



## Traumatic Brain Injury and the Very Young Child

Traumatic brain injury (TBI) is the leading cause of disability and death in children and adolescents in the U.S. According to the [Centers for Disease Control and Prevention](#), one of the two age groups at greatest risk for TBI includes infants and children ages 0-4.

*Among children ages 0 to 14 years, TBI results in an estimated:*

- 2,685 deaths
- 37,000 hospitalizations
- 435,000 emergency department visits

*Approximately 1,300 U.S. children experience severe or fatal head trauma from child abuse every year.*

These can be frightening statistics for parents of infants and toddlers. And yet, through awareness and knowledge, we can change these numbers and lessen the impact on our loved ones.

### What makes a brain injury in children different?

While the symptoms of a brain injury in children are similar to the symptoms experienced by adults, the functional impact can be very different. Children are not little adults. The brain of a child is continuing to develop. The assumption used to be a child with a brain injury would recover better than an adult because there was more “plasticity” in a younger brain. More recent research has shown that this is not the case. A brain injury actually has a more devastating impact on a child than an injury of the same severity has on a mature adult. The cognitive impairments of children may not be



immediately obvious after the injury but may become apparent as the child gets older and faces increased cognitive and social expectations for new learning and more complex, socially appropriate behavior. These delayed effects can create lifetime challenges for living and learning for children, their families, schools and communities. Some children may have lifelong physical challenges. However, the greatest challenges many children with brain injury face are changes in their abilities to think and learn and to develop socially appropriate behaviors.

## Concussion in Infants, Toddlers & Preschool Children

Concussion in children is common. Parents often ask, "When it is safe for a child to return to play or other activities?" and "How can I help my child recover from a concussion?" Very young children (i.e. infants, toddlers, and preschoolers) frequently sustain bumps and bruises to their heads from a host of mechanisms including falls (down stairs or from heights such as counter tops or beds), direct impacts (e.g. getting hit in the head with a ball), motor vehicle crashes, tricycle/bike accidents or child abuse.

Sometimes these events can be significant enough to result in a concussion. Deciding whether a child who has hit his or her head 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 or amnesia or even describe where they hurt. Parents and physicians should keep this in mind when considering the presence of concussion symptoms listed below. When in doubt, refer a child for immediate evaluation. Primary



care physicians (PCPs) should ask caregivers about all “bumps on the head” and should consider referring a child with a “bump on the head” to the emergency department if they suspect a concussion. Children who display the symptoms listed below for more than several weeks after a concussion may require further assessment and/or evaluation by a neuropsychologist, neurologist, or other specialist.

### Acute signs and symptoms of a concussion:

- Vomiting
- Headache
- Crying and inability to be consoled
- Restlessness or irritability

**Child Abuse** Infants and young children may also sustain mild to severe TBI from abuse, referred to as either Shaken Baby Syndrome (SBS), or the more recently adopted term, Abusive Head Trauma (AHT).

- Approximately 1,400 cases of AHT (including concussions) occur in the U.S. each year.
- Injuries resulting from AHT and other types of child maltreatment are often unrecognized or underreported.
- Recognition of AHT in young children is critical. If children are returned to a violent home or child care setting, they are at very high risk of being hurt again.
- In some cases of abuse, caretakers do not report a history of any trauma either because (a) they do not know that there has been trauma because it is being inflicted by someone else without their



knowledge or (b) because they don't want to tell. As a result, if an infant or young child presents with the signs and symptoms listed above, it is important to consider the possibility of AHT even in the absence of a history of trauma.

- Seizures
- Dizziness or confusion
- Change in personality
- Change in nursing or eating habits
- Becoming upset easily or increased temper tantrums
- Sad or lethargic mood
- Lack of interest in favorite toys

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### Prevention

To reduce the risk of a young child sustaining a TBI, family members/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/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 children by:
  - Installing window guards to keep young children from falling out of open windows;
  - Using safety gates at the top and bottom of stairs when young children are around;
  - Keeping stairs clear of clutter;
  - Securing rugs and using rubber mats in bathtubs; and
  - Not allowing children to play on fire escapes or on other unsafe platforms.
  - Make sure playground surfaces are made of shock-absorbing materials, such as hardwood mulch or sand, and are maintained to an appropriate depth.

## Resources

**Information** taken from the Brain Injury Association of America; and Centers for Disease Control and Prevention.

## Additional resources

- MN Dept. of Education: <https://education.mn.gov/mde/index.html>
- MN Low Incidence Projects: <http://www.mnlowincidenceprojects.org/tbi.html>



- MN Brain Injury Alliance: [www.braininjurymn.org](http://www.braininjurymn.org)  
Phone: (612) 378-2742 (800) 669-6442
- National Brain Injury Association of America: [www.biausa.org](http://www.biausa.org)  
Phone: (800) 444-6443
- Department of Health and Human Services, Centers for Disease Control and Prevention (CDC)  
[www.cdc.gov/TraumaticBrainInjury/index.html](http://www.cdc.gov/TraumaticBrainInjury/index.html)

For more information and resources, contact your district or regional TBI educational specialist; or

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MN Regional Low Incidence Projects

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