Brain Injury

The brain serves as the control center for all of the body's functions including conscious activities (walking and talking) and unconscious ones (breathing, heart rate, etc.). The brain also controls thought, comprehension, speech and emotion. Injury to the brain, whether the result of severe head trauma or a closed head injury in which there is no fracture or penetration of the skull, can disrupt some or all of these functions.

Brain injury can have serious and lifelong effects on physical and mental functioning, including loss of consciousness, altered memory and/or personality, and partial or complete paralysis.

Traumatic brain injury (TBI) results mainly from motor vehicle incidents, falls, acts of violence, and sports injuries. It is more than twice as likely in males than in females. The estimated incidence rate is 100 per 100,000 persons with 52,000 annual deaths. The highest incidence is among persons 15 to 24 years of age and 75 years and older.

Enclosed within the bony framework of the skull, the brain is a gelatinous material that floats within a sea of cerebrospinal fluid. This fluid supports the brain and acts as a shock absorber in rapid head movements. The outer surface of the skull is smooth, but the inner surface is jagged – this can cause significant damage in closed head injuries as the brain rebounds within the skull over rough bony structures.

Injury to the brain can be caused by fracture or penetration of the skull (such as in the case of a vehicle accident, fall or gunshot wound), a disease process (neurotoxins, infections, tumors, metabolic abnormalities, etc.) or a closed head injury such as in the case of Shaken Baby Syndrome or rapid acceleration or deceleration of the head.

When the injury results from trauma, damage to the brain may occur at the time of impact or may develop later due to swelling (cerebral edema) and bleeding into the brain (intracerebral hemorrhage) or bleeding around the brain (epidural or subdural hemorrhage).
When the head is hit with sufficient force, the brain turns and twists on its axis (the brain stem), interrupting normal nerve pathways and causing a loss of consciousness. If this unconsciousness persists over a long period of time, the injured person is considered to be in a coma, a condition caused by the disruption of the nerve fibers going from the brain stem to the cortex.

A closed head injury often occurs without leaving obvious external signs but the difference between closed and penetrating injuries can be profound. In a bullet wound to the head, for example, a large area of the brain may be destroyed but the result may be minor if that area was not a critical one.

In contrast, closed head injuries often result in more widespread damage and extensive neurologic deficits, including partial to complete paralysis, cognitive, behavioral, and memory dysfunction, persistent vegetative state, and death.

Injured brain tissue can recover over a short period of time. However, once brain tissue is dead or destroyed, there is no evidence that new brain cells can regrow. The process of recovery usually continues even though new cells do not grow, perhaps as other parts of the brain take over the function of the destroyed tissue.

The rehabilitation process begins immediately. Once memory begins to be restored, the rate of recovery often increases. However, many problems may persist, including those related to movement, memory, attention, complex thinking, speech and language, and behavioral changes.

Beyond the obvious physical effects of brain injury, survivors frequently cope with depression, anxiety, loss of self-esteem, altered personality, and in some cases, a lack of self-awareness by the injury survivor of any existing deficits.

Sources: Institute of Neurological Disorders and Stroke.

**Websites**

http://www.tbindsc.org
The Traumatic Brain Injury Model Systems National Data and Statistical Center (TBINDSC)
3425 S Clarkson St.
Englewood, CO 80113
Phone: 303-789-8202
TBINDSC, located at Craig Hospital in Englewood, Colorado, is a central resource for researchers and data collectors within the Traumatic Brain Injury Model Systems (TBIMS) program. The primary purpose of the TBINDSC is to advance medical rehabilitation by increasing the rigor and efficiency of scientific efforts to longitudinally assess the experience of individuals with traumatic brain injury (TBI). The TBINDSC provides technical assistance, training, and methodological consultation to 16 TBIMS
centers as they collect and analyze longitudinal data from people with TBI in their communities, and as they conduct research toward evidence-based TBI rehabilitation interventions.

http://www.msktc.org/tbi/model-system-centers
Model Systems Knowledge Translation Center: TBI Model Systems Centers
1000 Thomas Jefferson St, NW
Washington, DC 20007
Phone: 202-403-5600
TTY: 877-334-3499
This page lists contact information for the 16 model TBI facilities in the U.S.

http://www.braininjuryeducation.org/
Brain Injury Guide and Resources from the Missouri Department of Health and Senior Services and the MU Department of Health Psychology

http://www.americanbraincoalition.org
American Brain Coalition
6257 Quantico Lane N.
Maple Grove, MN 55311
Phone: 763-557-2913
The American Brain Coalition, a non-profit organization, seeks to advance the understanding of the functions of the brain, and to reduce the burden of brain disorders through public advocacy for increased support of research that will lead to better treatment; services and support that will improve patients’ quality of life; as well as a national commitment towards finding cures for individuals with disabling neurological and psychiatric disorders.

http://www.bafound.org
The Brain Aneurysm Foundation
269 Hanover Street, Building 3
Hanover, MA 02339
Phone: 781-826-5556, 888-272-4602
E-mail: office@bafound.org
The Brain Aneurysm Foundation is the nation’s only nonprofit organization solely dedicated to providing critical awareness, education, support and research funding to reduce the incidence of brain aneurysms.

http://www.biausa.org
Brain Injury Association of America (BIAA)
1608 Spring Hill Road, Suite 110
Vienna, VA 22182
Phone: 703-761-0750
National Brain Injury Information Center: 800-444-6443 (Toll-free)
BIAA is dedicated to increasing access to quality health care and raising awareness and understanding of brain injury through advocacy, education and research. The organization provides help, hope and healing for individuals who live with brain injury, their families and the professionals who serve them through a nationwide network of state affiliates, local chapters and support groups.

http://www.headinjury.com/
Brain Injury Resource Center
Phone: 206-621-8550
E-mail: brain@headinjury.com
The Brain Injury Resource Center is a non-profit clearinghouse founded and operated by head injury activists. The site provides information on brain injury and the impairments caused by it, as well as resources and support for dealing with it.

http://www.headinjury.com/doctorfind.htm
Brain Injury Resource Center: Doctor Finder Checklist
This checklist, which includes questions to ask doctors about their expertise and treatments, is designed to help people find a doctor who meets their needs.

http://www.headinjury.com/rehabfind2.htm
Brain Injury Resource Center: Rehab Finder Checklist
This checklist designed to help people collect and analyze information on programs and treatments for brain injury rehabilitation.

http://remind.org/
Bob Woodruff Foundation/ReMIND
1259 Broadway, Suite 800
New York, NY 10018
E-mail: info@ReMIND.org
The Bob Woodruff Foundation provides resources and support to injured service members, veterans and their families and programs that serve them. Special emphasis is placed on the "hidden signature injuries" of the wars in Iraq and Afghanistan – traumatic brain injury (TBI) and combat stress injuries including post-traumatic stress disorder (PTSD).

https://craighospital.org/resources/topics/traumatic-brain-injury
Craig Hospital: Traumatic Brain Injury (TBI) Resources
Phone: 800-247-0257

Craig Hospital: Emotional Problems after Traumatic Brain Injury

http://www.dvbic.dcoe.mil
Defense and Veterans Brain Injury Center (DVBIC)
1335 East-West Highway, Ste 6-100
DVBIC provides active duty military, their beneficiaries, and veterans with traumatic brain injuries (TBIs) with state-of-the-art clinical care, innovative clinical research initiatives and educational programs through ongoing collaboration with military, VA and civilian health partners, local communities, families and individuals with TBI. There are 15 DVBIC locations at military medical centers, VA hospitals and civilian partners in 11 states and one in Germany.

http://www.internationalbrain.org
**International Brain Injury Association (IBIA)**
5509 Ashby Manor Place
Alexandria, VA 22310
Phone: 703-960-0027
IBIA is dedicated to the development and support of multidisciplinary medical and clinical professionals, advocates, policy makers, consumers and others who work to improve outcomes and opportunities for persons with brain injury.

http://www.nashia.org
**National Association of State Head Injury Administrators (NASHIA)**
PO Box 878
Waitsfield, Vermont 05673
Phone: 802-498-3349
NASHIA assists state governments in promoting partnerships and building systems to meet the needs of individuals with brain injury and their families.

http://www.nchpad.org/1407/6273/Exercise~for~People~with~a~Traumatic~Brain~Injury
**National Center on Health, Physical Activity and Disability: Exercise for People with a Traumatic Brain Injury**
400 Ridgeway Drive
Birmingham, AL 35209
Phone: 800-900-8086

http://www.dontshake.org/
**National Center on Shaken Baby Syndrome**
1433 North 1075 West- Suite 110
Farmington, UT 84025
Phone: 801-447-9360
E-mail: mail@dontshake.org
The National Center on Shaken Baby Syndrome has a mission to prevent shaken baby syndrome through the development and implementation of education, programs, public policy and research; to establish networks, support and train families, caregivers and professionals.

National Institute on Neurological Disorders and Stroke: Traumatic Brain Injury Information Page
This page has information on traumatic brain injury including treatment, prognosis, and research as well as links to publications and related organizations.

National Institute on Neurological Disorders and Stroke (NINDS): Traumatic Brain Injury: Hope Through Research booklet

http://www.nabis.org/
North American Brain Injury Society
P.O. Box 1804
Alexandria, VA 22313
703-960-6500 (Alexandria), 713-526-6900 (Houston)
NABIS is a society comprised of professional members involved in the care or issues surrounding brain injury including clinical care, research, policy and litigation.

http://www.scvmed.org/
Santa Clara Valley Medical Center
751 S. Bascom Avenue
San Jose, CA 95128
Phone: 408-885-5000, 408-971-4068 (TTY)
Information on the Rehabilitation TBI program can be found by clicking on “Rehabilitation Services” (under Programs & Services) and then “Traumatic Brain Injury”.

http://www.myshepherdconnection.org/abi
Shepherd Center: Brain Injury
2020 Peachtree Road NW
Atlanta, GA 30309-1465
Phone: 404-352-2020
Patient education materials for patients and their families includes information on the brain, brain injury, cognitive issues associated with brain injury.

http://www.sfn.org
Society for Neuroscience
1121 14th Street, NW, Suite 1010
Washington, DC 20005
Phone: 202-962-4000
E-mail: info@sfn.org
SFN advances the understanding of brain research by providing information to neuroscientists, the public, and to legislators.

http://www.tbirecoverycenter.org
Traumatic Brain Injuries
This site has information on traumatic brain injuries, including signs and symptoms, care, complications, recovery and research.

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**LENDING LIBRARY**

The following books and videos are available for free loan from the PRC library. For more information, please visit the online catalog at: [http://www1.youseemore.com/ReevePRC/default.asp](http://www1.youseemore.com/ReevePRC/default.asp)

**Books**


• Brown, Alice L. Amazing Lady: There Is Life After Brain Injury. Baltimore: PublishAmerica, 2002. Brown was injured in a fall from her horse and fights to resume her career as a schoolteacher.


• Bryant, Beverley. To Wherever Oceans Go. South Paris, ME: Wings, 1996.


• Chillis, Janeide A. The ABC’s of Brain Education: Educate Me on the Seriousness of Brain Injury. 2009. Goes over the signs, symptoms and treatments of brain injury and stroke.


• Cromer, Janet M. *Professor Cromer Learns to Read: A Couple’s New Life After Brain Injury.* Bloomington, IN: AuthorHouse, 2010. Cromer writes of her husband Alan’s heart attack and cardiac arrest on an airplane that left him with brain damage. Alan lost the ability to talk, read, write, remember, walk, and think. After a while, he regained those abilities to varying degrees.


• DePompei, Roberta. *All About Me! My Life as a Teenager.* Wake Forest, NC: Lash & Associates Publishing, 2000. A notebook for students to fill in to prompt their memory about things like the name of their school and teachers.

Written by a psychotherapist who is a brain injury survivor.


• Hughes, Kathy with Rita Milios. **God Isn’t Finished with Me Yet!** St. Louis, MO: Hardbound, Inc., 1990.


• Jandial, Rahul. **100 Questions & Answers About Head and Brain Injuries.** Sudbury, MA: Jones and Bartlett Publishers, 2009.

• Johns, Amber J. **Our Journey with Joshua.** Bloomington, IN: AuthorHouse, 2005.
Biography written by Joshua’s sister documenting his recovery from TBI.

• Lancaster, Steven Kirk. **Life After a Head Injury.** Bloomington, IN: AuthorHouse, 2005.
Biography


Poetry with pictures of brain injured people. Includes a glossary and appendix on brain injury.


• Long, PJ. **Gifts From the Broken Jar: Rediscovering Hope, Beauty, and Joy.** Culver City, CA. EquiLibrium Press, 2005.


• Mason, Jill C. **Couldn’t Happen to Me: A Life Changed by Paralysis and Traumatic Brain Injury.** Booksurge, 2009. Injured in 2004 by a drunk driver while riding her bike in preparation for a triathlon, then 26-year old Jill Mason began the battle back from death while struggling with TBI and paraplegia.


• McNeil, Noelle. **Heaven Exists.** Denver, CO: Outskirts Press, 2009. McNeil was thrown from a horse and suffered a brain injury. She is now a motivational speaker and shares her story.


- Stoler, Diane Roberts and Barbara Albers Hill. **Coping With Mild Traumatic Brain Injury.** New York: Avery, 1998. Dr. Stoler is living proof of an undiagnosed condition and its ability to forever change your life.


- Swiercinsky, Dennis P. **Normal Again: Redefining Life with Brain Injury.** San Jose: Writer’s Showcase, 2002.


• Woodruff, Lee and Bob. **In an Instant: A Family’s Journey of Love and Healing.** New York: Random House, 2007. Woodruff, an ABC News Anchor, was brain injured while reporting in Iraq. Also available in audio CD.


**Videos**

- **Acquired Brain Injury: Teens Talking to Teens.** Wake Forest, NC: Lash & Associates Publishing/Training. VHS. (25 minutes)

- **Brain Injury Dialogues.** 2009. DVD. (52 minutes)  
  www.braininjurydialogues.org  
  Documentary on Rick Franklin’s brain injury.

- **Breakaway…a Tale of Two Survivors.** Boston: Fanlight Productions, 2000. (45 minutes)  
  Documentary of one brain injury survivor who is now a caregiver to a more severely injured brain injury survivor.

- **Concussions and Spinal Cord Injuries.** Princeton, NJ: Films for the Humanities and Sciences, 2003. DVD (19 minutes)  
  Covers spinal cord injuries and the existence of an 8-hour window during which methylprednisolone may be used to block or reduce the secondary damage of spinal injuries. The program also explores concussions.

- **The Crash Reel: The Ride of a Lifetime.** HBO /Phase4, 2014. DVD (108 minutes)  
  Professional half-pipe snowboarder Kevin Pearce sustained a serious brain injury just before the 2010 Olympics.

- **The Critical Link: CHRs and Traumatic Brain Injury in Indian Country. Brain Injury Awareness for Community Health Representatives.**  
  Albuquerque, NM: New Mexico Aging & Long-Term Services, 2009. DVD. (35 minutes)

- **Every 21 Seconds: Living with a Brain Injury.** Sherborn, MA: Aquarius Health Care Media, 2007. DVD. (60 minutes)  
  8 stories of brain injury narrated by Woody Harrelson. Title on DVD when played is Every 21 Seconds Or Why I Scream at the Refrigerator. Other title is from box.

- **Every 21 Seconds…Or Why I Scream at the Refrigerator.** New Mexico Brain Injury Advisory Council, 2005.  
  8 stories of brain injury narrated by Woody Harrelson.

- **In Harm’s Way: Traumatic Brain Injury in Young Children. Brain Injury Awareness for Head Start Providers.** Albuquerque, NM: New Mexico Aging & Long-Term Services, 2009. DVD. (39 minutes)

• **The Injured Brain: Closed Head Trauma.** Princeton, NJ: Films for the Humanities and Sciences, 1994. VHS and DVD. (19 minutes)

• **Life Goes On: Inside the Lives of Families of Youth with Brain Injuries.** Wake Forest, NC: Lash & Associates, 2000. VHS. (30 minutes)

• **Living with Brain Injury: A Guide for Families.** Birmingham, AL: HealthSouth Press, 1999. (75 minutes)

• **The Loss of Nameless Things.** PBS Home Video, 1008. DVD. (83 minutes) Oakley Hall III, a theater founder, loses his creativity and personality after a fall off a bridge.

• **Peter Wegner Is Alive and Well and Living in Providence.** New York: Filmmakers Library, 2002. (20 minutes)


• **Rebuilding the Brain: Adult Brain Stem Cells.** Princeton, NJ: Films for the Humanities and Sciences, 2002. (21 minutes)

• **Regarding Henry.** Paramount, 2003. 1991 film. DVD. (107 minutes) Harrison Ford stars as a lawyer who suffers a TBI due to gunshot and must learn to walk, talk and read again.


• **Understanding Brain Injury: What You Should Know About Brain Injury and Recovery.** Atlanta, GA.: Shepherd Center, 2011. DVD. (50 minutes) Produced by the Shepherd Center in collaboration with the American Trauma Society, the Brain Injury Association of America and the Christopher & Dana Reeve Foundation. Visit [www.BrainInjury101.org](http://www.BrainInjury101.org) to view the video online and download a copy of the companion booklet.

• **When Billy Broke His Head…and Other Tales of Wonder.** Boston: Fanlight Productions, 1994. (56 minutes) “An entertaining and funny film about disability, civil rights, and the search for intelligent life after brain damage.”
• **Wipe Out.** National Film Board of Canada, 2008. DVD (51 minutes)
  Documentary on three young men who became brain injured while pursuing extreme sports.

• **Without Warning: The James Brady Story.** HBO Video, 1991. (88 minutes)
  Beau Bridges plays Presidential Press Secretary Brady.

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