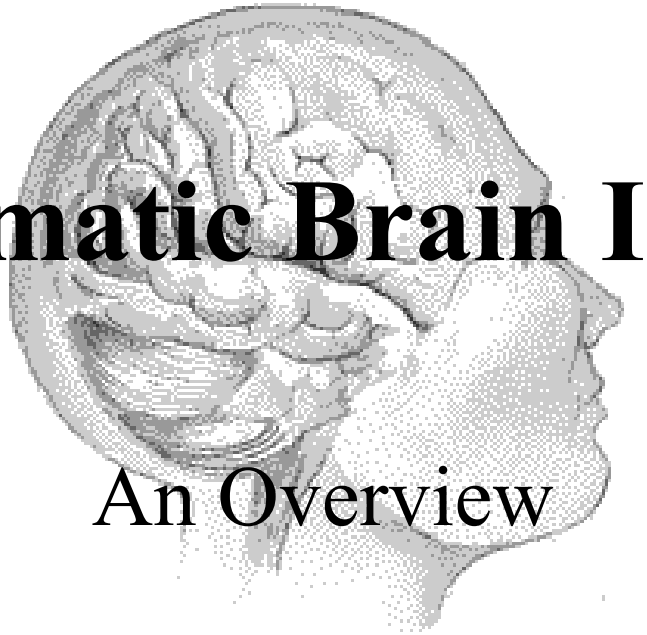
Traumatic Brain Injury



An Overview

NEBRASKA ADVOCACY SERVICES, INC.

The Center for Disability Rights, Law, and Advocacy

Definitions

Traumatic brain injury (TBI):

an insult to the brain, not of degenerative or congenital nature caused by an external physical force that may produce a diminished or altered state of consciousness, which results in an impairment of cognitive abilities or physical functioning. It can also result in the disturbance of behavioral or emotional functioning.

Acquired brain injury (ABI):

injury to the brain which is not hereditary, congenital or degenerative.

Scope

EVERY 21 SECONDS, ONE PERSON IN THE U.S. SUSTAINS A BRAIN INJURY

Traumatic brain injury (TBI) is a leading cause of death and disability among children and young adults in the United States. ***Each year an estimated 1.5 million Americans sustain a TBI***. As a consequence of these injuries:

- ***230,000 people are hospitalized and survive***
- ***50,000 people die***
- ***80,000 to 90,000 people experience the onset of long-term disability***

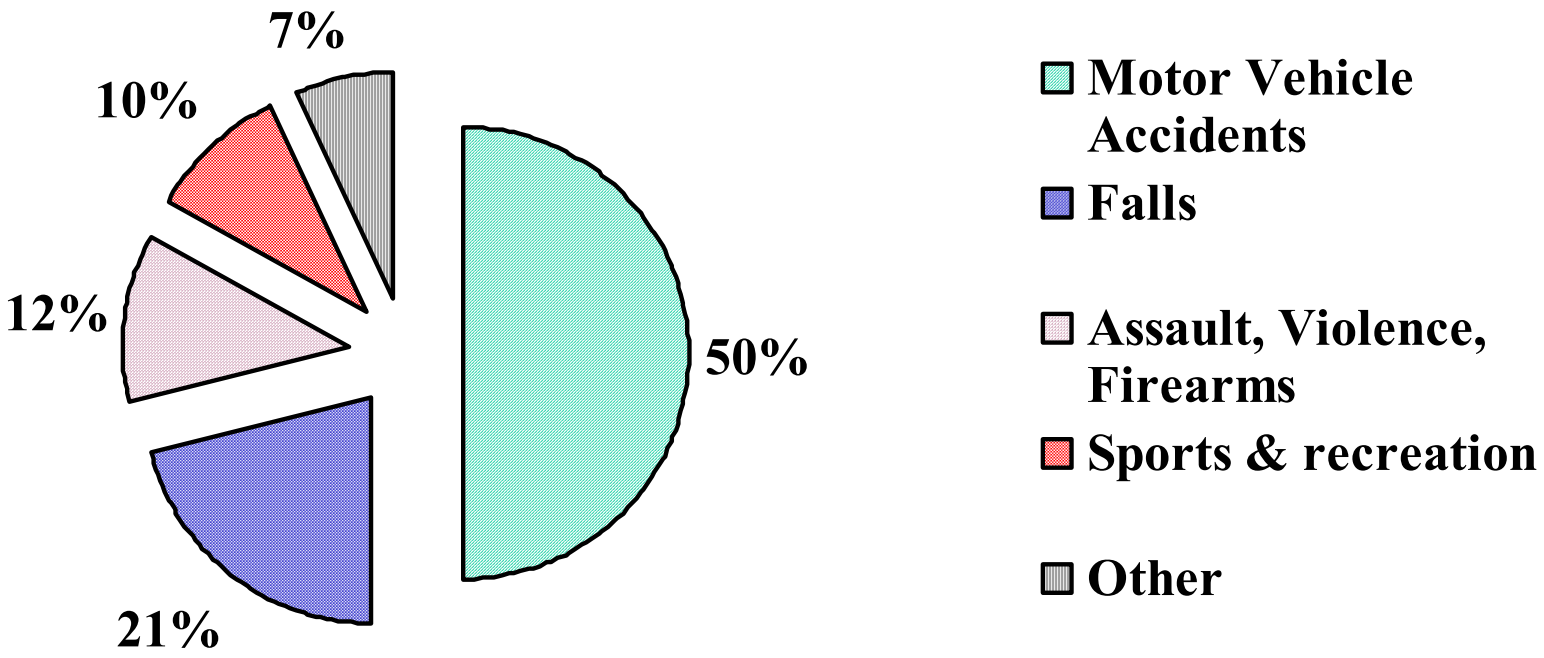
Scope

- An estimated **5.3 million Americans**—a little more than **2% of the U.S. population**—currently live with disabilities resulting from brain injury.
- It is estimated that **one million people are treated for TBI and released from hospital emergency rooms *every year***.
- After one brain injury, the risk for a second injury is **three times greater**; after the second injury, the risk for a third injury is **eight times greater**.

Scope

- Each year, 230,000 persons are hospitalized with TBI and survive
- 22% of persons with TBI die
- 66% of firearm-related TBIs are classified as suicidal in intent
- Falls are the leading cause of TBI for persons age 65 and older; transportation-related injuries lead among the 5-64 population
- 91% of firearm-related TBIs result in death
- 11% of fall-related TBIs proved fatal

Major Causes

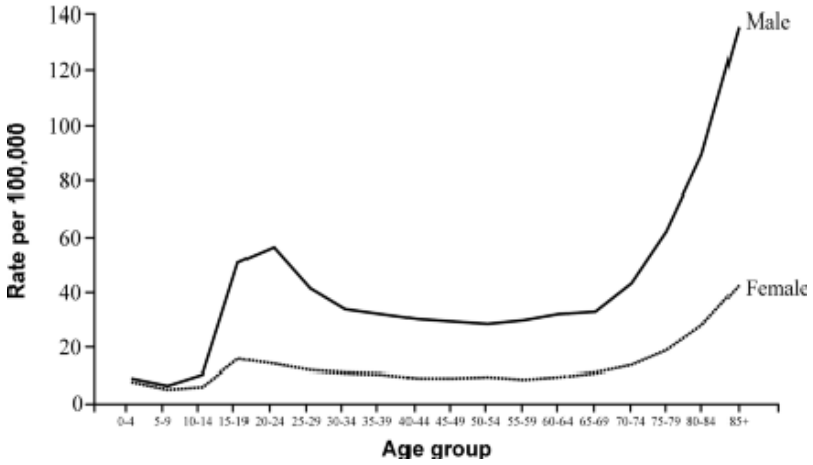


Major Causes

Firearms use has been the leading cause of death from traumatic brain injury since 1990.

In 1994, death rates among males were 3.3 times higher than among females (30.7 per 100,000 males compared with 9.3 per 100,000 females). Rates were highest among persons aged 75 years and older (46.3 per 100,000), with a smaller peak among those aged 15-24 years (32.8 per 100,000).

Figure 2. Traumatic brain injury-related death rates by age and gender, United States, 1994

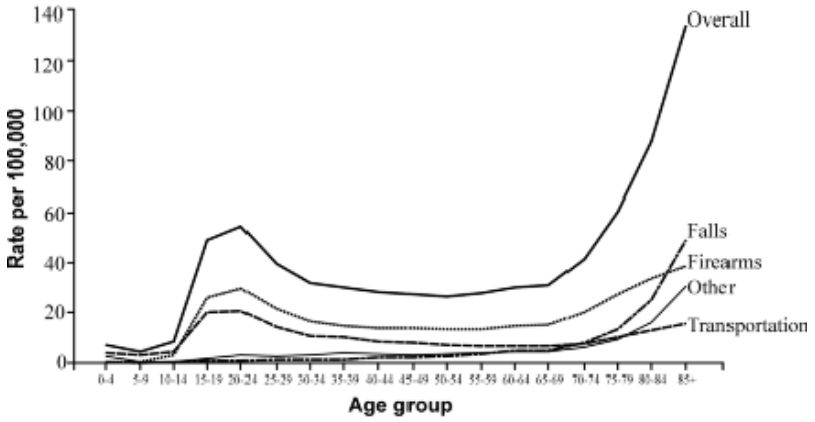


Major Causes

Teens, young adults, and people over 75--especially males--are far more likely than others to die of traumatic brain injury

Leading causes of TBI-associated death among males varied with age in 1994. Firearm-related injuries were the leading cause of TBI-associated death among males aged 15-84 years, transportation-related injuries among those under 15 years of age, and falls among those 85 years of age and older.

Figure 3. Traumatic brain injury-related death rates by age and cause, U.S. males, 1994*



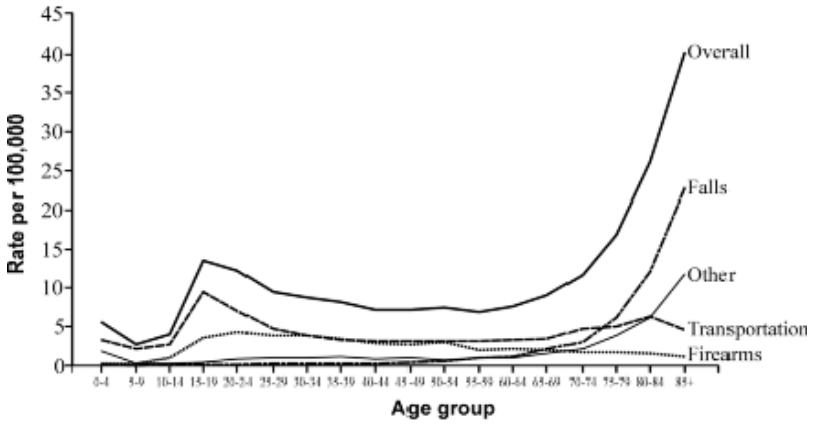
*Note different scale for Y axis for females

Major Causes

Brain injuries that kill boys and young men are often the result of shootings or motor vehicle crashes.

For females, the leading causes of TBI-related deaths also varied with age. Transportation-related injuries were the leading cause of TBI among females from birth to 74 years of age, although death rates related to firearms and transportation were almost identical among women aged 30-54 years. As in the older male population, falls were the leading cause of TBI-associated death among women 75 years of age and older

Figure 4. Traumatic brain injury-related death rates by age and cause, U.S. Females, 1994*

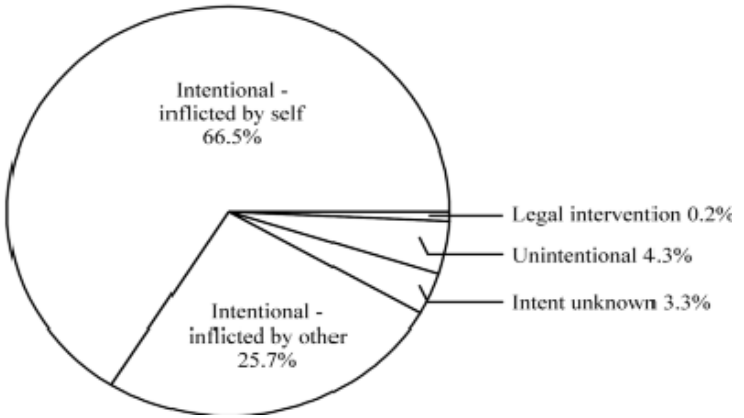


*Note different scale for Y axis for males

Major Causes

***Motor vehicle crashes are by far the leading cause of traumatic brain injury in these seven States and nationally as well. Shootings cause less than 10 percent of all traumatic brain* injuries, *yet they are the leading cause of TBI-related* death.**

Figure 9. Proportions of firearm-related traumatic brain injury by intent - Arizona, Colorado, Minnesota, Missouri, New York, Oklahoma, and South Carolina, 1994

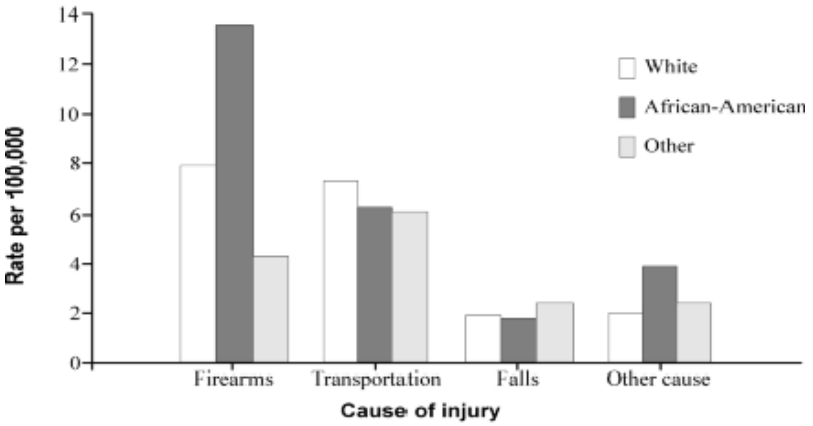


Major Causes

Brain injuries that kill women over 85 are usually the result of falls, whereas brain injures that claim the lives of teenage girls and young women most often occur in motor vehicle crashes.

TBI-associated death rates in 1994 differed by race as well (Figure 5): 25.5 per 100,000 for African Americans; 19.0 per 100,000 for whites; and 15.3 per 100,000 for all other racial groups combined. Among African Americans, firearm-use was the leading cause of TBI-associated death, with a rate of 13.6 per 100,000. This rate was more than two times higher than the rate for the next leading cause, transportation. Firearm-related injuries were also the leading cause of TBI-associated death among whites, with a rate of 7.9 deaths per 100,000--just slightly higher than the transportation-related rate (7.3 per 100,000). Transportation was the leading cause of TBI-associated death among all other racial groups (6.1 per 100,000).

Figure 5. Traumatic brain injury-related death rates by cause and race, United States, 1994*



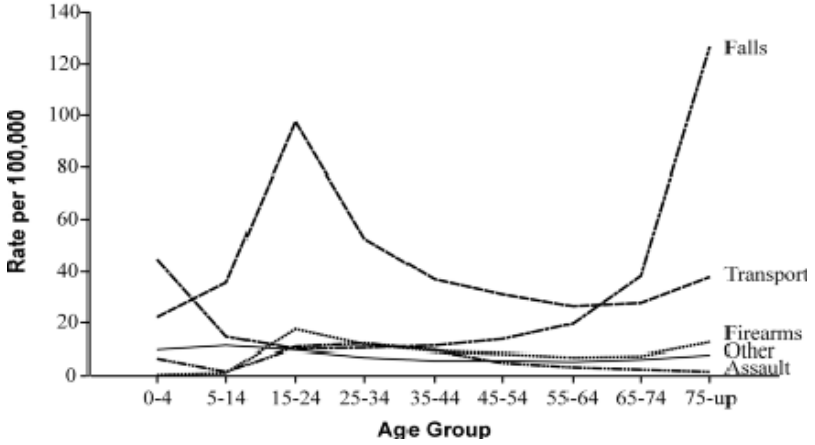
*Age-adjusted to 1990 U.S. population

Major Causes

The majority of firearm-related traumatic brain injury represent suicides or suicide attempts, although more than a fourth are the result of assaults by others.

The leading causes of TBI varied by age in the seven States. Falls were by far the leading cause of TBI among persons aged 75 years and older (at a rate of 126.6 per 100,000), whereas transportation led the list for persons aged 15-24 years (97.9 per 100,000) (Figure 10). Analysis also revealed that the severity of injury and the outcome varied depending on the cause. For example, 90.4 percent of firearm-related TBIs resulted in death, but only 10.2 percent of fall-related TBI proved fatal

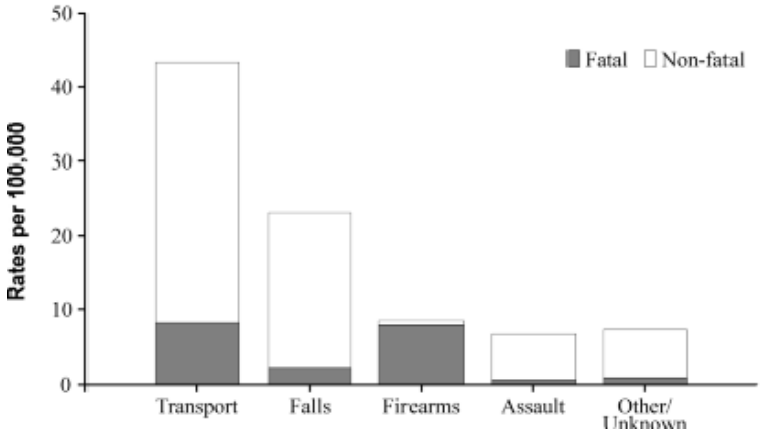
Figure 10. Traumatic brain injury rates by age group and cause of injury - Arizona, Colorado, Minnesota, Missouri, New York, Oklahoma, and South Carolina, 1994



Major Causes

Peak incidence rates in youths are largely related to motor vehicle crashes, whereas peak rates in the elderly are largely related to falls.

Figure 11. Traumatic brain injury rates by cause of injury and survival status - Arizona, Colorado, Minnesota, Missouri, New York, Oklahoma, and South Carolina, 1994



High Risk Groups

- Males 15 - 24 years old
- Substance abuse users
- Infants (64% are due to child abuse)
- Elderly
- Those who have received a prior brain injury

Consequences of Traumatic Brain Injury

Difficulty with "executive control" functions

- Short-term memory
- Money management
- Time management
- Judgment
- Concentration
- Planning
- Frequent confusion or frustration

Consequences of Traumatic Brain Injury

Difficulty with psychosocial and emotional functions:

- –Self-monitoring
- –Reading social "cues"
- –Impulse control
- –Mood swings
- –Anxiety
- –Depression
- –Anger management
- –Sudden agitation
- –Low self-esteem
- –Substance abuse prevalence (both pre- and post-injury)

Consequences of Traumatic Brain Injury

Difficulty with physical abilities:

- Motor coordination
- Headaches
- Fatigue
- Seizures
- Muscle spasticity
- Hearing, visual, and speech impairments
- Attention Impairment
- Bladder & Bowel Problems
- Dizziness
- Nausea
- Vertigo
- Vomiting

Consequences of Traumatic Brain Injury

The cost of traumatic brain injury in the United States is estimated to be $48.3 *billion* annually. Hospitalization accounts for $31.7 billion, and fatal brain injuries cost the nation $16.6 billion each year.

Lewin –ICF. *The Cost of Disorders of the Brain* Washington, DC: The National Foundation for the Brain, 1992.

CDC estimates = $37.8 billion

> "One study estimated that the annual economic burden of TBI in the United States was approximately $37.8 billion in 1985. This estimate included $4.5 billion in direct expenditures for hospital care, extended care, and other medical care and services; $20.6 billion in injury-related work loss and disability; and $12.7 billion in lost income from premature death. This study could not account for the intangible costs borne by the families and friends of individuals who die prematurely from brain injury".

Max W, MacKenzie EJ, Rice DP. Head injuries: costs and consequences. J Head trauma Rehabil 1991;6:76-91

Issues

Misdiagnosis

Each year in New York City and Downstate New York approximately 62,000 people are affected with acquired and traumatic brain injuries. Acquired and traumatic brain injury often times manifest similar symptoms, but they are very distinct from each other, in terms of treatment and prognosis... These approximately 62,000 cases do not take into account those individuals who are diagnosed incorrectly. This second category includes the effects of long-term misdiagnosis or undiagnosed traumatic brain injury. Traumatic brain injuries always assaults the physiological and psychological senses. Therefore, patients either, cannot function to their expected capacity in their jobs or have had their family lives disrupted or destroyed. Plus, there are those with genetic disorders such as epilepsy who endure a traumatic brain injury from a seizure, or persons with Down Syndrome who sustain a traumatic brain injury from an automobile accident, which compounds their problems.

Issues

Keeping Up With New Information

Patients and their families must be kept abreast of new information, as it becomes available through networking. Affiliations with acquired and traumatic brain injured people must be encouraged to develop new and better strategies. It is essential to keep the brain-injured person connected to treatment. Regression is stemmed by keeping the strategies learned in place and by nurturing the recovering patient to develop and restore more skills that are complex. No one can do this alone.

Issues

Lack of Coverage

Insurance coverage has been drastically cut for this type of injury. Cognitive remediation, vestibular therapy, speech, physical therapy, occupational therapy, vision therapy, psychosocial therapy, vocational therapy and psychotherapy are needed on a regular basis. It is not unusual for the initial treatment to require patient visits of two to three times a week, to be followed by monthly, quarterly, semi-annual and then annual visits in order to encourage the acquired and traumatic brain injured person to their highest "level of functionality." In this way, the learned strategies are reinforced and new problems are addressed, as they arise, can then be handled. Insurance companies are not dealing with ABI and TBI as long term or permanent disability with must be monitored. Many employers and co-workers cannot comprehend the recovery process or the impact that a brain injury makes. They will sometimes choose to not utilize their own corporate flexibility to create noncompetitive programs and instead dismiss the individual as lazy and unproductive. They also do not push insurance companies to provide necessary services.

Barriers

Limited Insurance Coverage

Both the private and public sectors finance acute care services to adults

with TBI. When the individual progresses past the acute phase, private

health insurance typically limits coverage of rehabilitation therapies and

does not cover long-term care or community-based support services. As

families exhaust their financial resources, the public sector pays for a

greater share of the services received.

Barriers

Service gaps

Despite these strategies, service gaps are likely—the number of adults with TBI who are provided services remains small relative to estimates of the total number. For example, in 1996, Colorado provided services under its TBI Medicaid waiver to 36 adults and Missouri served 223 in its state-funded program; GAO analysis shows that Colorado and Missouri have, respectively, about 4,000 and 5,600 individuals who sustain a TBI each year. According to program representatives and experts, those most likely to have difficulty accessing services are (1) individuals with cognitive impairment but who lack physical disabilities; (2) individuals without an effective advocate to negotiate the social service system or without a social support system; and (3) individuals with problematic or unmanageable behaviors, such as aggression, destructiveness, or participation in illegal behaviors. Without treatment, individuals with problematic or unmanageable behaviors are the most likely to become homeless, institutionalized in a mental facility, or imprisoned.

Barriers

Eligibility Orientation

Adults with TBI might benefit from some home and community-based

services covered under broad-based waivers. However, these individuals

often are unable to qualify for such services because the preadmission

screening process may be oriented to physical rather than cognitive

disabilities. For example, Colorado Medicaid reports that most adults with

TBI are unlikely to qualify for the broad-based waiver for elderly and

physically disabled individuals because the assessment weighs physical

factors more heavily than cognitive factors. Pennsylvania has a home and

Barriers

Stringent Eligibility Criteria

Because most of the services covered by standard Medicaid programs are medical, all states have expanded Medicaid services through home and community-based waivers, which permit them to offer additional services—such as homemaker services, adult day care, and non-medical transportation—to persons at risk of institutionalization. These Medicaid waivers generally target long-term community-based services to a broad population, such as the physically disabled or disabled elderly. **Although Medicaid broad-based home and community-based waivers cover many services that adults with TBI may require to remain in the community, these programs' eligibility criteria are often strict and based on certain physical limitations, such as difficulty in bathing, dressing, or eating.**

Waivers

Many states use 1915c Medicaid waivers to deliver home and community-based supports. A growing number of states have been able to pay for limited TBI services through Medicaid, including:

- Adding services to state Medicaid plan
- Developing targeted TBI Home and Community-based Waivers
- Developing interagency agreements using state head injury program program appropriations as a match for state plan services
- Interagency agreements with their Medicaid agency to cover state plan services (e.g., case management, personal care attendants, transportation, and respite care)

Services Needed

- Case Management
- Personal Care, in-home assistance
- Respite care
- Home modifications
- Day treatment/care
- Transportation
- Cognitive Rehabilitation
- Neuropsychological evaluation
- Financial management
- Assistive technology
- Independent living training/skills building
- Independent housing
- Counseling
- Long-term rehab
- Substance abuse treatment
- Therapies
  - Speech/language
  - Physical
  - Occupational
  - Behavioral

Actions Needed

Finally, more effective, targeted prevention requires better information on the occurrence of TBI and the circumstances surrounding those injuries (for example, the involvement of alcohol and other drugs or the use of personal protective equipment such as helmets). Expanded use of registries facilitates such data collection while also producing more precise information on the impact of these injuries. Standard measures for TBI outcomes need to be refined so that they will readily identify those adverse outcomes most amenable to prevention through rehabilitation and social support. A person's long-term outcome is related to the severity of the TBI. Better defining the relationship between the initial severity of an injury and a person's long-term outcome would help identify those persons who need ongoing medical care, rehabilitation, and other services. Such information also would also help health practitioners and policy makers ensure that these services are available in the community.

(from CDC Congressional report)