

Traumatic Brain Injury in Children Birth to Four Years

Traumatic brain injury (TBI) is a serious public health problem in the United States. Each year, TBIs contribute to a substantial number of deaths and cases of permanent disability. Recent data shows that, on average, approximately half a million children (0-14) sustain a traumatic brain injury annually. This includes:

- 473,900 emergency department visits.
- 35,000 hospitalizations.
- 2,100 deaths.

(U.S. Department of Health and Human Services Centers for Disease Control and Prevention, "Traumatic Brain Injury in the United States 2002-2006")

Children's brain injuries are different

Research has shown that a child's brain injury has a more severe effect than the same kind of injury on an adult. This is because children's brains are still developing. Also, the effects of a child's brain injury may only be apparent as the child gets older. Some children may have lifelong physical challenges. However, the greatest challenges many children with brain injury face are changes in their abilities to think, learn and behave.

Concussion in Infants, Toddlers and Preschool Children

Very young children may suffer bumps and bruises to their heads from falls, direct injuries, motor vehicle crashes, accidents or other causes including child abuse. Sometimes these can result in a concussion.

Deciding when a child needs an immediate concussion assessment can be difficult. Young children may have the same concussion symptoms as older children, but they do not express them in the same way. For example, young children cannot explain a feeling of nausea, amnesia or even describe where they hurt.

When in doubt, get an immediate evaluation from a medical professional.

At routine health checks your doctor should ask you about all your child's "bumps on the head" and should consider referring your child to the emergency department if they suspect a "bump on the head" might be a concussion.

Acute signs and symptoms of a concussion:

- Vomiting.
- Headache.
- Crying that can't be stopped.
- Restlessness or irritability.

Shaken Baby Syndrome

Shaken Baby Syndrome (SBS) occurs when a parent or caregiver shakes a child so hard that the unsupported head moves about violently, causing damage to the brain and blood vessels as the brain repeatedly hits the skull.

Every day three to four children are victims of SBS with 20 percent of the cases proving fatal in the first few days after injury. SBS is the leading cause of child abuse death in the United States and it is 100 percent preventable. The majority of the survivors are left with disabilities including learning and behavioral disorders, profound mental and developmental delays, paralysis, blindness, inability to eat and permanent vegetative state.

Some caretakers do not report possible abuse because it is being inflicted by someone else without their knowledge or because they don't want to tell. In severe cases of SBS babies may exhibit:

- Unresponsiveness.
- Loss of consciousness.
- Breathing problems.
- No pulse.

Babies suffering lesser damage from SBS may exhibit:

- Change in sleeping pattern or inability to be awakened.
- Vomiting.
- Convulsions or seizures.
- Irritability.
- Uncontrollable crying.

- Inability to be consoled.
- Inability to nurse or eat.

Prevention

To reduce the risk of a young child sustaining a TBI, family members and caregivers should:

- Buckle infants and children in the car using a child safety seat, booster seat, or seat belt according to the child's height, weight and age. Children should start using a booster seat when they outgrow their child safety seats, usually when they weigh about 40 pounds. Children should continue to ride in a booster seat until the lap and/or shoulder belts in the car fit properly, typically when they are approximately 4'9" tall.
- Make sure children wear helmets that are fitted properly.
- Use the right protective equipment and make sure it is maintained properly.
- Contact a friend, family member or community agency if you need emotional support and/or have concerns about the safety of your child.
- Make living areas safer for young children by:
 - Installing window guards to prevent falls from open windows.
 - Using safety gates at the top and bottom of stairs.
 - Keeping stairs clear of clutter.
 - Securing rugs and using rubber mats in bathtubs.
 - Not allowing children to play on fire escapes and other unsafe platforms.
 - Making sure playground surfaces are made of shock-absorbing materials, such as hardwood mulch or sand, and are maintained to an appropriate depth.

Resources Used in Developing this Fact Sheet

- Brain Injury Association of Minnesota: <http://www.braininjurymn.org> (612) 378-2742 (800) 669-6442
- Department Of Health and Human Services, Centers for Disease Control and Prevention (CDC) <http://www.cdc.gov/TraumaticBrainInjury/index.html>