Head Injury in Children

The worst fear of every parent is to receive news that your child has been injured in an accident. Unfortunately, in our society, accidental injuries have become the leading threat to a healthy childhood. Since children are dependent upon the caution and common sense of adults, the prevention of accidents must be a priority of every parent.

Head injury is especially serious because of the fragile nature of the brain. Nature has provided us with a "natural helmet," our hard skull, to protect our most important organ. Taking a cue from nature, sometimes it is important to protect our children’s heads with a safe helmet, especially with those favorite pastimes of all youngsters -- bike riding and in-line skating.

The magnitude of this problem is so enormous (5 million children, twice as many boys as girls, suffer head injury a year) that it is difficult to relate to. Thus, preventative measures which may be easily taken are too often overlooked.

Most head injuries are mild, do not result in loss of consciousness, and do not cause permanent problems. However, even mild concussions of the brain may leave "soft" neurologic deficits, such as memory, attentional, and learning problems which significantly impact on a child and the family.

On the other hand, as many as 30,000 children may suffer permanent brain injury from accidents in the United States each year. These children may be left with epilepsy, severe physical handicaps, major learning and cognitive difficulties, and emotional problems. Life can never be the same for the families of these children. The ordeal of complicated medical procedures, combined with the increased dependency of the child, and the emotional heartbreak for the parents is overwhelming.
Different Injury at Different Ages

The nature of head injuries is different at different ages. Adolescents are most often injured in car accidents or in sports. Football and boxing are the two sports in which injury is most likely to occur. The average high school football player will never, under any circumstance, volunteer to sit out a game. Boxers are attempting to cause a cerebral concussion, to knock out, their opponent. Thus, it is always the responsibility of the coach and the parent, with input from the physician, to determine whether a player is fit to participate.

Young children suffer head injuries most often as a result of bicycle accidents, dangerous play, falls, being struck by a motor vehicle, or due to not wearing a seat belt. Children are greatly influenced by peer pressures, sometimes beneficially, such as when your son or daughter must have the same style bike helmet as his or her friends. Other times, however, the child may refuse to wear a helmet because, "no one else wears one, and I’d look stupid."

Infants may suffer head trauma as a result of child abuse, a problem which persists in our society despite many educational and social programs. One particular form of injury to an infant’s brain, known as "Shaken Baby Syndrome," may occur even with what appears to be mild shaking or tossing of a baby by a playful parent. But the relatively large head size of infants, combined with an especially fragile brain can result in brain hemorrhages with permanent damage.
Cerebral Concussion

The most common head injury is a cerebral concussion. We call it a concussion when a child suffers sufficient impact to his or her head to cause an immediate temporary loss of alertness, awareness, or consciousness. Often there is amnesia, loss of memory of events just prior to the injury (retrograde amnesia), just after the injury (anterograde amnesia), or both. Rarely, there may be more severe retrograde amnesia for events which occurred years before the head injury. In the absence of complete loss of consciousness, amnesia may be the primary symptom confirming that a concussion did occur. There may or may not be a skull fracture. The force needed to cause a concussion is not usually strong enough to cause a skull fracture. A smaller impact may cause a concussion to an unsupported, unprotected head (such as a non-helmet wearing bike rider), compared to a well supported head (such as in a car with a head restraint, seat belt fastened, and an airbag).

Sometimes a child may simply be "dazed" for a few seconds after a particularly hard tackle in a school football game. Other times, a child may be left unconscious for several minutes after striking the windshield in a motor vehicle accident. When both of these children readily return to their normal alert state, it is clear that they suffered a benign cerebral concussion, rather than a permanent brain injury. However, at the time of the injury, it may not be clear at all that the trauma will turn out to be temporary and completely reversible. The football player should be immediately taken out of the game and watched on the side line. The car accident victim may be monitored overnight in the hospital if your doctor feels it is necessary.
What to Watch For After Head Injury

It is extremely important that any child who suffers head injury which results in any degree of altered consciousness, even just a mildly dazed state ("seeing stars"), be carefully watched for signs of worsening. Frequent symptoms which occur within 24 hours of a concussion include headaches, nausea, vomiting, dizziness, blurred vision, and lethargy. If your child has any of these symptoms, have him or her checked out by your pediatrician. The child should remain under observation for 24 hours to be sure the symptoms are resolving. Your doctor can check your child’s blood pressure, pulse, and level of alertness. Eyes can be checked for signs of abnormal light reflexes and for evidence of bleeding in the retina or swelling of the optic nerve. The ears can be checked for evidence of bleeding behind the ear drum, which could indicate a basilar skull fracture. If your child has suffered a concussion, none of these signs will be present. If symptoms persist, or if your doctor finds an abnormality, you may be dealing with more than a simple concussion.

Following a concussion, some children may continue to have persistent problems such as headaches, dizziness, easy fatigue, and irritability (seen primarily in adolescents) or behavioral problems, anxiety symptoms, attention deficit, and hyperactivity (seen primarily in younger children). These symptoms are referred to as a "Post-Concussion Syndrome," and may last weeks to months. Other symptoms may include difficulty with memory, learning new information, concentrating, and sleeping. The symptoms always seem to last longer than anticipated. Sometimes the headaches may be frequent and severe, interfering with school attendance. When these problems occur you should consult your pediatrician. A pediatric neurologist can also be helpful. The cause of this prolonged syndrome after a seemingly minor concussion is not fully understood, but probably is due to a diffuse stretching injury to nerve fibers (axons) in the brain.
When Severe Head Injury Occurs

A significant number of children suffer permanent brain injury each year due to severe head trauma. Most of these injuries occur due to car accidents in which the unrestrained head suffers a major impact. Injuries tend to be worse when twisting or torsional forces occur, such as in a side impact car accident. When this happens there may be direct bruising (contusion) of the brain, or bleeding from the major blood vessels in the head. Bleeding injures the brain in two ways. First, it deprives the brain of essential oxygen carrying blood. Second, it causes a blood clot (hematoma) which compresses the brain. A subdural or epidural hematoma may develop inside the skull and compress the brain inward. A contusion within the brain may cause a hematoma which also puts pressure on the brain. A skull fracture is often present.

Injuries of this magnitude are life-threatening, and always require emergency treatment to stabilize the child’s breathing and blood pressure and to reduce the increased pressure on the brain. Severe brain injuries often leave neurological deficits such as weakness, cognitive problems, and seizures. Children may require prolonged stays at a rehabilitation center. The high frequency of permanent injury from severe head trauma is the strongest incentive for working to prevent childhood accidents.
Preventing Head Injuries

How can you, as a parent, protect your child’s head from injury? All parents are confronted with the difficult balancing act of allowing your daughter or your son to live a normal, carefree childhood with, at the same time, keeping him or her out of harm’s way.

We live in a convenient society with many technological means to ensure our safety. However, the automobile, more than any other aspect of our lives, is responsible for tragic injuries. Careful, defensive, non-intoxicated driving at a safe speed is the best gift any parent can give to their child. Seat belts and car seats for infants must be an absolute rule in every family. The resistant child must be told, "The car won’t go if you don’t wear your seat belt." If a child takes off his or her seat belt while underway, the parent should pull off the road and stop until he or she complies. After two or three times, your child will learn that this rule will not bend.

In a published study of bike injuries, it was found that there were 85% fewer head injuries in riders who wore helmets compared to those who rode without a helmet. Considering most bike injuries occur when an innocent bike rider is struck by an automobile, the helmet is your child’s only defense.

So, what do you do when your son or daughter refuses to be the only child on his block who wears a helmet? The solution is not easy, since it requires the parent to believe in the value of the helmet, and to be willing to actively work to change the habits of peer-influenced children. First, mom and dad must wear a helmet when they ride a bike. Second, the child must be allowed to choose a helmet that he or she likes. Third, the parent may need to discuss the issue seriously with neighbors. Most parents do want their child to wear a bike helmet, but do not want their child to be embarrassed by being the only one with a helmet. If parents get together on this issue, the kids will follow. There is no reason why bike riding and in-line skating should be different from tackle football or ice hockey when it comes to wearing a helmet.

The best treatment for head trauma is prevention, a task which falls directly to you, the parent. With only a few common sense steps, and a small financial investment, you can greatly reduce the chances of permanent brain injury to your child. Parents are not helpless in avoiding that "worse nightmare" of your child suffering a head injury.