**Communicating Concussion Risk**

A British Columbia Injury Research and Prevention Unit (BCIRPU) Outline for Risk Communication

**PART ONE**

**What is the mission?**

The mission of this communication plan is *to increase awareness of proper concussion recognition and response following a potential concussion causing event.*

**Why is it important?**

A concussion is a type of traumatic brain injury that is caused by a bump, blow, jolt, or hit to the head, neck, trunk, or body that causes the brain to move rapidly back and forth within the skull. This movement causes the brain to stretch and expand rapidly. If addressed properly, the damage caused by this rapid movement typically resolves in about 2-3 weeks [1].

Youth account for over 50% of the annual burden of over 3 million concussions in North America [2]. Every day, they put themselves at risk of traumatic brain injury (TBI) through sport, yet their understanding of how to recognize and respond to a concussion remains very low [2].

The brain is a delicate organ and you can’t cast or transplant it if it gets damaged. Therefore, it is imperative to take the necessary steps to ensure a full recovery and prevent further damage in order to avoid lifelong consequences. Increasing awareness of concussion recognition is the most effective way to reduce the public health burden of this injury. Thus, awareness of proper concussion recognition and response is essential.

**Who is the audience?**

Because everyone is at risk of sustaining a concussion, everyone could potentially benefit from this plan. However, this communication plan will focus on youth in order to maximize quality life years saved while also minimizing the burden this injury places on the public health system. This decision was also made in order to ensure this plan remains measurable and attainable.

Due to the popularity of hockey here in Canada and the well documented high-risk of concussion among these athletes, this plan will focus on youth hockey players. Given that Dr. Shelina Babul currently sits on the BC Hockey League’s advisory board and that BCIRPU developed the leagues mandatory concussion trainings and protocols, it was decided to focus on youth athletes within this league. The pre-existing ties between the League and the Unit make BCIRPU a well-known and trusted source of concussion information for this audience.

This plan will focus on BC Hockey youth between the ages of 13-17 years old. This decision was based off the difference in league rules for players above and below this cut off. Specifically, there is no body-checking for athletes below age 13, resulting in a much lower risk of concussion. Therefore, in order to address concussions among those youth players with the highest risk, this plan will focus on those between the age of 13-17.

There is a common misconception among youth athletes that they are invincible and not at risk of serious injuries. This misconception can be a significant barrier in effective risk communication. Additionally, for the age range proposed in this plan, these athletes are all minors. This means that they still depend heavily on their guardians to help them understand the risk in the world around them. Given the influence that trusted groups like parents and coaches have on youth athlete’s awareness, attitudes, beliefs, and actions, it is essential to focus on communicating this concussion risk to these audiences as well. Including all three audience groups will maximize the success of this concussion risk communication plan.

This outline will mainly focus on providing in-depth details and examples for the athlete audience. However, it should be noted that while all 3 groups will have the same mission (i.e., improving awareness of proper concussion recognition and response following a potential concussion causing event), the medium and message will differ for athletes when compared with parents and coaches. It was decided to keep the message and medium the same for parents and coaches, as there is not enough evidence to indicate that these groups differ in any meaningful way that would necessitate variations in these components of the plan.

*If this plan proves to be successful, the outline presented here could then be adapted and applied to other concussion risk communication efforts and audiences in the future.*

**What are the potential obstacles for this plan?**

There is a significant amount of stigma surrounding concussions in sports. The culture around sports is known to value the ‘tough it out’ mentality. Therefore, coming out of a game or sitting out of competition is looked upon negatively. Players often experience pressure to continue to play through injuries from parents, coaches, teammates, and fans [3].

Concussions are a particularly stigmatized injury because they are invisible injuries. Unlike with a broken leg or torn ACL, there is no way to see these injuries externally. Athletes that have sustained a concussion often mention that they come back to play too soon due to stakeholders doubting their injury or its seriousness [3]. The stigma around this invisible injury is therefore a major potential barrier for this communication plan. In order to help address this barrier, this plan utilizes creative narratives and high-profile main characters to help remove this stigma.

Additionally, hockey is stereotyped as a masculine and tough sport. Sitting out or not playing though an injury could therefore be seen as a threat to one’s masculinity. While the hope is that involving high-profile athletes in this campaign will combat this, it could still be a barrier for effective risk communication. A certain solution has not been proposed; however, this should be re-visited before launching this campaign.

Having 3 different target audiences (e.g., athletes, parent, and coaches) is an additional barrier to this communication plan. It can be expected that due to the different demographics of athletes vs. parents and coaches, different things will motivate, resonate, and impact their attitudes, beliefs, and actions. To combat this potential barrier, this plan outlines how different mediums and messages can be utilized for each group. Doing this will ensure that despite having different demographics, the same message can still get through to each group.

**What are the opportunities for this plan?**

The Concussion Awareness Training Toolkit (CATT) that was developed by the BCIRPU is part of the BC Hockey League’s mandatory concussion protocol for referees and coaches. As previously mentioned, Dr. Shelina Babul sits on the League’s advisory board and BCIRPU has many strong ties with the BC Hockey League. Capitalizing on this trust and brand recognition is an opportunity for this plan as they will make it easier to gain traction and uptake. Another opportunity is BCIRPU’s close ties with other organizations like the UBC Faculty of Pediatrics and the BC Children’s Hospital, that share similar child health mission statements and goals. Teaming with these organizations could help amplify and extend the reach of this message and increase the resources available for this plan.

There are many high-profile athletes that are currently working to improve awareness around concussions in hockey, especially within the National Hockey League (NHL) [4]. Given that many youth athletes look at these professionals as idols and role-models- teaming with these professionals is an opportunity to reduce the stigma around concussions. For example, by involving Sidney Crosby in this campaign, who sat out for over a year following a concussion, the stigma around sitting out from sports can begin to change.

**PART TWO**

**The message:** *Multiple communication frameworks were utilized in developing the messages for this communication campaign. As mentioned previously the message for athletes differs from the message for parents and coaches.*

**Developing the message:**

1. Sandman’s Hazard x Outrage framework: This was first used to understand each audiences’ current concerns about concussions. It was determined that the audiences are currently in the low outrage and high hazard quadrant. To solve this, a message to increase outrage and ‘wake the audience up and get them concerned/motivated to act on concussions’ was developed. Specific main characters were also selected to help solve this (e.g., professional athletes).
2. Precautionary adoption process model (PAPM): This framework was used to develop each audiences message. Athletes are currently in stage 1, where they are unaware of the hazard around concussion, and/or stage 2, where they are unengaged with it. Given that the most effective way to move people from stage 1 to 2, and 2 to 3 is through the media, this risk communication plan utilizes social media to effectively message to audiences [5]. Below is an outline of the PAPM within the current plans for athletes:
   1. Stage 1: Athletes are unaware of how to recognize and respond to a potential concussion causing event and/or unaware of the consequences of not doing this properly. *Move from Stage 1 🡪 Stage 2 with media messages about the hazard*
   2. Stage 2: Athletes are unengaged (i.e., they have heard about the precaution and have begun to form opinions about it, but other things are competing for their time and attention.) *Move from Stage 2 🡪 Stage 3 with media messages, as they are better at agenda setting (i.e. are more effective at persuading people to consider an issue and have an opinion) [5].*

The current risk communication plan solely deals with moving the audience between these stages. As BCIRPU has seen in the past, when awareness, knowledge, attitude, behavior, and action are all addressed at the same time in a campaign, the likelihood of effective concussion communication is very low. By focusing this plan on the first 2 stages, the likelihood of trying to do too much and in turn failing, is diminished. This will also help ensure the current plan is attainable and measurable. Future plans will be needed to move the audience to action.

**Outlining the message narrative:**

Separate messages for athletes and parents/coaches in this communication plan overcomes the barrier of having 3 different audiences.

For athletes, solely stating scientific facts and statistics is unlikely to lead to successful risk communication. Neuroscience communication has notoriously low understanding and uptake rates due to the complexity of the topic. To cater to this audience’s demographic and lack of medical training, this campaign message will be simple and understandable. Messages will be written at the 8th grade reading level. Narratives will be used to develop the message as they are the most impactful and universal form of communication. This will help to ensure the successful uptake of this risk communication message for this audience.

The Narrative Model was utilized to develop the risk communication message. An outline is included below:

* Setting: A hockey rink was chosen as this is likely the most congruent setting with this audiences understanding of the world and the risk.
* Main characters: High profile professional hockey players such as Sidney Crosby and Hayley Wickenheiser were chosen to be the main characters for this narrative. This decision was based on these individuals being role-models that youth hockey players love. A male and female character was selected to maximize message update among all youth hockey athletes. Having their idols in this campaign will reduce the stigma around concussion and increase message uptake. Given this audiences demographic having the main character be a medical professional was avoided, as they are likely to be perceived as more authoritative figures and would in turn be less congruent/persuasive characters.
  + These main characters were also specifically chosen given their medical athletic histories. Each has returned successfully to hockey following well publicized concussion injuries. This will help athletes see that their mentors did the exact thing that this communication plan is wanting them to do **(i.e., recognize and respond to a concussion in the best way possible.)** Only professional athletes that responded and managed their concussions properly will be utilized in this campaign. This will ensure the plan is not perpetuating erroneous concussion management that is currently seen in sport.
  + Focus groups could be run prior to campaign launch to confirm that these are the best athletes to be the main characters. If they are not, these should be adjusted according to audience feedback. Other options could also include National Collegiate Athletic Association (NCAA) hockey players, retired NHL athletes, Olympians, or team doctors.
* Plot: Sidney or Hayley suffers a substantial hit during a game/practice and gets a concussion. They know how to recognize a concussion, so they come off the ice and get treatment. This action allows them to heal and return to the game they love.
  + This plot paints these characters at the heroes of the story. This was purposely done to avoid creating a fear-based message, as this has been shown to be less effective than positive public health messaging. This plot evokes a positive tone about concussions and creates an emotion that empowers athletes to recognize and respond to them properly.
  + Focus groups could be utilized to determine if this is the right emotion for this audience. If it proves to be erroneous, the most effective emotion determined in the focus group should be utilized.
* Moral of the story: The overarching point of this message is that by each athlete knowing how to recognize and respond to a concussion causing event, they increase their chances of returning to the game they love.
  + By the main characters talking about it not being a big deal for them to come off the ice and recover, and their families, teammates, and coaches supporting them they can help address the sports stigma of sitting out. However, if they were not supported by these stakeholders during their concussion experience, they could also talk about how they overcame this.
* Style: Each athlete was selected because they possess a certain ‘cool factor’ with the target audience. This will help maximize message resonance and uptake.

**How to adapt the message to each audience?**

The above outline can be used to adapt the message for this communication plan to parents and coaches. To briefly show how this could be adapted the following example was outlined:

* Setting- The stands of a hockey rink (this is likely where a parent may see a potential concussion event)
* Main character- A sports physician (this is likely who parents trust most for information on how to protect their children from injuries during sports)

*(See Appendix A Figure 1 for an example message for athletes and Figure 2 for an example message for parents.)*

**And, but, therefore:**

To develop the storytelling narrative for the message of each audience the ‘and, but, therefore’ framework should be utilized. This framework is relevant for this plan as it is short and direct, which helps to simplify the message. An example of how this framework can be applied to this communication plan is included below:

*“Sidney took a hit* ***and*** *got a concussion, he felt like he should stay in the game,* ***but*** *he knew the signs and came off the ice to be evaluated,* ***therefore*** *he got the treatment he needed without suffering any further injuries and was able to return to the game he loves.”*

The simplicity of the above framework will help ensure message understanding and resonance with any audience.

**What information to include in the message?**

What information to include and exclude in the risk communication message was carefully analyzed. The considerations outlined below will help reduce the likelihood of this plan losing track of its end goals.

When considering what information **should be included**:

1. What would help athletes understand when they are most likely to get a concussion in hockey? 🡪 This led to the inclusion of how the professional athlete sustained their concussion on the ice (e.g., mechanism of injury) in the messaging. Including this detail will hopefully increase recognition of a potential concussion causing event. (For example, this could be included in the message as “I was body-checked from behind and got slammed into the boards.”)
2. What would help athletes recognize if they suffered a concussion after a hit? 🡪 This led to the inclusion of what symptoms the professional athlete experienced after they got injured (e.g., headache, blurry vision, difficulty remembering their name or where they were, ringing in the ears, muffled hearing, dizziness, etc.). Including this will hopefully help increase concussion recognition.
3. What would help athletes understand what to do after a potential concussion causing event? 🡪 This led to the inclusion of how the professional athlete responded immediately after the injury (e.g., came off the ice, got evaluated by a doctor). Including this is important in modeling for athletes the ‘proper concussion response’ component of the overarching risk communication goal. (For example, this could be included in the message as “I came off the ice immediately and saw my team doctor. I knew I wouldn’t be any good to the team if I stayed on the ice with a concussion.”)

When considering what information **should not be included**:

1. What topics could distract audiences from the main message of proper concussion recognition and response? 🡪 This led to the exclusion of any statistics about the professional athletes (e.g., career goals, highlights, etc.) and what they did in the weeks and months following the concussion (e.g., long-term physiotherapy).

If any other information would be beneficial to the message, it can be added to the current

outline. By being clear and prioritizing what information is included in the message the likelihood of successful risk communication is increased.

**Why will this message be successful?**

Not having blanket messages for all three audiences enables this communication plan to account for each group’s differences. By incorporating who their trusted source of information is, what their education level is, what information matters most to them, and what tone or emotion is most effective for them, a narrative can be created to ensure effective risk communication messaging. Messages will then be pilot tested, or focus grouped before launching, which will increase the likelihood of success and decrease the likelihood of incompatible or ineffective messaging.

Utilizing short and simple catchy messages will increase message memorability and understanding. A campaign that focuses on the complex neurometabolic processes behind a concussion is likely to be completely ineffective and un-retainable for these audiences. Keeping messages below 250 characters will capitalize on society’s current attention economy. Similarly, including the main point of each message in the first 1-2 sentences will increase the likelihood of the message being seen by any given audience.

Adapting messages to each medium will help capitalize on its’ effectiveness. All adaptations can be tested in focus groups to ensure compatibility. Examples of how messages can be adapted to various mediums are outlined below:

* Facebook:
  + Post title= ‘Did your child take a hit?’, ‘Do you know how to protect your child?’, ‘Is your athlete safe?’, ‘Can you recognize a potential concussion?’, etc.
  + Posts will include specific hashtags to increase campaign messaging effectiveness and reach. (e.g., #IKnowTheSigns #ThinkTwice #SportSafety #RemoveRecoverRepeat #SafeSport #WhenInDoubtTakeThemOut)
* Instagram:
  + Caption could say ‘Click to see Sid the Kids advice to youth hockey players!’
  + Utilize clever hashtags to increase message appeal and reach. (e.g., #WhenInDoubtSitOut #HeadsUp #ThinkTwice #SidDid #RemoveRecoverRepeat)

These risk communication plan messages give each audience something simple to do (i.e., recognize and respond to a potential concussion causing event properly.) which will help ensure effective risk communication. Additionally, similar to fire safety’s ‘stop, drop, and roll’ slogan, this campaign will utilize the ‘when in doubt sit out’ slogan which will help with effective messaging and memorability for this campaign in all audiences.

**PART THREE**

**The medium:** *Extensive research was done to determine the appropriate medium for each audience.*

**What mediums will be used in this plan?**

Athletes:

Given that the target athlete audience for this communication plan is between the age of 13-17, Instagram and TikTok have been selected as the best mediums. This selection was based off current social media statistics showing that 72% of youth age 13-17 use Instagram [6], and 60% of TikTok users are between the age of 16-24 [7]. Past research has also shown that TikTok is the best medium for any audience between the age of 13-30 [7]. These mediums are also highly visual which will help capitalize on having pro-athletes involved in this plan.

*(See Appendix A Figure 3 and Figure 4 for examples of the medium for athletes.)*

To ensure the messaging is appealing on each medium the following will be utilized in this plan:

* Posting high quality photos and short captions that start with the conclusion in the first sentence and utilizing witty/clever hashtags.
* Posting live videos on Instagram once a week so users can ask real time questions and get real time answers
* Posting during peak times for each medium. (e.g., posting 3-4 times a week on Instagram before or after school) to ensure message reach and campaign effectiveness.
* Posting a concussion dance video on TikTok is also an option as these are immensely popular within this demographic right now.

This risk communication plan has also anticipated the questions athletes may have and plans to address them using Instagram’s permanent story feature. Based off the past research BCIRPU has done with athletes, answers to the most common questions such as: ‘What is a concussion?’, ‘Is there a treatment?’, ‘How long does it take to recover?’, etc., can be included in these permanent stories.

Parents and coaches:

Facebook and the BC Hockey homepage were selected for these audiences’ mediums. Facebooks was selected due to it having over 2.4 billion monthly users of a diverse demographic (e.g., age, education, income, etc.). It was decided that Twitter was a less relevant platform for this audience as only 22% of adults have Twitter [6]. Similarly, the age demographics for other platforms such as Instagram or TikTok were likely to be less compatible than Facebook with parents and coaches.

*(See Appendix A Figure 5 for an example of the medium for parents.)*

The BC Hockey homepage was also selected as a medium for this audience in order to accommodate for busy parents/coaches that don’t have time to check social media. Given that not all parents and coaches are on social media, doing this will also increase message reach. This website was decided on because all parents and coaches need to check this homepage on a regular basis in order to find their child’s/team’s practice and game schedule. Thus, this website is an ideal medium for this audience and ensures campaign reach.

To ensure the messaging is appealing for each medium the following outline will be utilized in this plan:

* Including high quality pictures of female and male athletes between the age of 13-17 playing hockey in each post
* Impactful post titles, starting with the conclusion, and clever/strategic hashtags to draw parent and coach attention and increase message reach
* Posting during peak hours such as midweek between 1:00-3:00PM
* Links to the CATT website in each post to increase visual impact and ‘clickability’

The most common questions that parents have will also be addressed on each of these platforms (as with the athletes on Instagram). On these platforms this will be done by including a link to the CATT websites Q&A page. This was decided on because these parents and coaches know and trust CATT, so capitalizing on the CATT name recognition/brand is an opportunity that shouldn’t be missed.

**Why are these mediums likely to be successful?**

Each medium has been researched and selected for its target audience. This means the chance of having an incompatible medium for any audience is unlikely. Additionally, extensive research was done to ensure each message was tailored appropriately to be compatible with each medium.

**SUMMARY**

**What are the goals of this risk communication campaign?**

The most important goal of this risk communication plan is to increase awareness of how to recognize and respond to a potential concussion causing event. This plan targets BC Hockey athletes age 13-17, their parents, and coaches.

**How will these goals be evaluated?**

This campaign will be run on an annual basis around the start of hockey season. This will ensure each year no hockey athletes slip through the cracks. The success of this risk communication campaign will be measured by utilizing annual pre-and post-surveys and polls throughout the campaign. If by 2-3 weeks after the campaign launches 70% of each audience is aware of the campaign, this will be considered a success. If surveys and polls show that by this time the goal has not been reached, different dissemination strategies should be used.

Pre-and post-surveys and polls will also be utilized to understand the impact the campaign had (e.g., Did it change their option or belief? Did they learn from the message? Did they understand the message?). For example: on Instagram the pro-athletes can post polls asking questions to gauge concussion understanding throughout the campaign such as ‘A sign I may have sustained a concussion on the ice is?’ and then athletes can type in their answers. Recording these findings through the campaign can enable us to see if knowledge/understanding levels for the message are improving. The goal for campaign understanding is 75% and anything at or above this benchmark will be considered a success.

**Why is this plan important and necessary?**

You only get one brain in life and damaging it at such a young age can have irreversible lifelong consequences. By improving awareness of how to recognize and respond to a concussion we can decrease the likelihood of these consequences. This is essential in protecting our children and reducing the public health burden of this injury.

**Why is this communication plan likely to be successful?**

The main reasons this communication plan will be successful are as follows:

* This topic is relevant and timely given the awareness high-profile professional athletes and researchers are brining to brain injuries. This will help ensure audience interest.
* Utilizing focus groups and pilot studies will ensure that all aspects of this communication plan are appropriate for each audience.
* Using characters that can help to combat the stigma around concussions and appeal to each audience is likely to lead to successful message uptake despite potential barriers.
* BCIRPU has strong ties with the BC Hockey League and is well known in the sports concussion realm, so the campaign is already a trusted brand for concussion information before ever launching.
* The plan has concise and attainable objectives/goals that are easily evaluated and measured. This will help determine and guide any potential changes during the course of the campaign and gauge annual success rates.

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**APPENDIX A:**

**Background:**

I am a concussion research specialist that works at the BC Injury Research and Prevention Unit (BCIRPU) at the BC Children’s Hospital. This risk communication plan is being pitched to the Directors of the BCIRPU (Dr. Ian Pike and Dr. Shelina Babul). If approved, the plan will be funded and passed on to our corresponding communication teams for execution.

The audience for this pitch is Co-Director’s Dr. Ian Pike and Dr. Shelina Babul of the BCIRPU. Dr. Pike is an injury prevention specialist and Dr. Babul is a sports injury prevention and concussion specialist.

**Risk Communication Plan Examples:**

**Figure 1-**



**Figure 1.** Example of a potential message for athletes within this risk communication plan. Above is the transcript of what Sidney Crosby could say in a video message.

**Figure 2-**

A screenshot of a social media post

Description automatically generated

**Figure 2.** Example of what a potential message for parents would look like on Facebook. There would be more information and a link to the CATT website when you click to view the whole post.

**Figure 3-**

A screenshot of a cell phone

Description automatically generated

**Figure 3.** Example of what a post for this campaign might look like on the athletes medium, Instagram. There would be the associated hashtags (mentioned previously in this outline) at the end of the post.

**Figure 4-**

A screenshot of a cell phone

Description automatically generated

**Figure 4**. Second example of what the medium for athletes might look like on Instagram.

**Figure 5-**

A screenshot of a social media post

Description automatically generated

**Figure 5.** Example of what the Facebook medium for parents might look like within this risk communication plan.