



# ASSOCIATION LEADERSHIP

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# Head Trauma in Hockey



## **CONCUSSION: Prevention Recognition Management Return to Play Return to School**

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# Questions



- Can We Decrease the Risk for Concussions?
- Does Hydration Help to Decrease Injuries?
- Check the Rink - Any Possible Risks?
- Taking control of the Locker Rooms
  - Locker boxing - concussions
  - Hygiene
  - Respect
  - Preventing Harassment & Bullying –SafeSport

# How to Decrease the Risk for Injuries



1. Changing Coaching Techniques to help protect players from being injured and from injuring others
2. Adding Playing Rules to give the players a message as to what actions are not tolerated
3. Adding or Changing Protective Equipment – Helmets, Facial protection
4. Education - Know what the dangers are and have respect for others



## 2001 – Don't grade concussions

- Don't grade concussions- 2001 Vienna IIHF-FIFA Conference on Concussions
- Why? - Grading at the time of the injury DOES NOT help in determining the severity of the concussion OR determining when an athlete can return to play
- New rule - Athletes cannot return to play in the same game or practice following a suspected concussion

# Concussions



- Is there an epidemic? (defined as a sudden outbreak with rapid spread and growth)?
- or Just better recognition?
- Do concussions occur in young players (say 7 & 8 year olds)?

# Concussion Recognition Tool 5



## CONCUSSION RECOGNITION TOOL 5 ©

To help identify concussion in children, adolescents and adults



FIFA®

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### RECOGNISE & REMOVE

Head impacts can be associated with serious and potentially fatal brain injuries. The Concussion Recognition Tool 5 (CRT5) is to be used for the identification of suspected concussion. It is not designed to diagnose concussion.

#### STEP 1: RED FLAGS — CALL AN AMBULANCE

If there is concern after an injury including whether ANY of the following signs are observed or complaints are reported then the player should be safely and immediately removed from play/game/activity. If no licensed healthcare professional is available, call an ambulance for urgent medical assessment:

- Neck pain or tenderness
- Double vision
- Weakness or tingling/ burning in arms or legs
- Severe or increasing headache
- Seizure or convulsion
- Loss of consciousness
- Deteriorating conscious state
- Vomiting
- Increasingly restless, agitated or combative

#### Remember:

- In all cases, the basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Assessment for a spinal cord injury is critical.
- Do not attempt to move the player (other than required for airway support) unless trained to do so.
- Do not remove a helmet or any other equipment unless trained to do so safely.

If there are no Red Flags, identification of possible concussion should proceed to the following steps:

#### STEP 2: OBSERVABLE SIGNS

Visual clues that suggest possible concussion include:

- Lying motionless on the playing surface
- Slow to get up after a direct or indirect hit to the head
- Disorientation or confusion, or an inability to respond appropriately to questions
- Blank or vacant look
- Balance, gait difficulties, motor incoordination, stumbling, slow laboured movements
- Facial injury after head trauma

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#### STEP 3: SYMPTOMS

- Headache
- "Pressure in head"
- Balance problems
- Nausea or vomiting
- Drowsiness
- Dizziness
- Blurred vision
- Sensitivity to light
- Sensitivity to noise
- Fatigue or low energy
- "Don't feel right"
- More emotional
- More Irritable
- Sadness
- Nervous or anxious
- Neck Pain
- Difficulty concentrating
- Difficulty remembering
- Feeling slowed down
- Feeling like "in a fog"

#### STEP 4: MEMORY ASSESSMENT

(IN ATHLETES OLDER THAN 12 YEARS)

Failure to answer any of these questions (modified appropriately for each sport) correctly may suggest a concussion:

- "What venue are we at today?"
- "Which half is it now?"
- "Who scored last in this game?"
- "What team did you play last week/game?"
- "Did your team win the last game?"

#### Athletes with suspected concussion should:

- Not be left alone initially (at least for the first 1-2 hours).
- Not drink alcohol.
- Not use recreational/ prescription drugs.
- Not be sent home by themselves. They need to be with a responsible adult.
- Not drive a motor vehicle until cleared to do so by a healthcare professional.

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**ANY ATHLETE WITH A SUSPECTED CONCUSSION SHOULD BE IMMEDIATELY REMOVED FROM PRACTICE OR PLAY AND SHOULD NOT RETURN TO ACTIVITY UNTIL ASSESSED MEDICALLY, EVEN IF THE SYMPTOMS RESOLVE**

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# Concussion Recognition

## Tool 5



To help identify concussions in children, adolescents and adults

1. Red flags - Call an ambulance
2. Observable signs
3. Symptoms
4. Memory assessment

# Returning to play



- If there are any symptoms or signs of a concussion, player cannot return
- When a player returns, it is in a graded fashion over several days with increasing physical effort and body contact (usually 6 to 8 days)
- Any return of signs or symptoms, go back a grade

# Problems with returning to play too soon following a concussion



- Sudden impact syndrome - can cause death or severe disability
- Post-concussive syndrome – signs and symptoms lasting for months
- A concussed player is four times more likely to sustain another concussion in that season

# CDC gets involved - 2004



- United States Center for Disease Control (CDC) is involved in prevention of injuries – such as concussions
- Several programs to decrease the risk for concussions –
- Clipboards, DVDs, Brochures
- Education web-based programs  
[www.nfhslearn.com](http://www.nfhslearn.com)
- [www.cdc.gov/ConcussioninYouthSports/](http://www.cdc.gov/ConcussioninYouthSports/)
- [www.cdc.gov/ncipc/tbi/coaches\\_tool\\_kit.htm](http://www.cdc.gov/ncipc/tbi/coaches_tool_kit.htm)

# American Academy of Neurology - 2013



- Excellent materials for coaches, players and parents
- Check out their website for materials and information
- [www.aan.com/practice/sports-concussion-toolkit/](http://www.aan.com/practice/sports-concussion-toolkit/)

# Important Facts Concussions



- Less than 5% of players sustaining concussions will sustain loss of consciousness
- Resolution of clinical and cognitive symptoms of concussion can vary greatly from player to player

# Concussions



- Change in the playing rules
  - There is a penalty for unintentional hits to the head as well as intentional hits to the head
  - There are no legal hits to the head
- Are there better helmets? New attenuators – but not necessarily more protective
- Treat a concussion as a “brain sprain” – Let “it” rest
- State legislation (all fifty states) – for middle school and high school interscholastic athletics and, in some states, all athletes under the age of 18
  - Athletes need a note from a doctor to return to play.

# Decreasing the Risk for Concussions



- Helmets – tight fitting - no movement on the head
- Hydration - start before the game or practice and continue during game/practice
- Mouthguards – not proven but still a good idea
- Respect for another
- Playing rules – observe the rules



# Signs of a Concussion

## as seen by the coach

- Appears to be dazed or stunned
- Is confused about assignment
- Forgets plays
- Is unsure of game, score, or opponent
- Moves clumsily
- Answers questions slowly
- Loses consciousness
- Shows behavior or personality change
- Forgets events prior to the hit
- Forgets events after the hit
- Lines up with the other team

# Symptoms of a Concussion

## as felt by the player



- Headache
- Nausea
- Balance problems or dizziness
- Double or fuzzy vision
- Sensitivity to light or noise
- Feeling sluggish
- Feeling “foggy”
- Change in sleep pattern
- Concentration or memory problems
- Seeing stars or flashing lights

# Concussions



- It takes teenagers a longer time to recover from a concussion than older players
- High school athletes, especially males, tend to under-report their symptoms
- It may take few weeks or a few months for athletes to recover fully from a concussion
- Players may have to miss the academic part of school as well as the on-field activities

# Helmets



- Must have the HECC sticker
  - HECC sticker has a seven year lifespan
  - Check the sticker BEFORE you buy the helmet
- Helmet must fit on the head tightly so that it does not move on the player's head
- Both the facemask chin straps and the helmet neck strap must be used
- J-clips must be properly positioned



# Virginia Tech STAR System

- Researchers at Virginia Tech have devised a testing system to rate the value of a helmet to decrease impact and rotation of a helmet
- The testing techniques do not relate to a new standard by VT.
- The VT rating system does not prove if a specific helmet will or will not prevent a concussion if worn by a hockey player.

# Mouth guards



- Mouth guards are mandatory for certain age groups - No longer mandated in college
- I recommend using fitted mouth guards or new types of boil & bite mouth guards made with Vistamaxx
- Bimolar mouth guards are available but very difficult to wear
- You should be able to talk with the mouth guard in place
- Mouth guards can protect the teeth and buccal mucosa

# ImPACT Immediate Post-Concussion Assessment and Cognitive Testing



- Testing with ImPACT is very helpful in detecting minor decreases in the player's neurocognitive abilities following a concussion, and can be very valuable in detecting when those abilities return. Baseline testing is usually required.
- There are other testing systems which should be considered - XLNTbrain, AXON Sports, and HeadMinder
- King-Devick test for decrease in eye function - simple, inexpensive



- If there are any symptoms or signs, the player does not return to play
- Players who have a suspected concussion during a game or practice must stop playing in that game or practice and must be seen by a medical professional before returning to play.
- When in doubt, sit them out!

# PeeWee Body Checking as a Cause for Injury



- ADM program – PeeWee players are not physically and emotionally mature enough to begin body checking in games
- June 2010 – research published in JAMA by Dr. Carolyn Emery that PeeWee players are three times more likely to be concussed (or seriously injured) in body checking leagues than non-body checking leagues
- Oct 2010 Mayo Clinic Ice Hockey Summit: Action on Concussion

# PeeWee Body Checking



- USA Hockey Task Force 2010-2011
- Reviewed all published research
- New program started in Sept 2011
  1. Take body checking out of PW games
  2. Institute better teaching of body checking at PeeWee practices
  3. Institute better teaching of body contact at Mites, Squirts, and PWs



- Dr. Carolyn Emery's study JAMA 2010
  - Followed 2,000 PeeWee players, half from Alberta with body checking and half from Quebec with no body checking
  - In Alberta, 73 players reported concussions compared to 20 players in Quebec



- Dr. Barry Willer Univ of Buffalo Director of Research for the Concussion Clinic studies published 2005, 2011
- Followed 3,000 players over five years
- When body checking was introduced for elite level 9 year olds, that group experienced an increase in injuries. The injury rate dropped when they turned 10.
- 2/3 of the injuries were the result of unintentional collisions and not a result of a deliberate attempt to body check

# American Academy of Pediatrics



- American Academy of Pediatrics in June 2014 recommended that body checking be delayed until the players are 15 years old

# Planning for Safety



- Emergency action plans
- Plan for emergencies (lacerations)
- Plan to prevent injuries, especially catastrophic injuries
- Provide immediate care (CPR & AEDs)
- Very important to decrease the risk for Paralyzing Neck Injuries (HUDD)
- Management of suspected concussions

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# Immediate Care



- Clean and cover bleeding wounds
- Sprains, Strains, and Contusions –
  - RICE treatment –
    - Rest, Ice, Compression, and Elevation
- Ice to decrease swelling, alleviate pain
- Save a tooth kit – (jar with saline)

# Hydration



- Dehydration can cause serious medical complications
- Hydrated players play better
- Hydrated players make better decisions
- Hydrated players score more goals and stop more pucks!
- Hydrated players may be less susceptible to concussions

# Hydration



- Symptoms and signs of mild dehydration (<2%)
  - Thirst
  - Dry skin
  - Dry mouth/Cotton mouth
  - Fatigue and Weakness
  - Chills
  - Dark colored urine
- Symptoms and signs of moderate dehydration (5%)
  - Rapid heart rate
  - Rapid respiratory rate
  - Decreased sweating
  - Decreased urination
  - Extreme fatigue
  - Muscle cramps
  - Headaches
  - Nausea
  - Tingling of the limbs

# Hydration



- Athletes lose fluid through perspiration (through the skin), through exhaled air (from the lungs), and through the urine (from the kidneys)
- If the urine is a dark yellow color, the player is probably not getting enough fluid
- Hydration helps to rid the body of heat and breakdown products (such as lactic acid)
- Cold water is the best replacement. It is absorbed quickly from the stomach and will help to cool the body

# Severe Hydration



- Symptoms and signs of severe dehydration (>10%). [This is a medical emergency. Call 911]
  - Muscle spasms
  - Vomiting
  - Racing pulse
  - Dim vision
  - Painful urination
  - Difficulty breathing
  - Confusion
  - Seizure
  - Unconsciousness

# Hydration



- Water is a very good fluid replacement for an event that is sixty minutes or less
- If the practice or game is longer than sixty minutes, a drink with electrolytes is recommended (such as Gatorade or Powerade)
- Cool water is better than warm water
- Start drinking before the activity - 2 cups an hour before the game
- Then a few sips of water every shift or a cup every five to ten minutes
- Continue hydrating for 30 minutes after the activity

# Hydration



- Two cups of cold water one hour before the game
- Then a cup of water every ten to fifteen minutes or a mouthful of water after every shift during the game
- One to two cups of water between periods
- Two to four cups of water after the game
- If the game lasts longer than one hour, there should be some carbohydrate (less than 12%) and salt and other electrolytes in the water (to replace salt lost in perspiration.) Most of your “Gaterade” type drinks will have this. You can make your own drink by diluting a pint of water with a pint of juice and adding a pinch of salt. [Straight juice will have too many calories!]
- **DO NOT TAKE SALT TABLETS!!!**

# Sports and Energy Drinks



- There is a big difference between sports drinks and energy drinks.
  - Sports drinks are meant to replace carbohydrates and electrolytes
    - Gatorade – designed for the University of Florida football team - the Gators
  - Energy drinks are meant to provide stimulants and a feeling of extra power
    - Red Bull - Dangerous for athletes

# Energy Drinks



- “Energy drinks have no therapeutic benefit.”
- “Some of materials included in energy drinks can be toxic and have been known to have very serious side effects.”
- Study reported in the medical journal *Pediatrics* March 2011

# Neck Laceration Protectors



- USA Hockey Position Statement on Neck Laceration Protectors
  - USA Hockey is very concerned about neck lacerations and the potential catastrophic involvement of arteries, veins, and nerves. To date there are no data to describe the prevalence of such an occurrence, the severity, or whether or not a neck laceration protector (neck guard) reduces the risk or severity. All USA Hockey players can choose to wear one of several available designs, preferably those that cover as much of the neck area as possible

# Results of the Recent Study of the Use of Neck Laceration Protectors (NLP)



- Neck Lacerations from a skate blade while playing ice hockey is an uncommon occurrence. Reported injuries are mild, BUT the potential for serious injury remains a very big concern.
- Current NLP designs do not eliminate the risk of a neck laceration.
- Further research and improved design may result in a more practical, comfortable design that better protects the vulnerable areas of the neck.