The Honorable Jan Schakowsky

1. There tend to be a lot of collisions in the sport of ice hockey. There is no "out of bounds" – only boards and glass. It is intentionally played on a slippery surface. And all skaters are trying to gain and keep control of a very active, three-inch-wide disk made of vulcanized rubber. So there are lots of collisions. What I would like to address in this series of questions is how to prevent these collisions from resulting in brain injury to players.

    a. A report last year from St. Michael's Hospital stated that up to one-quarter of players on some minor league hockey teams will suffer a concussion in a season. Briefly, what would you recommend as your top three steps to take to reduce that number?

    Preventative measures are critical, specifically: 1) educating stakeholders; 2) wearing equipment in compliance with manufacturer instructions; and 3) making changes to rules and policies as warranted.

    Education: *USA Hockey has developed educational materials for players, coaches, parents and officials. A standardized concussion management program addresses diagnosis, removal from play, initial management and a functional return to play program (see detailed USA Hockey Concussion Management Program at end of this response).*

    Equipment: *USA Hockey took a significant step in 1978 when it called for the creation of the Hockey Equipment Certification Council. HECC's mission is to seek out, evaluate and select standards and testing procedures for hockey equipment for the purpose of product certification. It is a completely independent body. The HECC certification program validates the manufacturers' certification that the equipment they produce has been tested and meets the requirements of the most appropriate performance standards.*

    Rules Enforcement/Modification: *USA Hockey has emphasized the importance of eliminating dangerous behaviors that have been associated with injury, including concussion. Enforcement of existing rules and more stringent penalties for charging, boarding, checking-from-behind, and hits to the head will continue to help reduce injuries. Recent rule changes include a penalty for both intentional and unintentional hits to the head. In addition, in 2011, USA Hockey eliminated legal body checking at the Peewee level (ages 11-12). That change was adopted by Hockey Canada two years later.*

b. In written testimony submitted to the Subcommittee for the hearing on March 13, 2014, you did not address fighting, which is a major cause of concussions among hockey players. Please detail USA Hockey's initiatives to continually reduce fighting in the leagues you oversee.

In youth hockey there is next to no fighting. Any player that does fight is ejected from the game and penalties are increasingly severe for any additional fighting penalty in the same season. USA Hockey also oversees three different levels of junior hockey (Tier I, II, III) that includes more than 180 teams (players are ages 16-20). A concerted effort to eliminate dangerous behavior -- including fighting, checking-from-behind, boarding, head contact, charging, kneeing, elbowing, butt-ending, and spearing – is on-going. At the Tier I and II level, a major penalty plus a misconduct penalty are assessed for fighting. Further, a player record is kept to document all penalties noted above and the player is further penalized with increasing severity by reaching various thresholds. Over the past three seasons, the incidence of fighting in the USHL, which is the top junior league in America, has been more than cut in half. At the Tier III level, a major penalty plus a game disqualification penalty is assessed for fighting.

2. Last year, Representative Pascrell introduced H.R. 2118, the Youth Sports Concussion Act. The Act would allow for the creation and implementation of standards to improve the safety of sports equipment. The Act would also specifically target deceptive health and safety-related marketing claims for sports equipment.

a. My understanding is that the NHL and USA Hockey support this bill. What is your experience in youth hockey with equipment designed to reduce concussions?

We support all efforts to reduce the incidence and severity of concussion. Although there is no current evidence to prove that helmets, mouthguards or force sensors can prevent concussion, research is necessary to improve equipment design and materials with the goal of reducing risk.

b. Have you seen misleading safety-related marketing claims for hockey gear? If so, what were the types of products being advertised with such claims, and what claims were made?

Numerous devices attached to the helmet, chinstrap, mouthpiece and head have been advertised as a means of alerting players, coaches and parents if high single or cumulative forces have occurred. We are continually striving for better ways to diagnosis and treat concussion in hockey, including the quantitative observation of force transmission to the brain; but these

devices do not diagnose a concussion or reliably guide management. There is likely some merit for a device that measures acceleration of the head. Certainly, the sensor does heighten awareness and promote the removal of athletes from play. However, from a clinical perspective, the efficacy of these devices is currently unknown. We are unable to predict linear and/or rotational G-force thresholds for individual athletes, so we must rely on observed mechanism of injury, reported symptoms and a concussion examination to test neurologic function, memory, recall concentration and balance in order to make the diagnosis.

USA Hockey has sponsored in-depth research on concussion in junior hockey using instrumented helmets and videotape game analysis to better understand these relationships. Additional clinical research is necessary to show that use of these sensors can improve concussion diagnosis and aid prevention. Several issues will need to be addressed before widespread application of this technology, such as player monitoring, protocol for enforcement and return to play criteria.

c. Does USA Hockey endorse any equipment intended to reduce concussions?

We support all efforts to reduce the incidence and severity of concussion. Helmets, face masks and mouthguards are mandatory equipment in youth ice hockey, however, there is no current evidence to prove that any of the above can prevent concussions. They may decrease severity.

d. Does your organization support giving the Consumer Product Safety Commission the authority to set minimum equipment safety standards in cases where no voluntary standard is adopted?

Without knowing specifics, that is difficult to answer. As noted earlier in this document, however, in 1978 USA Hockey took a significant step when it called for the creation of the Hockey Equipment Certification Council. HECC's mission is to seek out, evaluate and select standards and testing procedures for hockey equipment for the purpose of product certification. It is a completely independent body. The HECC certification program validates the manufacturers' certification that the equipment they produce has been tested and meets the requirements of the most appropriate performance standards. It has been an extremely valuable body that has taken its role seriously and has been an important part of the safety story in our sport for over 35 years.

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Concussion Management Program

Michael Stuart MD
Alan Ashare MD

The standard of care for current medical practice and the law in many states requires that any athlete with a ***suspected*** concussion is ***immediately removed from play***.

- A concussion is a traumatic brain injury- ***there is no such thing as a minor brain injury.***
- A player does not have to be "*knocked-out*" to have a concussion- ***less than 10% of players actually lose consciousness***.
- A concussion can result from a blow to head, neck or body.
- Concussions often occur to players who don't have or just released the puck, from open-ice hits, unanticipated hits and illegal collisions.
- The youth hockey player's brain is more susceptible to concussion.
- In addition, the concussion in a young athlete may be harder to diagnosis, takes longer to recover, is more likely to have a recurrence and be associated with serious long-term effects.
- Treatment is individualized and it is impossible to predict when the athlete will be allowed to return to play- ***there is no timetable***.

A player with any symptoms or signs; disorientation; impaired memory, concentration, balance or recall has a concussion.

Remember these steps:

1. Remove immediately from play (training, practice or game)
2. Inform the player's parents
3. Refer the athlete to a qualified health-care professional
4. Treatment begins with complete physical and cognitive rest
5. When free of symptoms, the athlete begins a graded exertion protocol.
6. Medical clearance is required for return to play

Diagnosis

Players, coaches, parents and heath care providers should be able to recognize the symptoms and signs of a concussion:

Symptoms

- Headache
- Nausea
- Poor balance
- Dizziness
- Double vision
- Blurred vision
- Poor concentration
- Impaired memory
- Light Sensitivity
- Noise Sensitivity
- Sluggish
- Foggy
- Groggy
- Confusion

Signs

- Appears dazed or stunned
- Confused about assignment
- Moves clumsily
- Answers slowly
- Behavior or personality changes
- Unsure of score or opponent
- Can't recall events after the injury
- Can't recall events before the injury

Management Protocol

1. If the player is unresponsive- call for help & dial 911

2. If the athlete is *not breathing*: start CPR

- ✓ DO NOT move the athlete
- ✓ DO NOT remove the helmet
- ✓ DO NOT rush the evaluation

3. Assume a neck injury *until proven otherwise*

- ✓ DO NOT have the athlete sit up or skate off until you have determined:
  - no neck pain
  - no pain, numbness or tingling
  - no midline neck tenderness
  - normal muscle strength
  - normal sensation to light touch

4. If the athlete is conscious & responsive without symptoms or signs of a neck injury…

- help the player off the ice to the locker room
- perform an evaluation
- do not leave them alone

5. Evaluate the player in the locker room:

- Ask about concussion ***symptoms*** (How do you feel?)
- Examine for ***signs***
- Verify ***orientation*** (What day is it?, What is the score?, Who are we playing?)
- Check ***immediate memory*** (Repeat a list of 5 words)
- Test ***concentration*** (List the months in reverse order)
- Test ***balance*** (have the players stand on both legs, one leg and one foor in front of the other with their eyes closed for 20 seconds)
- Check ***delayed recall*** (repeat the previous 5 words after 5-10 minutes)

6. A player with any symptoms or signs, disorientation, impaired memory, concentration, balance or recall has a concussion.

<u>"When in doubt, sit them out"</u>

- Remove immediately from play (training, practice or game
- Inform the player's parents
- Refer the athlete to a qualified health-care professional
- Medical clearance is required for return to play

7. If any of the signs or symptoms listed below develop or worsen: go to the hospital emergency department or dial **911**.

- Severe throbbing headache
- Dizziness or loss of coordination
- Memory loss or confusion
- Ringing in the ears (tinnitus)
- Blurred or double vision
- Unequal pupil size
- No pupil reaction to light
- Nausea and/or vomiting
- Slurred speech
- Convulsions or tremors
- Sleepiness or grogginess
- Clear fluid running from the nose and/or ears
- Numbness or paralysis (partial or complete)
- Difficulty in being arouse

8. An athlete who is *symptomatic* after a concussion requires complete ***physical*** and ***cognitive rest.***

- A concussed athlete should not participate in any physical activity, return to school, play video games or text message if he or she is having symptoms at rest.

- Concussion symptoms & signs *evolve over time*- the severity of the injury and estimated time to return to play are unpredictable.

USA Hockey Post-Concussion Functional Return to Play Protocol

This protocol should not be initiated until after the athlete has been released to participate in the functional return to play protocol by a qualified health care provider. ***If symptoms appear during a functional test, the test should be stopped and the athlete monitored until symptoms resolve***. No further functional testing should be performed that day. Functional testing may resume the following day at the previously asymptomatic level if the athlete remains asymptomatic. If symptoms do not resolve, appropriate medical attention should be obtained.

After each phase of functional testing, the presence of post-concussive symptoms should be assessed and progression to the next phase of functional testing will require the absence of post-concussive symptoms. Each phase requires ***a minimum of 1 day*** before progressing to the next phase.

Level 1: Physical and cognitive rest.

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Level 2: Light aerobic exercise such as walking or stationary cycling. No resistance training. May read 20-40% of normal volume. Limited TV, but No video games. Partial school day as tolerated.

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Level 3: Sport-specific exercises. No resistance training. May read 40-60 % of normal volume. No video games. Full school day as tolerated.

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Level 4: Non-contact practice. Resistance training OK. No video games. Full school day

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Level 5: Full contact practice. Full school day. Video games OK.

Level 6: Return to unrestricted competition and cognitive activities if medical clearance is provided by a qualified health care provider