



Traumatic Brain Injury – Fact Sheet

The Problem

A blow or jolt to the head can result in a traumatic brain injury (TBI), which can disrupt the function of the brain. Concussions, also called “closed head injuries,” are a type of TBI.

TBIs contribute to a substantial number of deaths and cases of permanent disability annually.

- Each year in the United States, an estimated
 - 1.4 million people sustain a TBI. Of those, 230,000 are hospitalized and survive, which is more than 20 times the number of hospitalizations for spinal cord injury, another key disabling injury (CDC 2001; Langlois et al. 2004).
 - 50,000 people die from a TBI. (Langlois et al. 2004).
 - 80,000 to 90,000 people experience the onset of long-term or lifelong disability associated with a TBI (Thurman et al. 1999).

- Among children ages 0 to 14 years, TBI results in an estimated
 - 3,000 deaths,
 - 29,000 hospitalizations, and
 - 400,000 emergency department visits (Langlois et al. 2001).

- Approximately 75% of TBI that occur each year are concussions or other forms of mild TBI (CDC 2003)

- An estimated 300,000 sports-related brain injuries of mild to moderate severity occur in the United States each year (Sosin et al. 1996).

Symptoms

Because the brain is complex, every brain injury is different. Some symptoms may appear right away. Other symptoms may not show up for days or weeks. Sometimes the injury makes it hard for people to recognize or to admit that they are having problems.

The signs and symptoms of a concussion can be subtle. Early on, problems may be missed by patients, family members, and doctors. People may *look* fine even though they may act or feel differently.

Possible symptoms of concussion:





- Headaches or neck pain that won't go away;
- Difficulty with mental tasks such as remembering, concentrating, or making decisions;
- Slowness in thinking, speaking, acting, or reading;
- Getting lost or easily confused;
- Feeling tired all of the time, having no energy or motivation;
- Mood changes (feeling sad or angry for no reason);
- Changes in sleep patterns (sleeping a lot more or having a hard time sleeping);
- Light-headedness, dizziness, or loss of balance;
- Urge to vomit (nausea);
- Increased sensitivity to lights, sounds, or distractions;
- Blurred vision or eyes that tire easily;
- Loss of sense of smell or taste; and
- Ringing in the ears.

Children with a brain injury can have the same symptoms as adults. But it is harder for them to let others know how they feel. Call your child's doctor if your child has had a blow to the head and you notice any of these symptoms:

- Tiredness or listlessness;
- Irritability or crankiness (will not stop crying or cannot be consoled);
- Changes in eating (will not eat or nurse);
- Changes in sleep patterns;
- Changes in the way the child plays;
- Changes in performance at school;
- Lack of interest in favorite toys or activities;
- Loss of new skills, such as toilet training;
- Loss of balance or unsteady walking; or
- Vomiting.

Consequences

- TBI may cause problems with
 - Cognition (concentration, memory, judgment, and mood).
 - Movement abilities (strength, coordination, and balance).
 - Sensation (tactile sensation and special senses such as vision).
 - Emotion (instability and impulsivity). (Thurman et al. 1999)
- Repeated mild brain injuries occurring over an extended period of time (i.e., months, years) can result in cumulative neurological and cognitive deficits. Repeated mild brain injuries occurring within a short period of time (i.e., hours, days, or weeks) can be catastrophic or fatal (CDC 1997_a).
- At least 5.3 million Americans — 2% of the U.S. population — currently live with disabilities resulting from TBI (Thurman et al. 1999). (*This*



estimate is based on the number of people hospitalized with TBI each year and does not include people seen in Emergency Departments who were not admitted to the hospital, those seen in private doctor's offices, and those who do not receive medical care.)



- An estimated 15% of persons who sustain a mild brain injury continue to experience negative consequences one year after injury (Guerrero et al. 2000).
- TBI can cause seizure disorders such as epilepsy (Hauser et al. 1993).
- The following general tips can aid in recovery:
 - Get lots of rest. Don't rush back to daily activities such as work or school.
 - Avoid doing anything that could cause another blow or jolt to the head.
 - Ask your doctor when it's safe to drive a car, ride a bike, or use heavy equipment, because your ability to react may be slower after a brain injury.
 - Take only the drugs your doctor has approved, and don't drink alcohol until your doctor says it's OK.
 - Write things down if you have a hard time remembering.
 - If your brain injury was severe, you may need therapy to learn skills that were lost, such as speaking, walking, or reading. Your doctor can help arrange rehabilitation services. (CDC 1999_a)

Causes

- The leading causes of TBI are
 - Vehicle crashes,
 - Firearm use, and
 - Falls (Thurman et al. 1999).
- Firearm use is the leading cause of death related to TBI (CDC 1999_b).
- Firearms cause about 10% of all TBIs, but they account for 44% of TBI-related deaths (CDC 1999_b).
- Nine out of 10 people with a firearm-related TBI die (CDC 1999_b).
- Nearly two-thirds of firearm-related TBIs are classified as suicidal in intent (CDC 1999_b).



Cost

Direct and indirect costs of TBI totaled an estimated \$56.3 billion in the U.S. in 1995 (Thurman 2001).

Groups at Risk

- Males are about twice as likely as females to sustain a TBI (CDC 1997_b).
- People ages 15 to 24 years and those over age 75 are the two age groups at highest risk for TBI (Thurman et al. 1999).
- African Americans have the highest death rate from TBI (Thurman et al. 1999).

Prevention

There are many ways to reduce the chances of brain injury. CDC and the Brain Injury Association of America offer these tips:

- Wear a seat belt every time you drive or ride in a motor vehicle.
- Always buckle your child into a child safety seat, booster seat, or seat belt (according to the child's height, weight, and age) in the car.
- Never drive while under the influence of alcohol or drugs.
- Wear a helmet and make sure your children wear helmets when
 - Riding a bike, motorcycle, snowmobile, scooter, or all-terrain vehicle;
 - Playing a contact sport, such as football, ice hockey, or boxing;
 - Using in-line skates or riding a skateboard;
 - Batting and running bases in baseball or softball;
 - Riding a horse; or
 - Skiing or snowboarding.
- Avoid falls in the home by
 - Using a step stool with a grab bar to reach objects on high shelves;
 - Installing handrails on stairways;
 - 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;



- Removing tripping hazards such as small area rugs and loose electrical cords;
 - Using non-slip mats in the bathtub and on shower floors;
 - Putting grab bars next to the toilet and in the tub or shower;
 - Maintaining a regular exercise program to improve strength, balance, and coordination; and
 - Seeing an eye doctor regularly for a vision check to help lower the risk of falling.
- Make sure the surface on your child's playground is made of shock-absorbing material, such as hardwood, mulch, and sand.
 - Keep firearms stored unloaded in a locked cabinet or safe. Store bullets in a separate secured location.

There are many opportunities to raise awareness in your community about the causes and consequences of TBI. Below are some times of the year that may be appropriate for drawing attention to a particular issue:

- October is Brain Injury Awareness Month.
- December is National Drunk and Drugged Driving Prevention Month.
- The week of Valentine's Day is National Child Passenger Safety Week.
- The fourth week of April is National Playground Safety Week.

Schools are a great place to incorporate prevention efforts. The National SAFE KIDS Campaign Web site and the National Program for Playground Safety Web site have teacher plans and student handouts about motor vehicle, sports and recreation, and playground safety.

National SAFE KIDS Campaign
<http://www.safekids.org/>

National Program for Playground Safety
www.uni.edu/playground/

Additional Resources

Government Organizations

National Highway Traffic Safety Administration (NHTSA)

NHTSA is responsible for reducing deaths, injuries, and economic losses resulting from motor vehicle crashes. NHTSA provides consumer information about motor vehicle safety topics.

www.nhtsa.dot.gov



Child Passenger Safety: www.nhtsa.dot.gov/people/injury/childps/
Phone: 888-DASH-2-DOT (888-327-4236)

National Institute of Neurological Disorders and Stroke (NINDS)

NINDS's mission is to reduce the burden of neurological disease — a burden borne by every age group, by every segment of society, by people all over the world.

www.ninds.nih.gov
NIH Neurological Institute
P.O. Box 5801
Bethesda, MD 20824
Phone: 800-352-9424



Non-Government Organizations

Brain Injury Association of America (BIAA)

BIAA identifies and responds to the needs of individuals with brain injury and their families. It creates new and innovative programs to serve its constituencies. BIAA has state-chartered affiliates, to help injured persons. BIAA also has a number of fact sheets about TBI.

www.biausa.org
BIAA fact sheets: www.biausa.org/Pages/facts_and_stats.html
8201 Greensboro Drive, Suite 611
McLean, VA 22102
Phone: 703-761-0750
Family Helpline: 800-444-6443

National Program for Playground Safety (NPPS)

Established under a grant from the CDC, NPSS works to reduce the annual playground-related injuries suffered by America's youth. NPSS also serves as a recognized national clearinghouse for playground safety information.

www.uni.edu/playground/
School of Health, Physical Education and Leisure Services
WRC 205
University of Northern Iowa
Cedar Falls, IA 50614-0618
Phone: 800-554-PLAY (7529)

National SAFE KIDS Campaign

The National SAFE KIDS Campaign is the first and only national organization dedicated solely to the prevention of unintentional childhood injury, the number one killer of children ages 14 and under.

www.safekids.org
1301 Pennsylvania Ave. NW Suite 1000
Washington, DC 20004



Phone: 202-662-0600

ThinkFirst National Injury Prevention Foundation

Thinkfirst Foundation works to prevent brain, spinal cord, and other traumatic injuries by educating of individuals, community leaders, and policy makers.

www.thinkfirst.org

5550 Meadowbrook Drive, Suite 110

Rolling Meadows, IL 60008

Phone: 800-Think56 (844-6556)



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