Prevent Concussions

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By USA Hockey

This information is from the recent cover article in The Journal of Musculoskeletal Medicine which will need to be referenced (Michael J. Stuart MD. Managing and Preventing Ice Hockey Injuries. J Musculoskeletal Med. January, p.37-44, 2005. Here is an excerpt on the head and face.

**HEAD AND FACE**  
Mandatory use of standardized helmets has apparently reduced the incidence of skull fractures and intracranial hematoma. Despite helmet protection, concussions occur with alarming frequency. Concussions encompass a graded set of clinical syndromes that may or may not involve loss of consciousness. A direct blow to the head, face, neck or elsewhere on the body may cause a concussion by transmitting an impulsive force to the head. The resultant brain injury is due to a rapid onset, short-lived impairment of neurological function that resolves spontaneously.5 The acute symptoms reflect a functional disturbance rather than a structural injury. Players should always report symptoms such as prolonged headache, confusion, visual disturbance, and loss of memory or concentration. (Table 2) Health care professionals should look for concussion signs and maintain a high index of suspicion. (Table 2) A recurrent blow to the head can be serious, since repeated concussions cause cumulative damage and the severity can increase with each incident. After an initial concussion, the chance of a 2nd concussion is several times greater.  
   
Physicians and athletic trainers should always rule out an associated neck injury when evaluating a player with a suspected concussion. Obtain a concussion history, since prior brain injury can affect severity and risk of recurrence. Perform a "sideline" evaluation, including a neurological examination, balance testing, and mental status assessment for orientation, attention, memory and concentration. Repeat the evaluation after 15 minutes both at rest and after exertion. No grading systems or return to play guidelines to date have been scientifically validated; therefore, common sense and caution should guide judgment. A symptomatic player should never return to play or be left alone. The player should be monitored regularly, medically evaluated after the injury and cleared for return to play by a physician. Neuropsychological testing, if available, may provide insight into concussion severity and recovery.  
   
Facemasks have dramatically reduced the risk of eye injuries, including periorbital lacerations. Eye trauma from a stick, puck or elbow to players wearing partial or no protection can cause hyphema, orbit fracture, retinal detachment, or globe rupture. A blinding eye injury to a hockey player wearing full facial protection has never been reported. Full facial protection also reduces the risk of facial lacerations and dental fractures. A prospective cohort observational analysis in the United States Hockey League demonstrated a 4.7 times greater risk of eye injury with no protection compared to partial protection (visor or half-shield).6 No eye injuries occurred to players wearing full protection. This study demonstrated that both full and partial facial protection significantly reduce injuries to the eye and face without increasing concussions. All youth, high school and college players in the United States are required to wear full facial protection. USA Hockey rules now also mandates full facial protection for all Junior players. However, players 18 years of age and older may wear a half shield (visor) if they sign a waiver. The helmet and half shield must not be worn tilted back so that the bottom of the visor is above the tip of the nose. Improper positioning of the visor may direct a stick or puck toward the eye. A violation of this rule is a misconduct penalty. The helmet should be secured with a padded four-buckle chinstrap to prevent migration and protect the chin.  
   
The mouth guard is a required piece of equipment for youth hockey in the United States, but is optional for college and junior players. A form-fit mouthguard not only protects the teeth, but may also prevent concussions and injuries to the temporomandibular joint.

**NECK**

Serious neck injuries (cervical spine fractures) are usually the result of a direct axial load to the top of the head with the cervical spine slightly flexed.7,8 This mechanism occurs in hockey when a player slides on the ice without control or is pushed or checked from behind and hits the boards. The risk of spinal cord injury, including quadriplegia, may be increasing and appears to be higher in hockey than football. Helmets and facemasks have been implicated in this apparent increased incidence of neck injuries because players feel invincible and officials are more lenient in calling penalties. No scientific research to date supports these contentions. However, a false sense of security may lead to violent attitudes and tactics. Prevention of catastrophic injuries involves the cooperation of players, coaches, and officials. Dangerous violent acts must not be disguised as aggressive physical play. Players should learn to protect themselves by making initial board contact with another part of their body other than their head. When sliding on the ice or being checked near the boards, attempt to make board contact with the shoulder blade or buttock areas. If head contact does occur, players should avoid the position of vulnerability by always keeping their "heads up" (in other words: "don't duck"). Coaches should teach body contact and control skills so that players can effectively and safely give and take checks. Athletes and coaches must always practice the objectives of sportsmanship, including respect for their opponents. Conditioning programs should include strengthening of the neck muscles. Existing rules, like checking from behind, charging, and boarding, must be strictly enforced. Non-officials (players, coaches, and fans) must support the on-ice officials who are trained to differentiate illegal from legal contact in order to eliminate dangerous actions. A larger ice surface ("Olympic-size" rink) may decrease player-board contact, which may decrease the risk of injury, especially to the head and neck.  
   
Acute airway trauma to the larynx, hyoid and cervical soft tissues from a stick or puck blow to the throat may be life threatening. Beware of the "choking sign", stridor, hoarseness, hemoptysis, and subcutaneous emphysema. Any suspected airway injury should be evaluated at a hospital since luminal obstruction from edema or hematoma may be delayed. Diagnosis requires evaluation with flexible bronchoscopy and laryngoscopy followed by a CT scan.  
   
Neck lacerations by the skate blade are potentially catastrophic, but uncommon.