentation and history.

While I think Dr. Tator precedes me in age, I'm also of a similar ilk. I think we predate concussion being a concern. Early on in our careers when we started off, concussion wasn't identified.

What I want to focus on in my presentation is that I think the emphasis has been on identification and prevention of concussion. Where we have come into the fold and where we've done a lot of our work is on, I think, something very important mentioned by Dr. Tator, which is the management of a concussion after it's occurred.

There's acute management, and there's that minority of persons who had a sport-related concussion or a concussion outside of that. Generally it's 15% to 20% in a study for pediatrics, and it exceeds 30% if we go longer than 30 days. If we go beyond six months, it's probably 15% to 20% of the population. Again, sport concussion is a subset of concussion. I think concussion affects everyone in their daily lives.

The tack I take from it is that we as clinicians were recognizing that people were having concussion, and these individuals weren't necessarily completely recovering, which is what the expectation was: complete recovery. My main area has been moderate and severe brain injury. We were in rehabilitation and finding that these patients were not completely recovering.

Akin to guidelines that talk about management of concussions, or concussions more clearly, Canada has been a lead. Another area that we have focused on has been the management of symptoms following that, to try to standardize practice for how we manage people who have ongoing symptoms following concussion, primarily focusing on those with persistent post-concussion symptoms.

Through the work of the Ontario Neurotrauma Foundation, there have been two sets of guidelines created, one for pediatric, ages 18 and under, and another for adults. These have been published nationally and internationally. They have been presented as such and are recognized as very solid guidelines. We're currently in the third edition for the adult concussion guidelines. The aim of this is to standardize practice to provide care. As Dr. Tator mentioned, 200,000 Canadians per year sustain concussions. If 20% are not better after 30 days, then we're looking at people who need help and support. This needs to be improved in care and where we're focusing our research.

The other thing I will comment on specifically is that there have been initiatives that, to date, have not been successful, but have tried to harness the expertise here nationally in the country. Led in Calgary by Keith Yeates, there was an application for a national centre of excellence for concussion management through the University of Calgary. It was not successful in the letter of intent stage, but it harnessed experts throughout the country to focus on sport-related concussion and concussion in general, both pediatric and adult.

Another initiative that has been successful, but has not received full funding through the Ontario government, is the Ontario Brain Institute in relation to the Connect group studying concussion from all elements, from pre-concussion to concussion, looking at even chronic encephalopathy through all stages, including acute management and post-concussion management.

These are things that should be pursued further to standardize practice of care. Clearly, Canada and Ontario are leading in this area in trying to set these standards, and this has been well recognized internationally.

I believe that support on setting those guidelines and standards and allowing for further research will help us better serve our patients.

Thank you.

● (1905)

The Chair: Thank you, Dr. Marshall.

Dr. Tator, I'm not sure if we cut you off at one point, but if you do have more to your opening statement, you can submit that. We will distribute that to the committee members, and it will be made public.

Thank you.

Dr. Charles Tator: Thank you.

The Chair: Now we're moving to Ms. Dorothyann Curran.

Ms. Dorothyann Curran (Research Associate, The Ottawa Hospital, Centre for Rehabilitation Research and Development): Concussion, in particular, sport concussion, has become very topical in terms of public awareness over the last 15 years. Both physicians alluded to that.

Research on concussion has also risen exponentially. In doing a literature review for the 2012 adult version of “Guidelines for Mild Traumatic Brain Injury and Persistent Symptoms”, about 18,000 abstracts were reviewed. When the third version of the guidelines was created in 2018, over 38,000 abstracts were reviewed.

There are different types of research targeting different aspects of concussion. There's research on identifying concussion conclusively and quickly. Not everyone who experiences an impact to the head develops a concussion. How do we identify those people who actually do end up with brain damage? There's research that looks at proper healing timelines, and there are guidelines for adults, children and adolescents, designed to advise people on getting back to work, school or play. A lot of research has been done looking at attempts to speed recovery during concussion, in the subacute phase, to address specific symptoms, such as headaches, cognitive issues and vestibular issues. People want to get back to their day-to-day activities as quickly as possible.

Some research on persisting symptoms has also been done. How do we identify people who might develop persisting symptoms? We know, for example, that women tend to have persisting symptoms more frequently than men do. What can we offer these people, in terms of rehabilitation? What therapies and treatments might offer optimal management for these persisting symptoms in the long run?

There's also research that looks at extrinsic and intrinsic factors that might contribute to persisting symptoms. There's a concern about the effects of multiple concussions that may translate into persistent symptoms. There's gender, age and mechanism of injury which could contribute to persisting symptoms as well.

Some athletes are working in jobs that can increase their likelihood of having concussions. It's known that people who experience a concussion are more likely to have another one, which is also a danger for athletes, especially those in contact sports.

It's generally accepted, as Shawn and Dr. Tator mentioned, that about 15% of people who experience a concussion may go on to have persisting symptoms. It's becoming a little more clear that it could actually be a higher number; maybe 20% of people end up with persisting symptoms following a concussion. Symptoms that remain beyond three months are considered persisting symptoms. People who fall into the persistent symptoms category are at a great disadvantage. Their symptoms interfere with work, return to play, social activities and family obligations.

In terms of avenues for future research, which is more where my focus is, augmented reality and virtual reality are definitely gaining interest, in terms of assessment and treatments for concussion. There are different types of goggles with analytic software emerging for use in sports. They are very portable, and may be able to assist in the diagnosis of concussions. Virtual reality that uses larger, more immersive systems can also measure range of motion and centre of balance. They have good potential, although they'd only be available at health care centres. The newer gaming platforms make simulation interfaces more visually engaging, which could improve compliance with treatment.

The advantages of the use of VR for assessment and therapy are that we can program virtual reality very specifically, to elicit responses based on increment, difficulty or intensity, and we can measure responses to stimuli. It's also a great distraction, and, obviously, the entertainment feature is high.

In terms of the disadvantages, we don't know what long-term exposure to virtual reality can do. Virtual reality is also not the real world. Human responses are not the same in virtual reality. If we want to rehabilitate people into the real world, there are some things we simply want them to do in the real world. If we want them to stack blocks in virtual reality, they might as well stack blocks in the real world.

● (1910)

Overall, there's a lot of research being done on concussion. At this point, the literature, in my opinion, needs to be evaluated. Studies need to be evaluated by people with clinical and research experience using reporting guidelines that will help to qualify the research. The new research that is going to be done needs to be driven by what gaps exist that we know about now.

The Chair: Thank you, Ms. Curran.

I know that the members are eager to ask all of you many questions to tap into your expertise and your knowledge.

We're going to start with the Liberals and with Dr. Eyolfson.

Mr. Doug Eyolfson: Thank you, Mr. Chair.

Thank you, everyone, for coming.

I was explaining to the last panel that I'm a physician, so it's kind of nice being back with people from my field. I feel like we're getting the band back together.

I'd like to start with Dr. Tator. At your centre, they're studying deterioration of brain function. I think you mentioned chronic traumatic encephalopathy in your remarks. Has your research found any correlation with other identifiable neurologic conditions like dementia, Parkinson's disease, MS, or anything like that?

Dr. Charles Tator: Yes. That's a very good question, because there is a real connection between all of the neurodegenerative disorders, and patients may end up having more than one. For example, in the brains we have examined of athletes who have had multiple concussions, we have found other conditions present, like Parkinson's disease, or small strokes or a loss of blood supply to the brain. That's why very careful analysis has to be done of people who are suffering from symptoms like dementia and other brain degenerations to figure out exactly what caused it.

We're at a very early stage of this. In our centre, we've examined about 45 brains now that have been donated to us by the loved ones of people who have passed on where something of that sort was suspected. In about one-third of those people, we do find evidence of CTE. It's not as common as has been reported in other centres. Some were saying that up to 95% of brains donated to them concerning patients who have passed on with those degenerative conditions have shown CTE, but that hasn't been the case for us. I think that's just indicative that this is a growing field. We're just scratching the surface, really, but we have made some gains. I would hope that one of the objectives of your committee will be to advance further research as just indicated by Dr. Curran.

● (1915)

Mr. Doug Eyolfson: Further to the examination of brain tissue, you've described how in these patients you find things like Parkinson's disease. In the absence of any of these diagnoses in the brains you've examined, are there any specific changes to the brain that you've seen that are unique to concussion that don't fit any other diagnostic criteria like Parkinson's or something like that?

Dr. Charles Tator: Yes, very definitely. The diagnosis of CTE, chronic traumatic encephalopathy, has definite criteria. For example, you have to see deposits of this abnormal protein called phosphorylated tau. It's quite easy to identify that protein because it stains a dark brown if the brain is prepared with the appropriate stain according to now-established techniques. Yes, we can identify brains that have that problem specifically.

For example, you may know the name Steve Montador. He played for six NHL teams during his career. We went over his records very carefully, and I personally counted that he had had 19 documented concussions. He was a very aggressive player. When he died unexpectedly at the age of 35, his brain had lots of deposits of this abnormal protein, which is very specifically located in areas that are characteristic of CTE.

The answer is yes. There are some people, even young people of 35 years of age, who are showing this abnormality after multiple concussions.

Mr. Doug Eyolfson: Thank you.

The Chair: We are moving over to the Conservatives now, and Dr. Kitchen for five minutes.

Mr. Robert Kitchen: Thank you to all of you for being here and for bearing with us on a day like today.

It's great to have researchers here. It's piqued my interest on a number of questions and aspects that I'd like to hear about. I'm trying to figure out where I want to start.

A number of you talked about brain degeneration, and some of the side effects that we might see, with mental health issues or possible CTE, etc.

I'm wondering whether there is research out there now compared to my day, and I go back to the days when I was.... I could talk about my undergraduate degree. I studied under Dr. Pat Bishop at the University of Waterloo. He was a mentor of mine. We did research where we were dropping hockey helmets, ancient contraptions.

Dr. Tator, I can see you smiling. I know you're very well aware of this information.

Nowadays, we're seeing a lot more new information. Ms. Curran, you mentioned about virtual imaging. These are all interesting aspects that I haven't kept up with, and I'd love to hear a little more about it. For example, on the issue of looking at this protein, the tau, obviously this is a new study. It's obviously done when someone has passed away. We can't look for that product today. It's after the fact.

How do you take all of that information and correlate that with a sports concussion?

I'll throw the question out to Dr. Tator first and then go from there.

● (1920)

Dr. Charles Tator: That's a great question, a tough question. I will try to answer it.

By the way, I interacted with Pat Bishop for a long time. There is no doubt that he was a great Canadian researcher on head injuries.

With respect to your question about tau and the fact that we can see it at an autopsy, the good news that's starting to appear is that research has shown us a way to identify it in the living. We're not ready to be able to apply it to an individual patient who is suffering, let's say, with dementia, and you want to know whether it's regular Alzheimer's disease or CTE. We're not ready for that, but I think that is coming down the pike. We will be able to identify it in the living.

One of the hottest areas of research right now in this condition is the use of PET scanning, which can identify deposits of this abnormal protein. We use a radioactive tracer that's labelled with fluorine-18. We inject it and then do PET scanning, and we can see deposits of tau in the brains of some of those living athletes.

We've had a very good relationship with the CFL Alumni Association. They have sent along a number of their alumni for examination with this technique, and we can identify deposits of tau in the brains of people who are living.

I think that's a very important first step in trying to develop a treatment for this. We don't want to just be able to diagnose it. We want to be able to do something about those deposits of tau.

Mr. Robert Kitchen: Thank you.

I know at the University of Ottawa they have a scanner that's been used in looking at PTSD aspects in veterans. There's some early research on that.

Perhaps, Dr. Marshall. you might have some information that would correlate with this.

Dr. Shawn Marshall: I think we're talking a little bit about different things too. There's the one goal of identifying CTE, which is a chronic sequela, presumed due to multiple concussions. I think the research is certainly going off in that range. We're learning more and more each day, and I think those things are very important.

I think the other area, which is in high-intensity research, looking probably more at the sport level and the acute concussion level, is the immediate diagnosis of concussion. It relates to what you're saying about PTSD, so often associated with injury, more often outside of sport than inside of sport. There's an emotional reaction that we often talk about, PTSD, and some of the symptoms can be similar to those of a concussion.

The other thing is that we're looking for markers—or biomarkers, if you will—that would suggest you've actually had resolution of your concussion. When is it safe to return? A case in point would be an example like Rowan Stringer. Clearly, she was a person who had evidence of concussion, when they went through and looked at the record, and yet continued to play. Now through prevention and other strategies in this day and age, we would identify it, first of all. That's probably one of the many failures in the system that occurred, which Dr. Tator is referring to, and we need to remedy, but it would be ideal to identify those who actually had a concussion urgent injury.

There are experimental imaging techniques. Conventional imaging such as a CT or MRI generally shows normal, and we consider it actually a more severe brain injury if it's not normal. However, we do know certain MRI protocols, like diffusion tensor imaging and other types of protocols like SWI, can show concussions acutely. The problem is that it can't be used diagnostically at this point in time. But these things need to be explored. There are also biomarkers such as SB100 which, if it's in more severe cases, is a better pickup, but when it's in the milder cases won't pick up. So I think for the acute markers—

The Chair: Thank you, Dr. Marshall.

We're going to be moving over to the NDP and Ms. Hardcastle, for five minutes.

● (1925)

Ms. Cheryl Hardcastle: Thank you, Mr. Chair.

Actually, I would love to hear you continue, Dr. Marshall, with regard to how we sort out and monitor the progress that's been made for diagnosis and treatment, and then move on to the more long-term effects that Dr. Tator was talking about, the intensity of that kind of research.

Looking at it from the mandate of this committee—and we're not really clear on what is going to manifest itself from the testimony and the report and the recommendations—how can we be facilitating not just advances in research but also in the protocols that are needed and the standards and all of it?

Dr. Shawn Marshall: It's a large topic and I realize there's a time limitation.

In relation to concussion, and the fact that we're focusing on sport concussion, I think we have to first compliment the Canadians who Dr. Tator was referring to earlier, who actually led the guidelines for, first of all, identifying it and for return-to-play protocols, because you're saying how do you do it. We're all looking for—

Ms. Cheryl Hardcastle: To be clear, because our time is limited, how about sharing where the best places would be for us to look at how we leverage what you've already done to move forward, and how we can facilitate that.

Dr. Shawn Marshall: If you wanted to leverage, I think things are at the point where we've identified as a priority some very important areas. I think research is where to go.

The truth is that you have a lot of great researchers in this country who have actually come together. This is unique, compared to other countries, working in collaboration, a national centre of excellence, as I mentioned earlier. I think through big data, for instance, through the Ontario Brain Institute, our being able to examine these large populations, and coming together, we should be able to identify technologies that can diagnose concussion and actually monitor progression, so we know who are at risk. I think this is going to be key to our being successful, helping to solve the diagnostics and then actually treatment. I think these collaborations to foster those and foster that research here in our country would be huge.

Ms. Cheryl Hardcastle: Okay.

Dr. Tator.

Dr. Charles Tator: I think what Dr. Marshall just said is very important. I would like the House of Commons committee on health to put some teeth into what has been done to date. For example, I feel very strongly that every province should enact concussion laws, because that's one way to be sure we are all on the same page with concern about concussion. The concussion laws should apply to not only school-based sports, but also all the non-school based sports, for example, all of those that are organized by Hockey Canada, the Canadian Soccer Association, etc. All of those folks should be subject to the concussion laws.

What do the concussion laws say? They say that everybody should be educated about concussion. They should know how to recognize concussion. That goes for parents, coaches, teachers, players. Even the referees have to be clued in about concussion. We simply have to prevent people like Rowan Stringer from ending up dead.

We need accurate surveillance data. I've heard other speakers recommend that to your committee. We do have the machinery in Canada to make that happen. We have CIHI, PHAC, ICES, with all their methods of data management. We have to collect data about what is happening in every sport in the country. We simply don't have that information and we should. From the annual coroners' reports we should know how many people die. Those take three or four years to finish, but we should be compiling that data.

There was recently a death in P.E.I. of another rugby player. Who's adding up all those catastrophic injuries? That should be a national effort. We've heard about good resources that are available, for example, the one I held up, the "Canadian Guideline on Concussion in Sport". This should be in the hands of every family, every coach, every referee. I would like to see your committee do something about the distribution of what is already available. I think Canadians have done a very good job of preparing a menu of opportunities for your committee to distribute and emphasize.

I would encourage you to use what's available, rather than—

● (1930)

The Chair: Thank you, Dr. Tator.

Dr. Charles Tator: Yes.

The Chair: We're going to be moving now to the Liberals.

We're fortunate that we have Mr. Casey, the chair of the Standing Committee on Health, with us today.

Thank you for launching this subcommittee, Mr. Casey. The floor is yours for the next three minutes. I understand you may be sharing your time.

Mr. Bill Casey: I'm going to share my time with Dr. Eyolfson.

You answered part of my question, Dr. Tator. I know that a few years ago there was a concern about brain tumours, and doctors had no information about what was going on in other locations. There was no brain tumour registry.

We passed a bill in Parliament to establish a brain tumour registry so that if there was a cluster of brain tumours in one location, they could compare the circumstances to see if there was some common denominator. It sounds as though that's what's needed here, in terms of concussions, so that there is a registry and studies done that researchers can compare to see if there is common ground or a common denominator.

Would you recommend that?

Dr. Charles Tator: Absolutely. It really makes sense to me that we document carefully all the concussions that are occurring in the country, especially in sports and recreation. We can do that. We have the organizational ability to do it. We have CIHI, ICES, PHAC. We have all of those great opportunities available to do the math and count up how many are occurring in rugby, in hockey, in soccer. Then we'd find out how important heading the ball is in soccer. We really suspect that it's an important cause of brain injury in some people. This would be the way to make sure we get early warning in our country.

We want kids to play sports, but we do want them to play safely, and that will keep them playing forever. That's the moto of Parachute Canada—play safely; play forever.

Mr. Bill Casey: Thank you.

The Chair: Dr. Eyolfson, you have about 45 seconds.

Mr. Doug Eyolfson: Okay. I have a very quick question.

We were talking before, Dr. Tator, about the studies you've done on brains. I know your sample size is not really large, but have you found any cases of athletes who had had a number of concussions but who had no symptoms? There are people who recover. They'll have multiple concussions but no long-term clinical presentations. Was there any correlation you found where you'd have less of these tau proteins in the people who had less symptoms, or more? Did you see some of these in people who really had no long-term symptoms?

Dr. Charles Tator: You know, those are all great questions, and we can't answer any of them accurately with our small sample. We said before that we need about 200 brains in order to answer those questions. There are some big gaps in our knowledge. For example, we just received the first woman's brain. All 44 of the other brains we have accumulated over the past 10 years have been male, and that's the same with most registries: there's a real lack of women's brains. We put out a big advertising campaign to try to get women to donate their brains, ultimately, when they're finished with them, to give them to us for science.

● (1935)

The Chair: On that note, we're going to move over to the Conservatives. Thank you.

Dr. Kitchen.

Mr. Robert Kitchen: Thank you.

For many years I dealt with sports, in my time as a trainer, in my private practice, and then when I was one of the team doctors for our junior hockey team, so basically for 25 years. I reflect back today, and although I treated a lot of concussions over the years, it did not seem to be the same.... When I was ending my practice, the longevity of the injury seemed to be greater in my last couple of years of practice versus in my early years of practice. I'd like to think that in my early years of practice, fresh out of school, I was on top of it and everything.

I'm wondering, from the research, can you tell us why we're seeing more situations where concussions seem to be lasting longer than 30 days? Is there any research to suggest that?

I'll start with the researcher, Ms. Curran.

Do you have any comments?

Ms. Dorothyann Curran: As I mentioned, we definitely do know that more people have persisting symptoms than we initially thought, symptoms like headaches, vestibular issues, which are going beyond the usual—quote, unquote—"recovery time" of a couple of weeks. It's unclear whether that is simply because people are more comfortable reporting it and they don't hide it as much as they may have previously, or whether there is some other factor, extrinsic or intrinsic, that is emerging. That is definitely something on which more research needs to be done.

We do know that women do present with persisting symptoms more frequently than men do, so the fact that Dr. Tator has received only one woman's brain for his research is very interesting. It would be very interesting to see more female brains.

In terms of how long symptoms last, when people end up with persisting symptoms, they can become chronic. That's a huge issue in terms of managing the people in that 15% to 20% who end up with a concussion that has persisting symptoms. That impacts people's lives thereafter. The research we really need is to figure out what sorts of things we can do for those people and what kind of evidence we can find in the research to support people like Dr. Marshall who do rehabilitation with people with persisting symptoms.

Mr. Robert Kitchen: Thank you.

I want to get through it quickly because I have limited time. I'd like to hear from both of you.

Dr. Marshall, is it because we are more attuned to it?

Dr. Shawn Marshall: It's a great question. The quick answer is I don't know.

What do I think? I think you're asking the question now if they had a concussion. I think we're old enough to know that previously, concussions were dismissed, and it wasn't even conceivable that people could actually have persisting symptoms. I think that now that we ask, we see them.

I think society has also changed. I think people are on board all the time with thinking of these sorts of things, with regard to technology and these sorts of things that can perpetuate symptoms.

I think it's because we're more aware of it. We're actually asking the question, whereas you were almost vilified before if you actually said you had symptoms afterwards. It was almost blaming the patient for saying they had ongoing symptoms, because no one would ever believe them. We have many examples of this through health care and through the insurance industry trying to minimize these things.

Mr. Robert Kitchen: Dr. Tator, quickly, I probably only have about 20 seconds.

The Chair: You have 30 seconds.

Dr. Charles Tator: My take on it is that the forces on the brain now, in certain sports, are much greater than they were.

When I played hockey, I was an average-size player. Now, I'm a shrimp in comparison with the current crop of hockey players. The forces that they generate are much greater because of their greater weight. They're skating faster than I ever could skate because they have longer legs. What I learned from Pat Bishop is that force is a very important factor in the impact on the brain.

That's another reason they're lasting longer, because they're more serious.

The Chair: Thank you.

We're going to move to our last questioner, and that is Ms. Hardcastle for the NDP.

Ms. Cheryl Hardcastle: Thank you.

Just to wrap up, then, can we go back to some of the research opportunities that we really need to be exploring about our understanding of the gender differences?

● (1940)

Ms. Dorothyann Curran: I know that in terms of what's been done, there's been a lot more focus put on men, and a lot of male varsity teams, male rugby teams and that sort of thing, have been part of the research literature. It's starting to emerge a little bit more now that women are coming into the research and that people are becoming aware that there are gender differences between the way women present with things and the way men present with things, so I think that is promising.

It needs to really become a little bit more of a focus because, certainly in terms of the people who present at Dr. Marshall's clinic, for example, we know that two-thirds of them are women, and that has a huge impact on that segment of society.

Ms. Cheryl Hardcastle: Dr. Marshall.

Dr. Shawn Marshall: Sure, I can comment.

First of all, I'm not sure if the committee has interviewed Dr. Angela Colantonio, but she actually has a CIHR grant to look at gender differences in brain injury and concussions in particular. She's an expert and an excellent resource.

I can definitely say that in my clinic, two-thirds or 70% of patients who have persisting symptoms are women. Their injuries are different. They're managed differently. I also think we have to consider a lot of psychosocial implications of this.

I can also comment that my clinic isn't just related to sport concussions. I see a lot of concussions outside of sport.

If I had one message, particularly if we're looking at adolescents, people in university and that sort of thing, sport has done so much for concussion, but there are people who have concussions because they are active, and concussion affects people who are active. People who aren't active don't get concussions. The truth is that you can even get one through recreation, through things that we don't consider sports, rock climbing and other things that aren't organized sport but people can get concussions. I think we have to ensure that this awareness occurs. People playing on the playground get concussions.

Certainly, the focus on gender needs to be researched. Women absolutely behave differently in relation to their response and in the treatment of their concussion.

Ms. Cheryl Hardcastle: Dr. Tator, is that something you recognized early on that you'd like to see treated aggressively with research?

Dr. Charles Tator: Yes, absolutely. Trying to determine why women concuss more easily and why post-concussion syndrome lasts longer in women are questions that we are grappling with. In fact, last year we had a full-day symposium on concussion in women and girls. There is now a worldwide movement called Pink Concussions that we have joined forces with. That group is also trying to find the answers.

One answer that does appear to be firm is that women have less developed neck muscles, and strengthening neck muscles may prevent the jiggle of the brain within the skull that causes concussion. The stronger your neck muscles are, the less jiggle there will be of the brain if you get hit with a soccer ball or if you fall while skating. Strengthening neck muscles is a very attractive way to try to protect women from concussions.

The Chair: Thank you.

That will conclude our hearings for today.

We want to thank Ms. Curran, Dr. Marshall and Dr. Tator. Thank you for all your answers. With the papers and research that you've done, if there's anything further you would like to submit to our analysts such as recommendations, please feel free to do so. That would help us a lot.

You also mentioned a doctor but I didn't catch the name.

Dr. Shawn Marshall: Dr. Angela Colantonio.

The Chair: If we could also get that information about Dr. Colantonio, that would be terrific.

Thank you for the legacy that you have built up here for Canada when it comes to concussions.

The meeting is adjourned.