




Brain Injury in our Community: Prevalence, Pressures, & Problem Solving

Judy Dettmer
 Director, MINDSOURCE
Judy.Dettmer@state.co.us
 303.866.4085

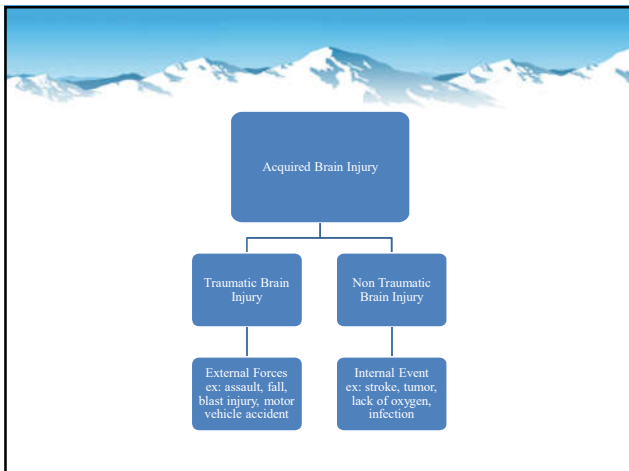



Liz Gerdeman, MA
 Director of Professional Programs
liz@biacolorado.org
 303.562.3298



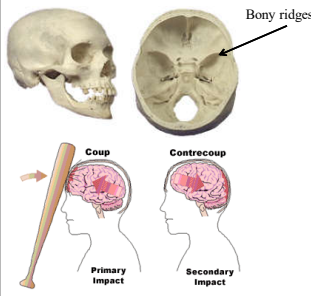
Objectives

- Understand brain injury terminology and prevalence
- Increase awareness of the needs and challenges faced by Coloradans with brain injury
- Explore existing infrastructure and efforts to support individuals and systems
- Recognize and assess potential increased community responses



Mechanism of Injury

Traumatic Brain Injury



Coup
Primary Impact


Contrecoup
Secondary Impact

Bony ridges

Non Traumatic Brain Injury

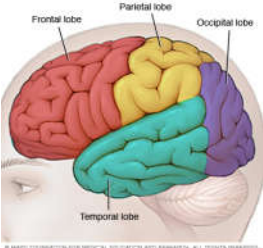
Anoxia:
A loss of oxygen to the brain caused by an airway obstruction due to choking, strangulation, near drowning or drug reactions.

Stroke:

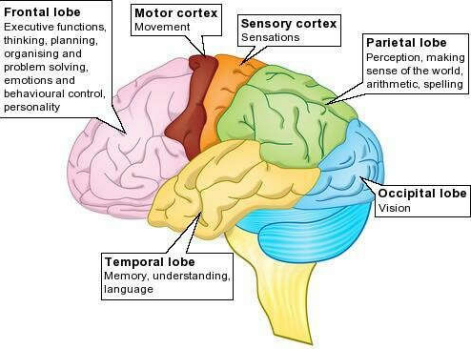


Thrombotic
Embolic
Cerebral artery

Youth Brain



- Brains do not reach their adult weight (3lbs) until 12 years of age
- The brain, and most importantly the **frontal lobe**, does not reach full maturity until mid 20s.
- The frontal lobe is **very vulnerable** to injury. Many of our "adult thinking skills" reside here.



Classification of Severity

Mild – Loss of consciousness 0-30 minutes (Concussion)

Moderate – Loss of consciousness 30 minutes to 24hrs

Severe – Loss of consciousness for over 24 hours

Signs & Symptoms

Thinking/Remembering	Difficulty thinking clearly	Feeling slowed down	Difficulty concentrating	Difficulty remember new information
Physical	Headache Fuzzy or blurry vision	Nausea or vomiting (early on) Dizziness	Sensitivity to noise or light Balance problems	Feeling tired, having no energy
Emotional/Mood	Irritability	Sadness	More emotional	Nervousness or anxiety
Sleep	Sleeping more than usual	Sleeping less than usual	Trouble falling asleep	Difficulty maintaining deep sleep

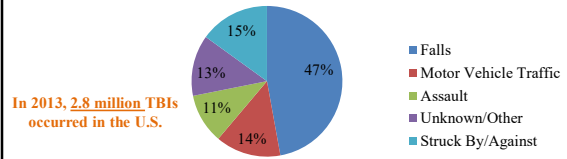
“Mild” TBI: Complications

>75% of TBIs are mild. MTBI symptoms may appear mild, but can lead to significant, life-long impairment affecting an individual’s ability to function physically, cognitively, and psychologically

- Symptoms may be subtle
 - 90% of concussions are **not associated with a loss of consciousness**
 - Concussive symptoms may develop over days or even months later
- Treated in non-hospital setting, not in ED, or not treated at all
 - 90% of mTBI may go **unreported**
 - Often not visible on CT scan or MRI
- Brain Injury can **mirror** other disabilities
- Individuals with a history of concussion are at an **increased risk** of sustaining a subsequent concussion

TBI Statistics

- Children **0 to 4 years**, older adolescents aged **15 to 19** years, and adults **65 years+** are most at risk
- Males are almost **twice** as likely to sustain a TBI as females
- **Falls** are the leading cause of TBIs in the United States (globally, motor vehicle accidents are #1)



Colorado Data

Over 500,000 adults in Colorado have sustained a brain injury

- Colorado ranks **9th** in the nation of fatalities and **13th** in the nation of hospitalizations due to a TBI
- Almost **5,000** individuals are hospitalized and nearly **1,000** die due to a TBI in Colorado each year
- **23,500** emergency room visits each year are due to a TBI
- Males are **twice as likely** to sustain a TBI in Colorado as females
- The age groups with the highest risk of sustaining a TBI in Colorado are **15-24** and **65+**
- Each year, **2,200** individuals continue to experience disability one year after hospitalization for a TBI

The number of people with TBI who are not seen in an emergency department or who receive no care is unknown.

Traumatic Brain Injury National Data Center

Pressures


Impact of Brain Injury on Communities



A Multitude of Losses

- Functional abilities (physical, cognitive)
- Life roles as worker, spouse, lover, friend, parent, sibling, authority figure, student...
- Responsibilities as bread winner, role model, support to others (emotional, work, home, parenting, etc.), driving
- Social network of friends/family
- Self-esteem
- Intimacy

- ↑ risk for [homelessness](#)
- ↑ risk for [substance abuse](#)
- ↑ risk for [criminal activity](#)
- ↑ risk for [mental health issues](#)



Behavioral Health

[Almost half of adults](#) with TBI who have no pre-injury history of mental health problems [develop mental health problems after the TBI](#)
(Gould, Pinesford, Johnson, & Schenberger, 2011, Psychological Medicine, 41, 2099-2109.)

[1/3 of TBI survivors experience emotional problems](#) between 6 months and a year post injury

Patients who reported:

- Hopelessness 35%
- Suicidal ideation 23%
- Suicide attempts 18%

[85% of survivor families](#) report that emotional or behavioral problems have an impact on their function

Suicidal ideation can be [7x higher](#) in people with TBI than in those without

- [Attempts of suicide post-TBI](#) can be at rates close to 17%
- [Increased suicide risk persists up to 15 years post-injury](#)

Finkel et al. 2014. JAMA Psychiatry. 71(10): 1026-33.; Mackelprang et al. 2014. Am J Public Health. 104(7), e100; Simpson & Tate, 2007. Brain Inj. 21(13): 1431-1435.

Homelessness



In a study of over 2,000 individuals experiencing homelessness, 43% of respondents reported a history of TBI with the mean age of first injury being 15. Individuals with TBI become homeless at a younger age and are [more likely to report mental health diagnoses, substance use, suicidality, victimization, and difficulties with activities of daily living](#). The majority of participants (51%) reported sustaining their first injury prior to becoming homeless or at the same age as their first homelessness episode. (Mackelprang, Harpin, Grubenhoff, & Rivara, 2014).

Out of 111 men, nearly half (45%) of the respondents had a positive screening result for traumatic brain injury. Of these, 73% reported experiencing their first injury before adulthood, and 87% reported a first injury before the onset of homelessness. Among those with a positive screening result, 66% reported sustaining at least one traumatic brain injury by assault. A positive screening result was significantly associated with a [lifetime history of arrest or mental illness and a parental history of substance abuse](#). (Topolovec-Vranic et al 2014)

Intimate Partner Violence

- [Violence is one of the leading causes of brain injury in the United States](#)
- The CDC estimates that at least 150,000 brain injury deaths, hospitalizations, and ED visits are related to assault annually.
- Of women reporting to emergency rooms for injuries associated with domestic violence:
 - > 30% reported a loss of consciousness at least once
 - > 67% reported residual problems that were likely brain injury related – (Corrigan, 2003)
- Another study polled 99 battered women:
 - > 75% reported sustaining at least 1 partner-related brain injury
 - > 50% sustained multiple (Valera, 2003)

Youth

- TBI is a **leading cause of death and disability** among children ages 1 to 19 years in the United States (Faul, Xu, Wald, & Coronado, 2010).
- Each year, approximately **40%** of TBIs in the United States occur in the pediatric population (ages 0–19 years)
- Research indicates that youth in foster care are at a greater risk for trauma exposure, with approximately **50% to 66% experiencing at least one lifetime trauma** such as abuse, neglect, exposure to domestic violence, or physical assault (Finkelhor, Turner, Ormrod, & Hamby, 2009).
- Physical abuse is reported by **48.4% of foster care youth and 64% of foster care youth** who experience complex trauma, or those with exposure to chronic, interpersonal traumatic experiences at the hands of a caregiver (Greeson et al., 2012).
- **Assault** is the leading cause of brain injuries in children ages 0–4.
- Children under the age of one, followed by 1 to 4 year olds, are the **most likely to be treated in an emergency department for a TBI**; 15 to 19 year olds have the third highest rate.



Aging and Brain Injury

- Adults ages **75 and older** have the highest rates of TBI-related hospitalizations and death.
- They also **recover more slowly and die more often** from their injuries than do younger people.
- One out of three adults age 65 and older fall each year, **but less than half talk to their healthcare providers** about it.
- Research has linked **moderate & severe TBI to a greater risk of developing Alzheimer's** disease or another type of dementia years after the original head injury

Substance Use/Abuse

Why would TBI be association with substance abuse disorders?

1. Intoxication causes TBI
2. Early life TBI predispose to substance abuse
3. Structural damage from TBI changes behavioral control



Justice-Involved Individuals



- According to jail and prison studies, **65% of inmates report having experienced a head injury or TBI** as compared to **8.5%** in a general population reporting a history of TBI.
- Prisoners who have had head injuries may also experience **mental health problems** such as severe depression and anxiety, substance use disorders, difficulty controlling anger, or suicidal thoughts and/or attempts (CO study indicates **87%** with co-occurring behavioral health problems
- **60%** of individuals reported being a victim of childhood violence compared to **10%** General population (Safe Horizons, 2014).
- Among male prisoners, a history of TBI is strongly associated with **perpetration of domestic and other kinds of violence.**

TBI Incidence

General population = **8.5%**

Williams, Mewse, Tonks, Mills, Burgess, and Cordan (2010) found the incidence of TBI in correctional settings to be **65%**.

Denver Juvenile Probation= **22%** (39 of 179)
This is right in line with the rates research suggests.

Across Colorado criminal justice settings = **52%** (1703 of 3275). With **73%** positive for gross cognitive impairment.

Severity of injury

Studies	Mild	Moderate / Severe
Population (CDC, 2003)	74%	26%
County Jail (Slaughter, Fann, & Ehde, 2003)	58%	29%
Denver County Jail	48%	52%

Strategies

Brain Injury 102


Strategies & Accommodations



Problem Solving

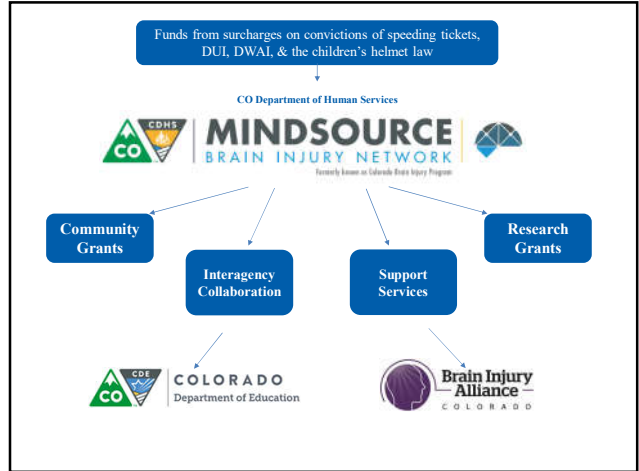

Resources, Services and Supports






MINDSOURCE Brain Injury Network

- Lead State Agency on Brain Injury
- Technical Assistance and Training
- Initiatives to Improve Outcomes for Special Populations
- Administration of the TBI Trust Fund



CO Department of Education Initiatives

- Two Brain Injury Consultants
- BrainSTEPS
- Concussion Management Teams



Created and implemented by the Colorado Department of Education (Health & Wellness and Exceptional Student Services Units)

with funding from the MINDSOURCE Brain Injury Network within the Colorado Department of Human Services

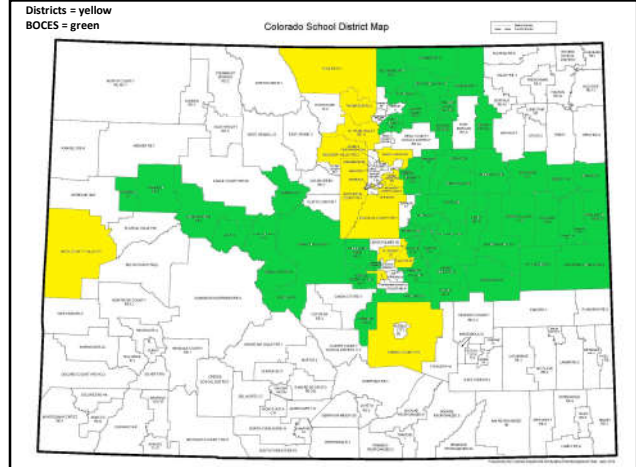
What is BrainSTEPS CO?

STEPS Means:
Strategies
Teaching
Educators
Parents &
Students

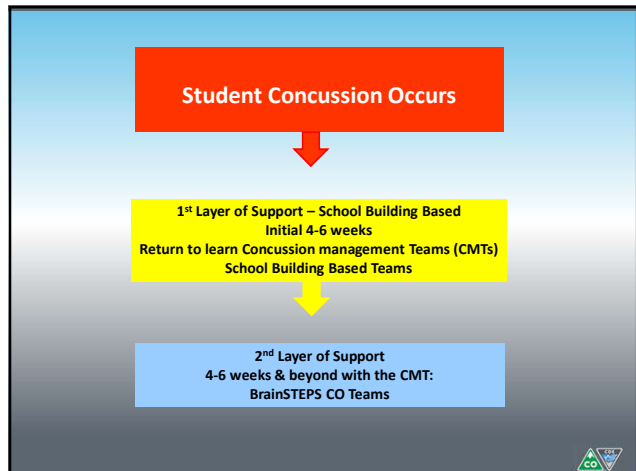


District/BOCES Level Inter-disciplinary Consultation Teams

Brain Injury = traumatic and non-traumatic injuries that occur after the birth process



Concussion Management Teams



Addressing all Brain Injury Severities

CMTs:

- are school-building based
- manage student concussions for the initial 4-6 weeks
- return to learn focus
- refer those students who have not recovered on to the BrainSTEPS CO team

BrainSTEPS CO teams:

- are district or BOCES based
- provide training and consultation to all district staff, students, families on all severities of acquired brain injuries

Ongoing training to accommodate staff turnover and outreach to bring on new teams

Criminal Justice System

- Improving awareness through screening
- Striving to reduce recidivism

THE DENVER POST
PUBLISHED: April 13, 2018



84 percent of surveyed inmates in Colorado had serious brain injuries. This program aims to keep them from returning to crime.

Brain Injury Alliance of Colorado

The go-to resource for help and services for survivors of an injury to the brain, their families, and providers.

BIAC is a statewide **nonprofit** dedicated to helping all persons with a brain injury thrive in their community

- Core service is **case management** for all ages – this is free, with no income or insurance eligibility criteria
- In person **training** and **consultation** to community providers
- Brain injury specific **conferences & workshops**
- Online and printed **educational materials** for survivors, family, & professionals
- Statewide brain injury **professional networking** groups
- Adaptive **recreation programs, music & art therapy classes**
- Emergency utility assistance through Energy Outreach Colorado
- Online **resource directory** specific to brain injury providers
- Statewide **support groups**
- Member of United States Brain Injury Alliance

Classes & Workshops

These activities are **free**, however **space is limited** and **registration is required**. Clients in our case management program have priority access.

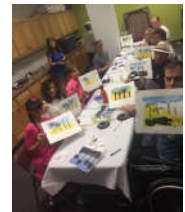
Workshops

Financial Health
Brain Injury Basics
Mindfulness



Classes

Art Therapy
Music Therapy
Adaptive Yoga
Cooking
Balance (fall prevention)



Recreation & Social Programs

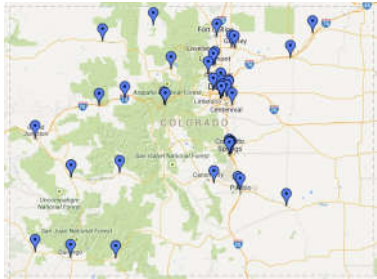
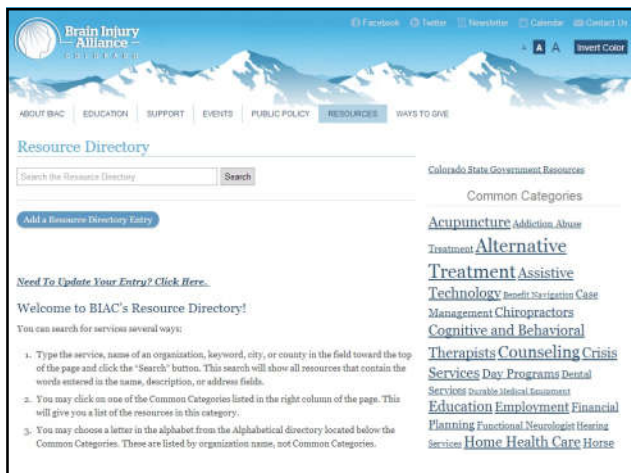
Our camps are an opportunity to **build friendships**; **gain confidence**, **accomplish physical feats** you did not think possible, **earn field work credits** and **have more fun** than you thought imaginable!
Partial scholarship funding awarded based on needs and availability of funds.

<p><u>Multi Day Opportunities:</u> Winter Sports: March/April Summer Camps: June through August Canoe Trip: September Creative Activities September</p>	<p><u>Day Programs:</u> Obstacle Course – April Rock Climbing – May Paddle Sports – July Zip Line – October</p>	<p><u>Social Events:</u> Movies Film festival Theater productions</p>
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Support Groups

Over 65 support groups across Colorado, plus more online. Download a full list from: BIAColorado.org






The screenshot shows the website's navigation menu (ABOUT BIA, EDUCATION, SUPPORT, EVENTS, PUBLIC POLICY, RESOURCES, WAYS TO GIVE) and the Resource Directory search interface. It includes a search bar, a list of common categories like Acupuncture, Alternative Treatment, and Assistive Technology, and instructions on how to use the search function.


Education for Professionals

What is a brain injury?
[Brain Injury, Facts & Figures](#)

Would you like to request a training?
[Fill out this form](#) and BIA's staff member will be in touch with you shortly!

Watch a brief animated video to learn more about brain injuries in Colorado:



For more information, visit BIAColorado.org

Educational Materials

- [Best Practices in Concussion Management](#) – An online tool developed by concussion experts in Colorado
- [CoS4oW@BrainInjury](#) – A website for parents, educators, and professionals who serve kids with brain injuries
- [BIAF](#) – Reduce/Remove, Education, Adjust/Accommodate, Pace – Community Based



Looking Ahead

- **Improve** identification of brain injury within systems
- **Linkage** of individuals with brain injury to specialized services and supports
- **Educate** service providers on successful approaches – strategies and accommodations
- **Increase** statewide surcharge collection to assure those with brain injury have access to services and supports

**Thank you!
Questions?**

Contact:
Liz@biacolorado.org
Judy.dettmer@state.co.us

Please see our website for more information:

BIAColorado.org