Understanding Concussion and Brain Injury

Jennifer Rayman, Ed.S., CRC, CBIS
Brain Injury Specialist

Brain Links

Brain Links is supported by the Administration for Community Living (ACL) of the U.S. Department of Health and Human Services under Grant No. 90TBSG0051-01-00 and in part by the TN Department of Health, Traumatic Brain Injury Program.

Brain Links

Who we are

Statewide team of brain injury specialists

What we do

We equip professionals to better serve people with TBI with current research-based training and tools.

- Family-friendly educational materials
- Resources for return to school and work settings
- Toolkits for healthcare providers, school nurses, families and service professionals
- Tennessee Brighter Futures Collaborative

Tennessee Brighter Futures

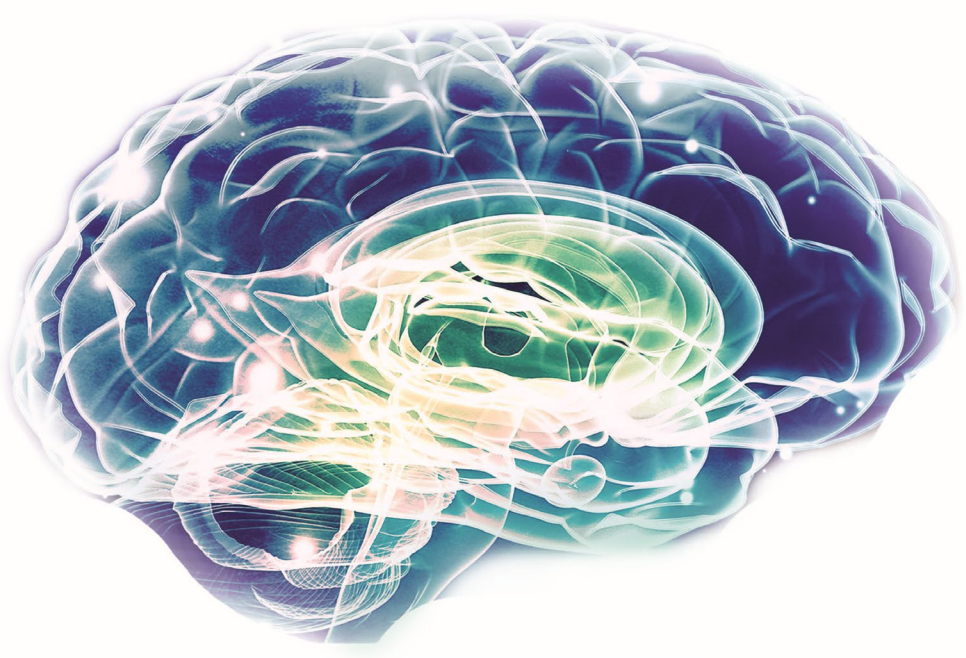
Building brighter futures for Tennesseans by improving how systems of support collaborate to identify, educate and serve people with co-occurring needs.

https://www.tndisability.org/tennessee-brighter-futures

Agenda

- Overview of Traumatic Brain Injury (TBI) & Concussion
- TBI and Mental Health
- TBI and Substance Use Disorder
- TBI and Other Co-Occurring Disorders
- Tools and ways to help

What is TBI?



A Traumatic Brain Injury is caused by a bump, blow or jolt to the head or body, or a penetrating head injury that disrupts the normal function of the brain.

A Brain Injury can be ACQUIRED in other ways: brain tumor, stroke, infection, surgery and drug overdose

TBI Can Happen in Many Ways

In Tennessee, the three leading causes of TBI are **falls, motor vehicle crashes and homicide or violent injuries.**

- Struck by an object
- Motor Vehicle – also think boat, ATV, motorized scooter & pedestrians
- Whiplash from a collision
- Being pushed or shaken
- Assault
- Strangulation

Can also Include:

- Repeatedly “smacking” someone in the head
- Throwing someone against a wall
- Punching them in the face
- Being physically bullied
- Falling off a bed as a young child (also think of someone with physical disability or older person)

If you suspect abuse: Tennessee Department of Children Services 24-hour hotline: 1-877-237-0004
National Domestic Violence Hotline: 1-800-799-SAFE (7233) | The HOTLINE: https://www.thehotline.org/

Tennessee

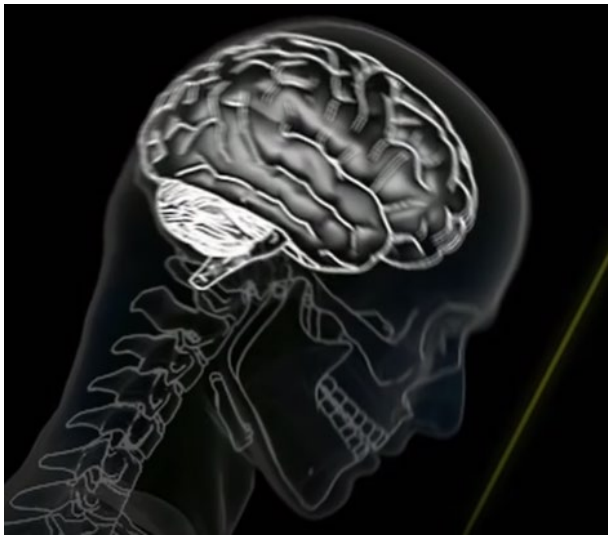
68

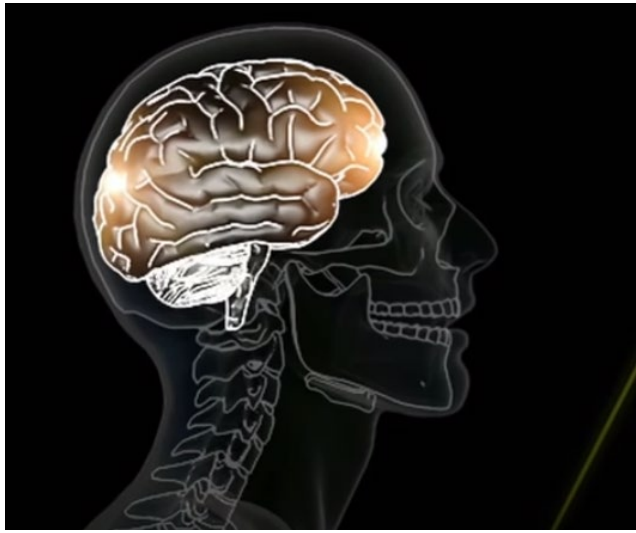
Tennesseans experience a traumatic brain injury EACH DAY

25,000 Tennesseans EACH YEAR

Nationally, 2.8 Million new TBIs each year

Concussion is a Type of TBI



- Functional Injury vs. Structural Injury
- Chemical Cascade
- CT Findings

CDC “What is a concussion?” https://www.youtube.com/watch?v=Sno_0Jd8GuA

Common Symptoms following Concussion

Cognitive/Communication

- Feeling dazed or in fog
- Word finding problems
- Slowed information processing

Emotional/Behavioral

- Irritability
- Quick to anger
- Decreased motivation
- Cries easily

Physical

- Headaches
- Changes in vision
- Sleep disturbance
- Fatigue
- Balance/Dizziness
- Sensitivity to light/sounds

Common Problems after TBI

Physical

Balance, incoordination, vision, difficulty walking, movement disorders

Cognitive, Speech and Language

Slurring, forgetting words, slow to respond, difficulty understanding, "over" talking/rambling, under responding, problem with attention, decreased reasoning

→ **Executive functioning: impulsivity, initiation, planning, organization, judgment, self-monitoring, flexibility**

Behavior

Impulsive, aggressive, angry, rude, belligerent, loud, don't know boundaries, overly emotional

Common Symptoms Following Concussion for the Younger Child

Same as Older Child or Adult, but also

- Appetite Changes
- **Behavioral Dysregulation**
- **Decreased Engagement**
- Disrupted Sleep
- Continence Issues
- Increased Dependence
- Stomachaches

Suskauer et al, 2018

Are you missing Pain Indicators?

Signs of Pain:

- Excessive crying
- Anxious or agitated
- Increased muscle tightness
- Facial changes (tense or stressed)
- A lot of physical movement
- Changes in breathing

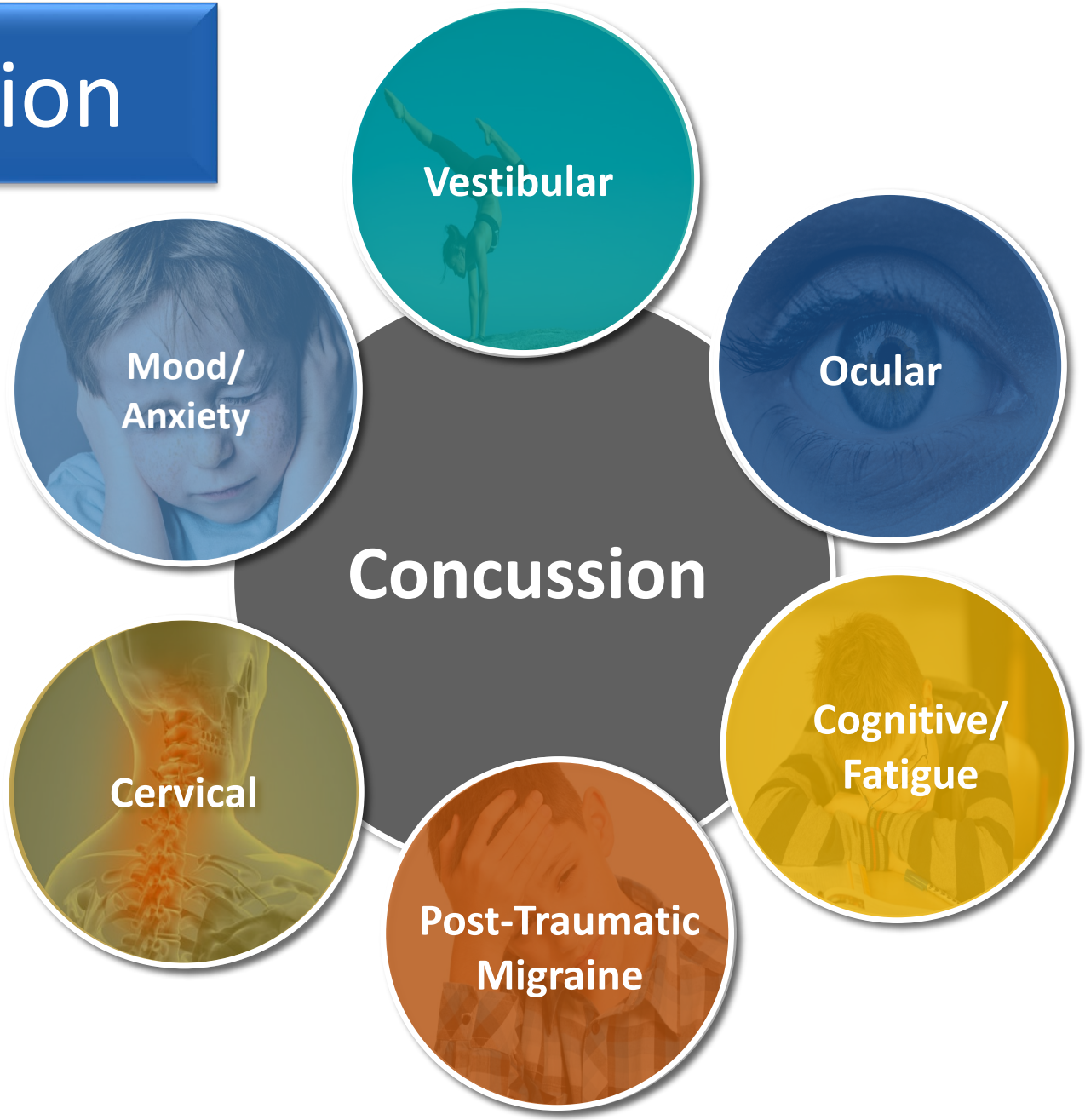
Also may be relevant for someone who communicates without words

Danger Signs

Emergency

- One pupil larger than the other.
- **Drowsiness or inability to wake up.**
- A headache that gets worse and does not go away.
- **Slurred speech**, weakness, numbness, or decreased coordination.
- Repeated vomiting or nausea; **seizures**.
- Unusual behavior, increased confusion, restlessness, or agitation.
- Loss of consciousness.

6 Types of Concussion



Collins MW, Kontos A, et al, KSST, 2014

Targeted & Active Treatments

- Medication
- Exercise
- CBT
- Psychotherapy

Mood/ Anxiety

Vestibular

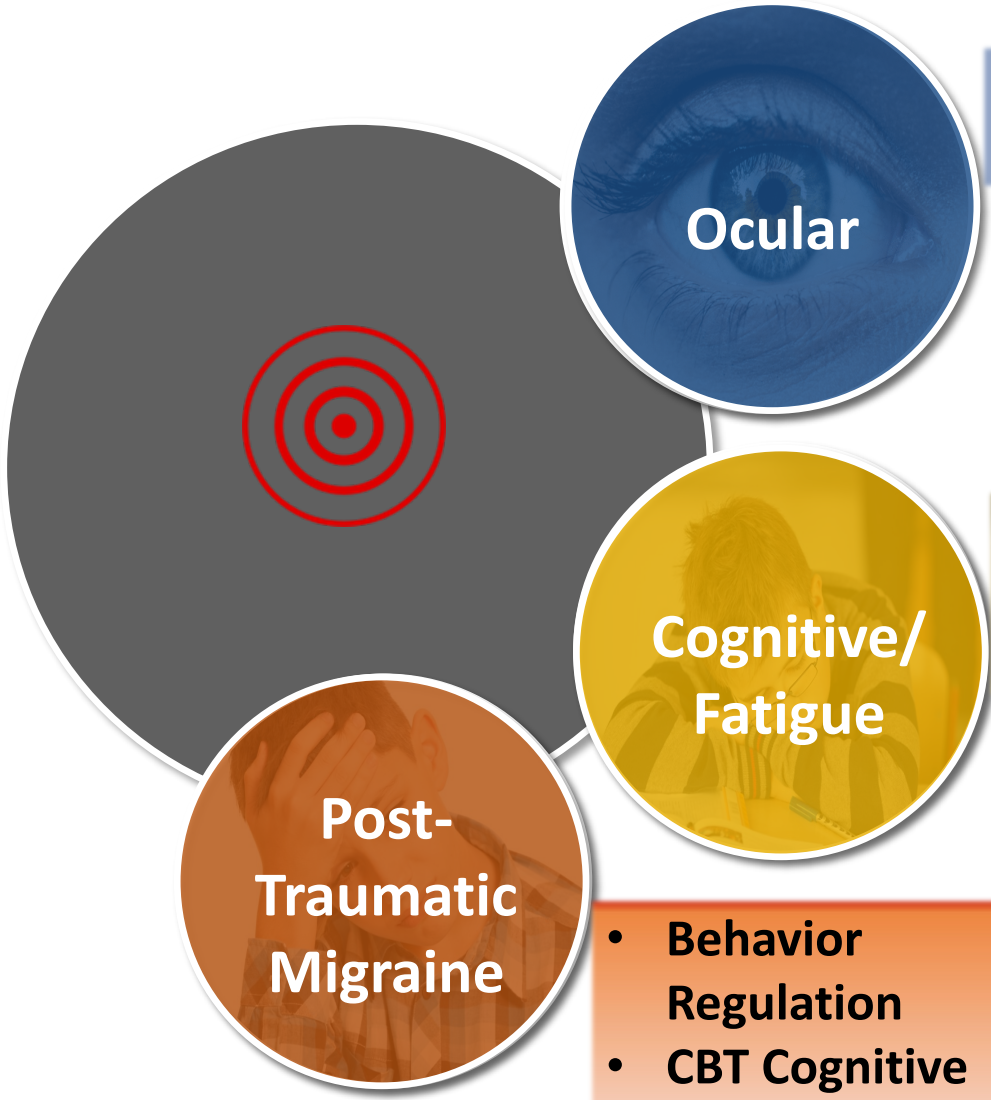
- Vestibular Rehabilitation
- Exercise

- Manual Therapy
- Exercise
- Injection
- Acupuncture
- Biofeedback
- Medication
- Surgery

Cervical

Courtesy of UPMC Sports Medicine Concussion Program

Targeted & Active Treatments



- Vision Therapy/
- Orthoptics

- Structured Rest
- Exercise
- Medication

- Behavior Regulation
- CBT Cognitive Behavioral Therapy

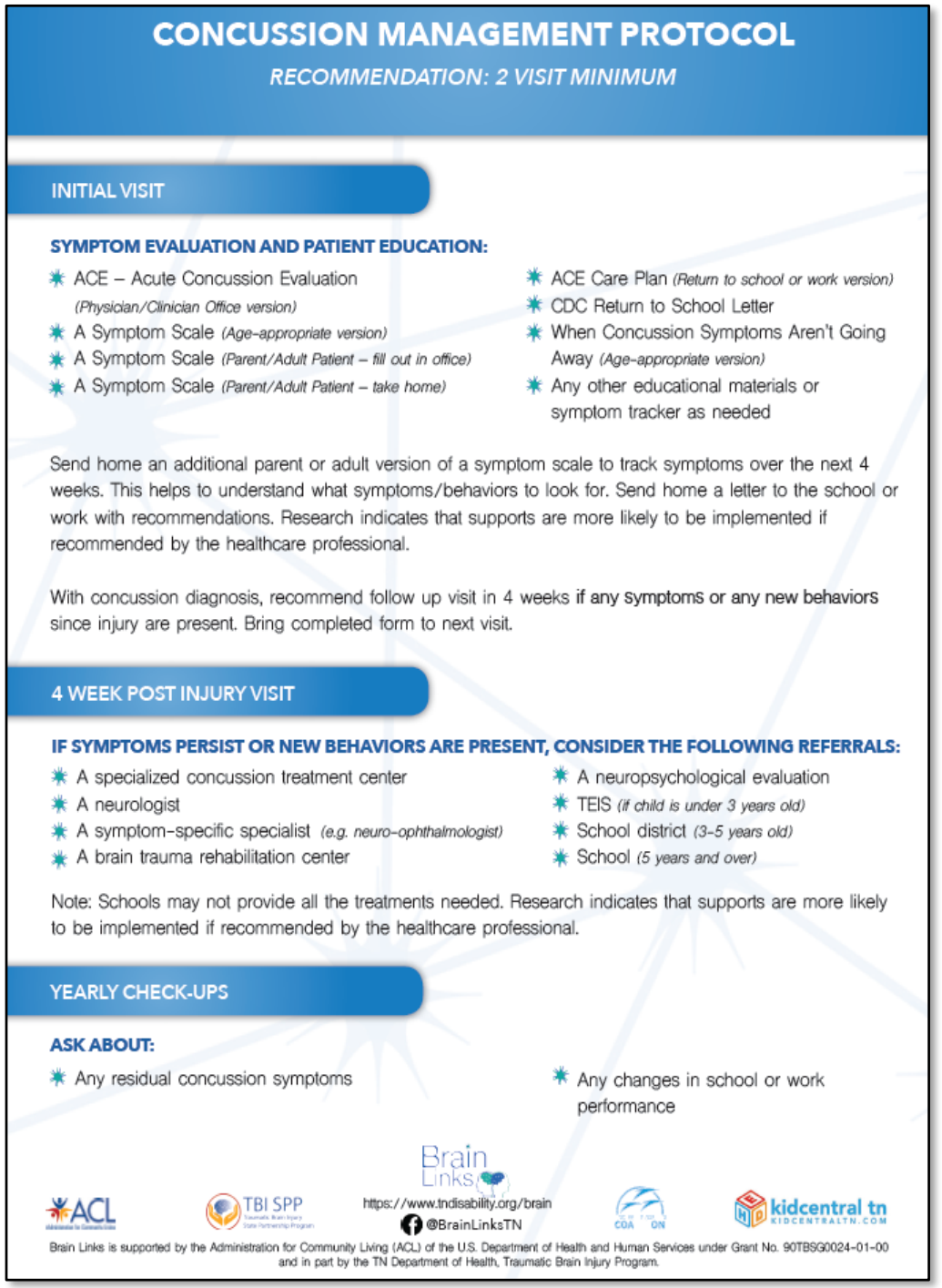
- Education/Trigger Modification
- Exercise
- Medication

Courtesy of UPMC Sports Medicine Concussion Program

Concussion Protocol

Asking Healthcare Providers to

- Think of Concussion as a 2-visit diagnosis
  - 1st visit: Symptoms Evaluation and Patient Education. Give parent/patient a symptom list to take home and observe.
  - **If symptoms exist/persist**
    - ➢ Return in 4 weeks
    - ➢ Referral for treatment
- Check in at yearly check-ups specifically about the concussion



CONCUSSION MANAGEMENT PROTOCOL

RECOMMENDATION: 2 VISIT MINIMUM

INITIAL VISIT

SYMPTOM EVALUATION AND PATIENT EDUCATION:

- ACE – Acute Concussion Evaluation *(Physician/Clinician Office version)*
- A Symptom Scale *(Age-appropriate version)*
- A Symptom Scale *(Parent/Adult Patient – fill out in office)*
- A Symptom Scale *(Parent/Adult Patient – take home)*
- ACE Care Plan *(Return to school or work version)*
- CDC Return to School Letter
- When Concussion Symptoms Aren't Going Away *(Age-appropriate version)*
- Any other educational materials or symptom tracker as needed

Send home an additional parent or adult version of a symptom scale to track symptoms over the next 4 weeks. This helps to understand what symptoms/behaviors to look for. Send home a letter to the school or work with recommendations. Research indicates that supports are more likely to be implemented if recommended by the healthcare professional.

With concussion diagnosis, recommend follow up visit in 4 weeks **if any symptoms or any new behaviors** since injury are present. Bring completed form to next visit.

4 WEEK POST INJURY VISIT

IF SYMPTOMS PERSIST OR NEW BEHAVIORS ARE PRESENT, CONSIDER THE FOLLOWING REFERRALS:

- A specialized concussion treatment center
- A neurologist
- A symptom-specific specialist *(e.g. neuro-ophthalmologist)*
- A brain trauma rehabilitation center
- A neuropsychological evaluation
- TEIS *(if child is under 3 years old)*
- School district *(3-5 years old)*
- School *(5 years and over)*

Note: Schools may not provide all the treatments needed. Research indicates that supports are more likely to be implemented if recommended by the healthcare professional.

YEARLY CHECK-UPS

ASK ABOUT:

- Any residual concussion symptoms
- Any changes in school or work performance

Brain Links

ACL TBI SPP https://www.tndisability.org/brain @BrainLinksTN COA ON kidcentral tn KIDCENTRALTN.COM

Brain Links is supported by the Administration for Community Living (ACL) of the U.S. Department of Health and Human Services under Grant No. 90TBSG0024-01-00 and in part by the TN Department of Health, Traumatic Brain Injury Program.

Anoxic Brain Injury

Anoxic Brain Injury

In 2015, the Media Research Center reported that drug overdoses had surpassed motor vehicle accident fatalities nationwide for the first time.

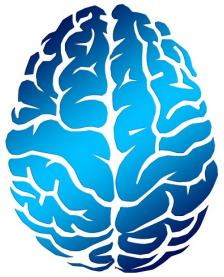
BIAA, 2020
Will Dane, Dianna Fahel, and Tiffany Epley

Opioid Overdose

1. People who have had an opioid overdose **may** now be living with a brain injury.
2. Brain injury caused by opioid overdose can make treatment and recovery difficult for some people.
3. If a person has had one or more opioid overdoses, they should visit their doctor to be **checked for brain injury**.

https://www.nhproviders.org/brain-injury-and-opioid-overdose

TOXIC Brain Injury



"The opioid epidemic has led to the creation of a new term: **Toxic Brain Injury**." This type of brain injury occurs from prolonged substance misuse and nonfatal overdose.

The amount of time the brain is without adequate oxygen dictates the severity of injury.

BIAA, 2020

Will Dane, Dianna Fahel, and Tiffany Epley

Oxygen and Brain Injury

Anoxia refers to the **complete lack of oxygen** delivery to an organ.

Hypoxia applies when an organ **experiences oxygen delivery which is insufficient** to meet the metabolic needs of the tissue – so *not enough* oxygen.

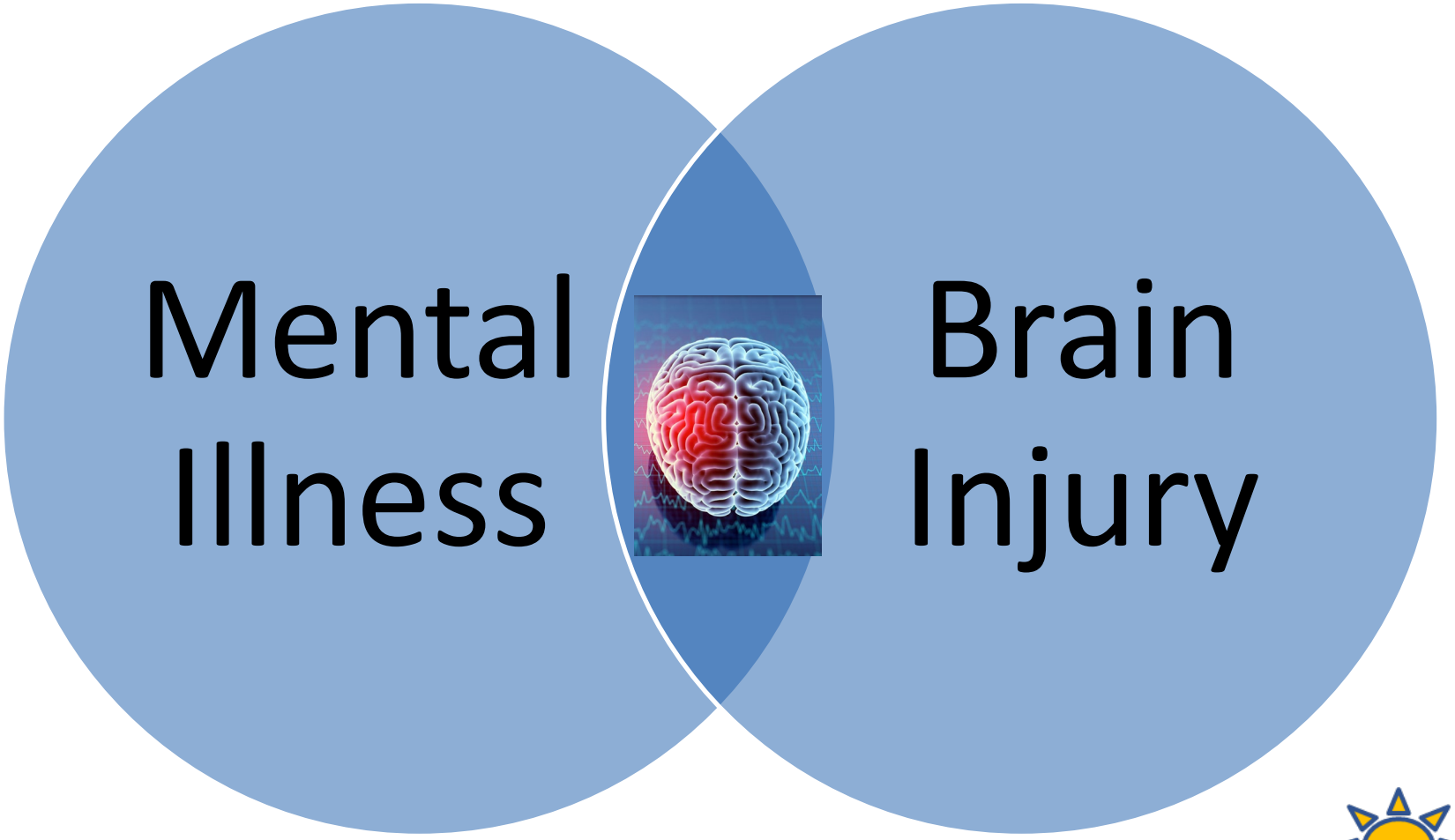
https://www.ncbi.nlm.nih.gov/books/NBK537310/

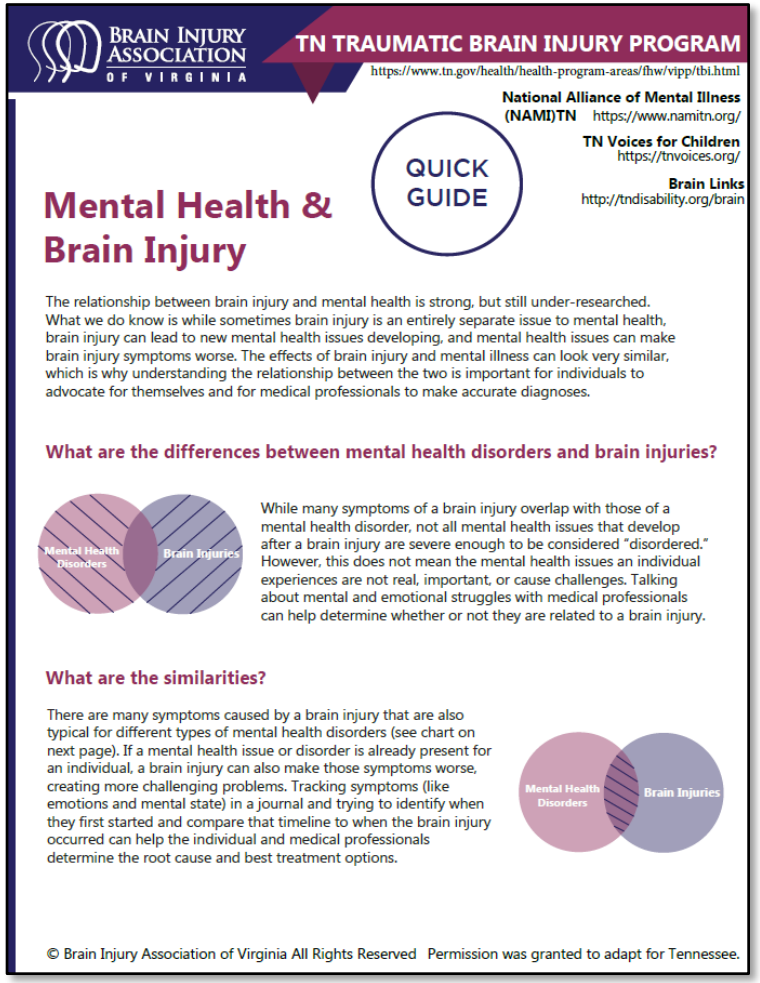
"Cellular injury can begin within minutes, and permanent brain injury will follow if prompt intervention does not occur."

BIAA, 2020
Will Dane, Dianna Fahel, and Tiffany Epley

Brain Injury & Mental Health

A complex relationship





BRAIN INJURY ASSOCIATION OF VIRGINIA

TN TRAUMATIC BRAIN INJURY PROGRAM
https://www.tn.gov/health/health-program-areas/fhw/vipp/tbi.html

National Alliance of Mental Illness (NAMI)TN https://www.namitn.org/

TN Voices for Children https://tnvoices.org/

Brain Links http://tndisability.org/brain

QUICK GUIDE

Mental Health & Brain Injury

The relationship between brain injury and mental health is strong, but still under-researched. What we do know is while sometimes brain injury is an entirely separate issue to mental health, brain injury can lead to new mental health issues developing, and mental health issues can make brain injury symptoms worse. The effects of brain injury and mental illness can look very similar, which is why understanding the relationship between the two is important for individuals to advocate for themselves and for medical professionals to make accurate diagnoses.

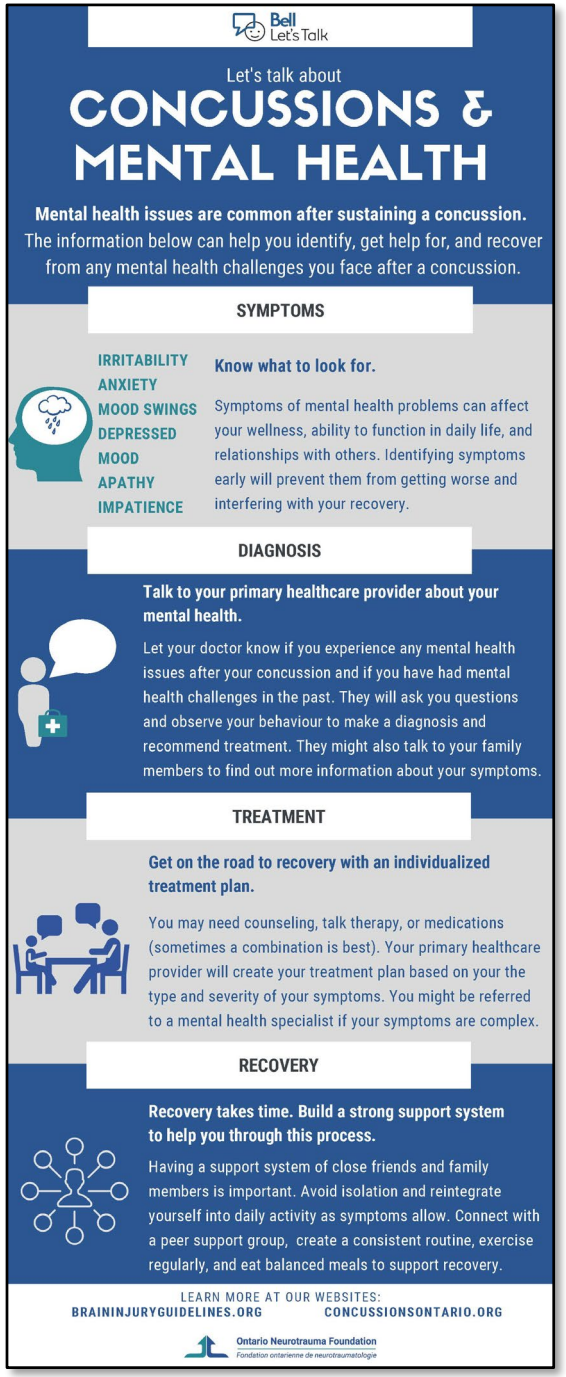
What are the differences between mental health disorders and brain injuries?

While many symptoms of a brain injury overlap with those of a mental health disorder, not all mental health issues that develop after a brain injury are severe enough to be considered "disordered." However, this does not mean the mental health issues an individual experiences are not real, important, or cause challenges. Talking about mental and emotional struggles with medical professionals can help determine whether or not they are related to a brain injury.

What are the similarities?

There are many symptoms caused by a brain injury that are also typical for different types of mental health disorders (see chart on next page). If a mental health issue or disorder is already present for an individual, a brain injury can also make those symptoms worse, creating more challenging problems. Tracking symptoms (like emotions and mental state) in a journal and trying to identify when they first started and compare that timeline to when the brain injury occurred can help the individual and medical professionals determine the root cause and best treatment options.

Brain Injury Association of Virginia



Concussions and Mental Health

- ✓ Know what symptoms to look for
- ✓ Talk with your doctor about your mental health
- ✓ Individualized treatment plan
- ✓ Strong support system

ConcussionsOntario.org

Important to Understand TBI

History of TBI is often hidden among people with

- **Substance Use**
- Spinal cord injury
- **Mental health challenges**
- Homelessness
- **History of incarceration**
- Aggression/behavioral issues
- **Domestic violence (perpetrators AND victims)**
- Cognitive/intellectual disabilities

Youth ages 15-19 with TBI

Higher levels of

- Use of alcohol and/or drugs
- Anxiety
- Depression
- Attention deficit and hyperactivity disorder
- Attempted suicide

Need for Ongoing Monitoring/Treatment

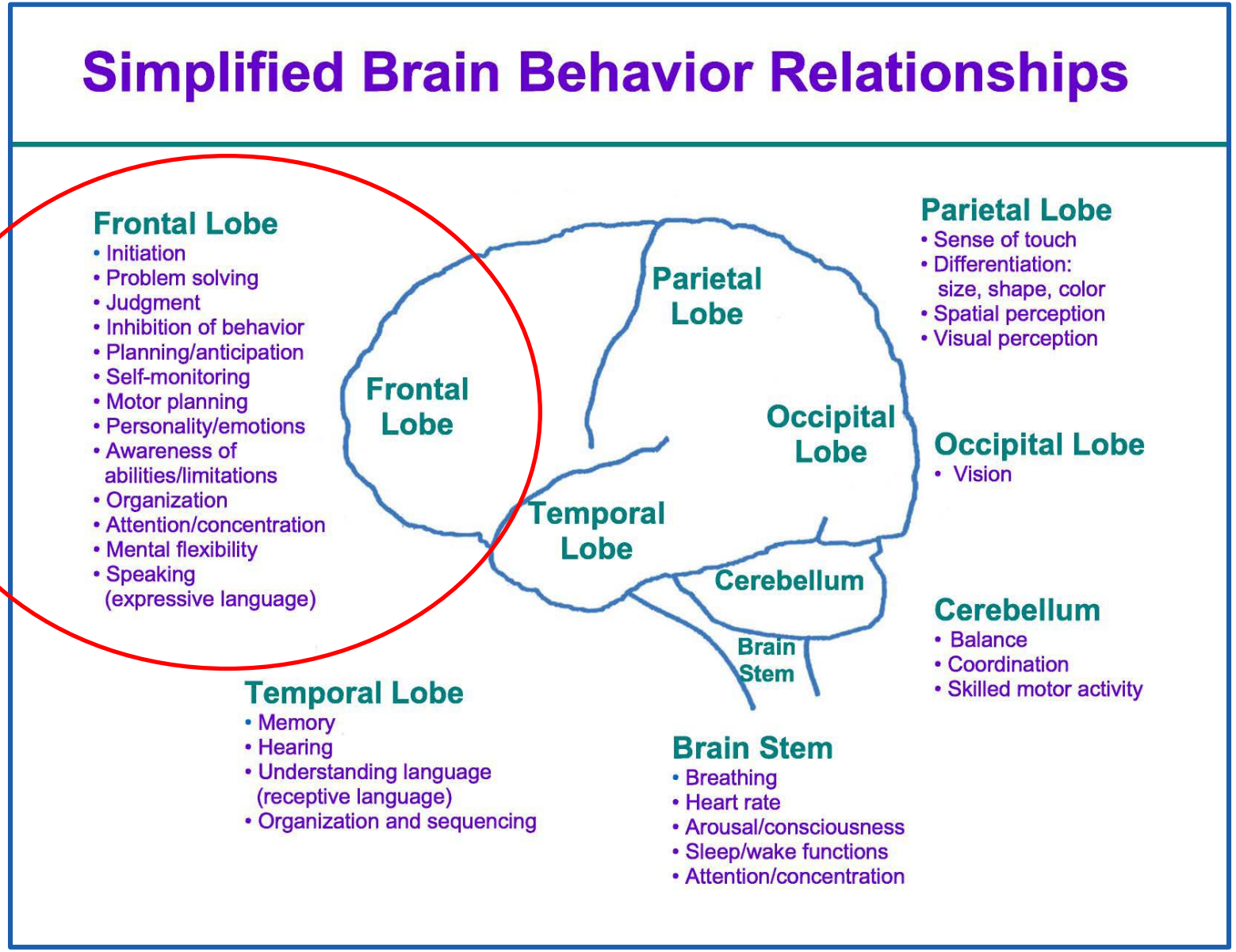
All ages: More likely to

- Have another injury
- Become obese
- Be incarcerated
- Use substances
- Become depressed
- Be socially isolated

Frontal Lobe

"Breaking mechanism"

- Self-control
- Judgement
- Self-monitoring
- Inhibition of Behavior



Possible Psychosocial changes with TBI

1. Social cues
2. Overly stimulating environments, **low frustration tolerance**
3. Mood swings or emotional lability
4. Self-esteem
5. Lack of awareness of deficits
6. **Emotional adjustment to injury (anxiety, depression, anger, withdrawal, egocentricity, or dependence)**

Possible Psychosocial Changes with TBI

7. Behavior not age-appropriate
8. **Impaired self-control (verbal or physical aggression, impulsivity)**
9. Restlessness, limited motivation and initiation
10. **Intensification of pre-existing maladaptive behaviors or disabilities**

    (something they already had is now worse)

Behavior Following TBI

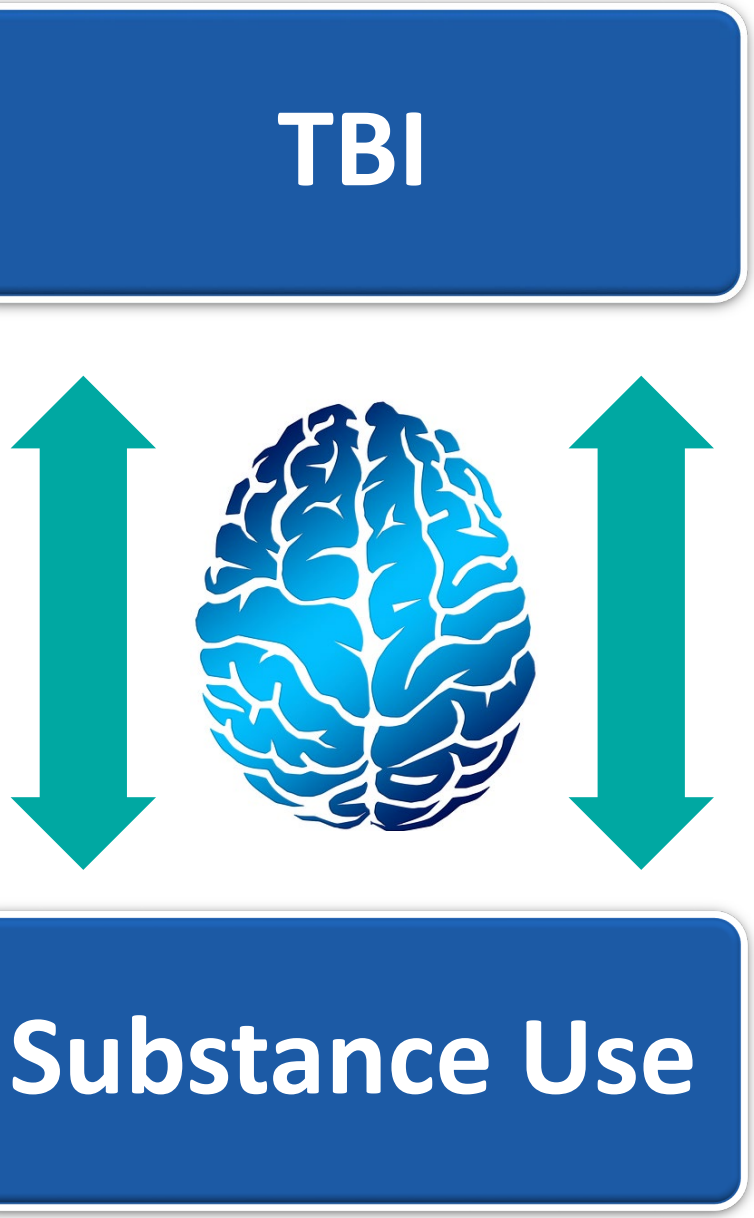
- Verbal outbursts
- Physical outbursts
- Poor judgment and disinhibition
- **Impulsive behavior**
- Negativity
- Intolerance
- **Apathy**
- Egocentricity
- **Rigidity and inflexibility**
- **Risky behavior**
- Lack of empathy
- Lack of motivation or initiative
- **Depression or anxiety**

Brain Injury & Substance Use

Another Complex Relationship

25% of people entering brain injury rehabilitation are there as a result of drugs or alcohol.

Approximately half of people receiving substance abuse treatment have at least one brain injury.



Nashia.org Brain Injury and Opioid Overdose Fast Facts

Opioid Overdose and Brain Injury

Brain Injury is called the **Silent Epidemic**

Opioid Overdose is the **Second Silent Epidemic**

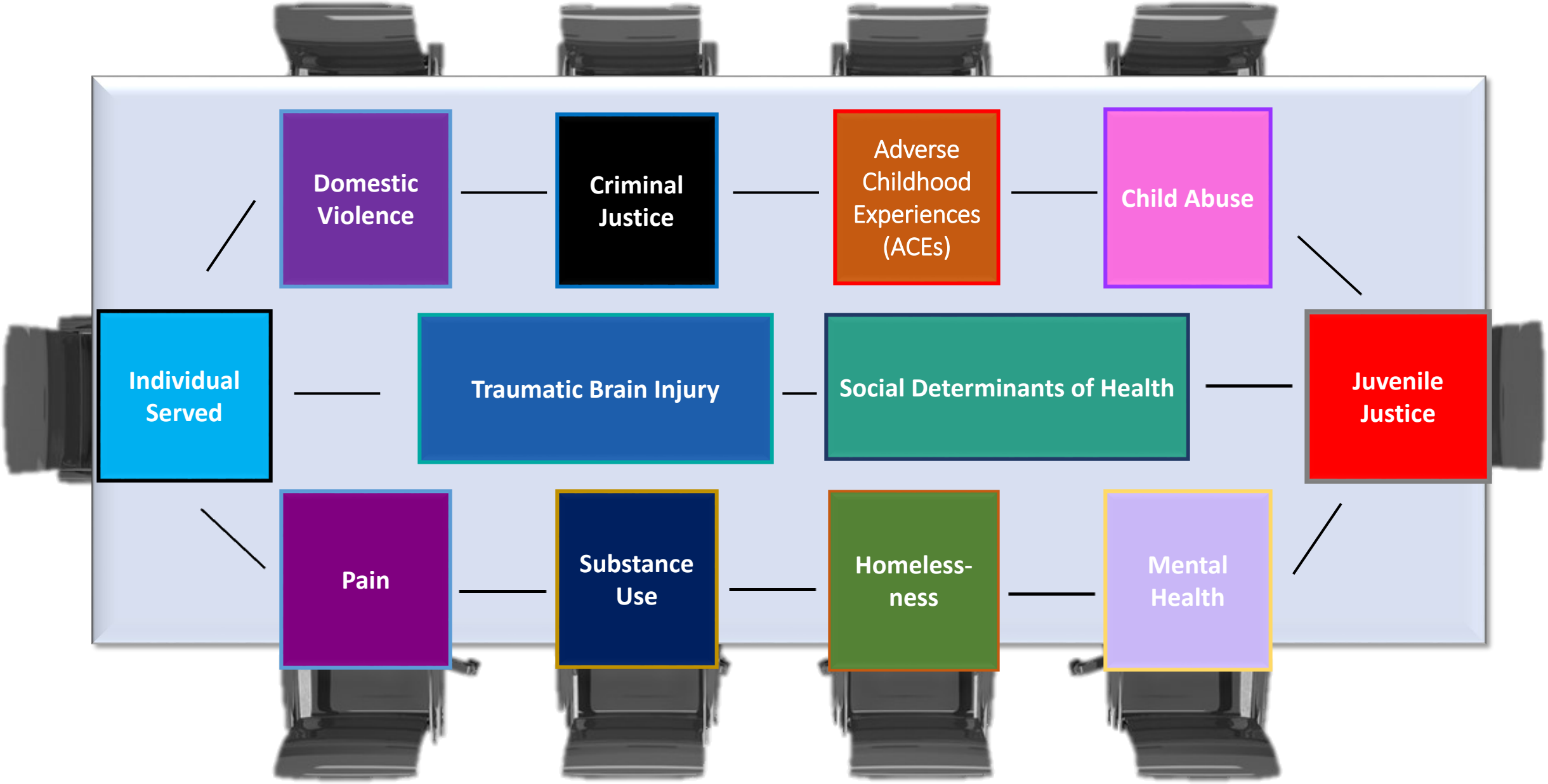
- **For <u>every overdose death</u>, there are approximately <u>fifty overdose survivors</u>,**
- **<u>90% of whom become impaired</u> because of insufficient oxygen to the brain.**

Substance Use

People with TBI:

- 70-80% discharged from health care facilities with a Rx for opioids
- Greater risk of opioid misuse and death due to overdose
- 10-20% develop a substance use problem 8-12 months after injury

CDC


Domestic Violence
Criminal Justice
Adverse Childhood Experiences (ACEs)
Child Abuse
Individual Served
Traumatic Brain Injury
Social Determinants of Health
Juvenile Justice
Pain
Substance Use
Homeless-ness
Mental Health

Justice System

- Within 5 years post injury, nearly 1/3 report some involvement with criminal justice system

(Farrer & Hedges, 2011)

- **Of those in the Juvenile Justice System, 41% have had a TBI.**
- **In the adult Justice System, 50-80% have had a TBI.**

Downstream Consequences of TBI

Nathan

Age: 10 months

- Falls down a flight of steps
- Crying, no loss of consciousness
- Seen at hospital, “no concussion”
- No recommendations
- Bruising around his right eye for weeks

Age: 24 years

- Is currently in prison
- Uses drugs and alcohol (“tried everything”)
- Can’t/won’t hold a job
- Very smart but struggled in school
- Few friends
- Borderline personality disorder

Often, the parent or guardian may say, “He won’t get help.”

At the Individual Level

Brain Health

- Eat well
- Get 7-8 hours sleep
- Exercise regularly
- Maintain a healthy weight
- Don’t drink or do illicit drugs
- Keep learning
- Be social
- And much more…

- Get early treatment for Brain Injuries
- Screening for Brain Injuries*
- Ongoing monitoring throughout life
- Re-engage in treatment as needed

Brain Health

How to Have a Healthy Brain Throughout Life

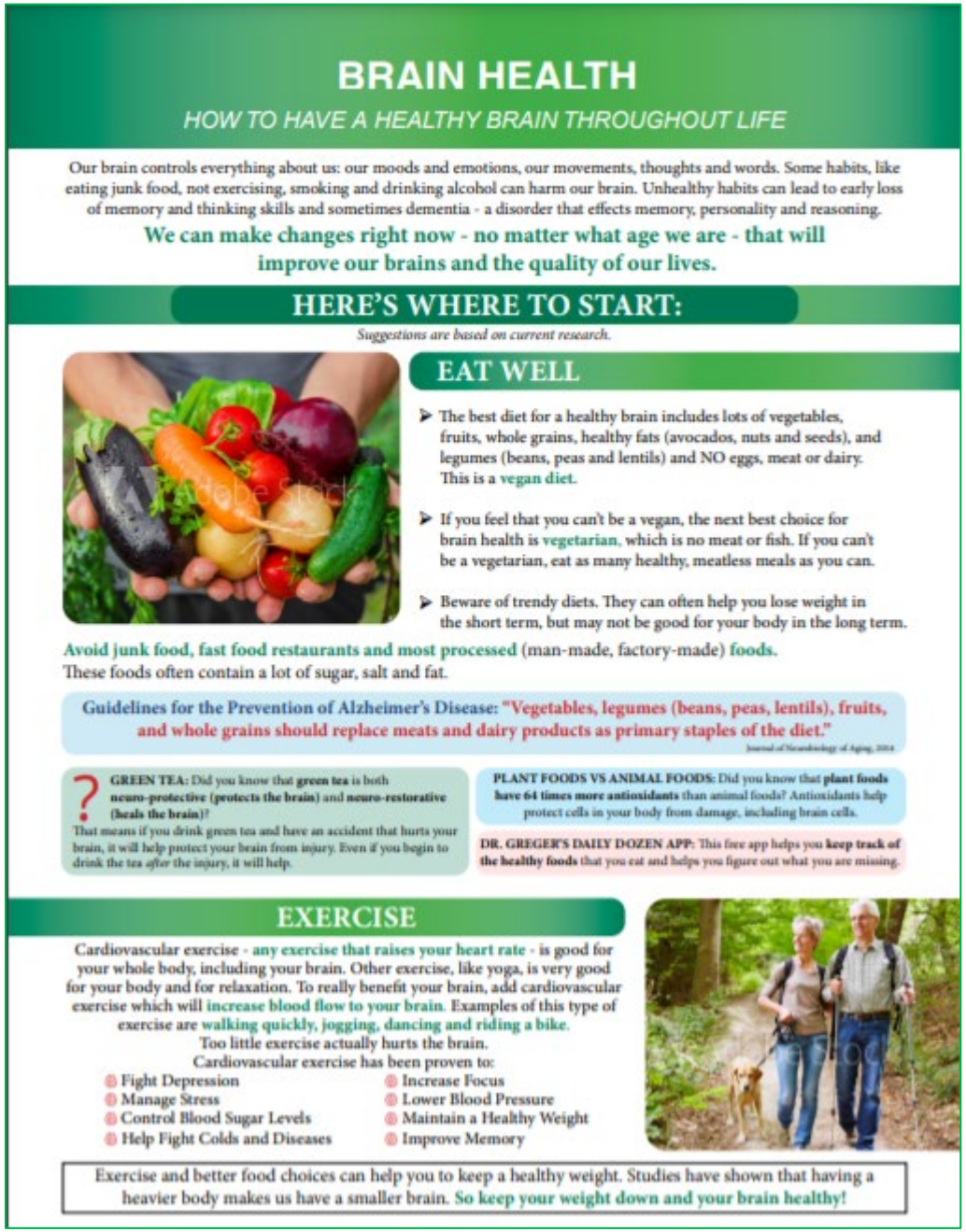
Evidence-based information on

- Eating Well
- Exercise
- Being Social
- Learning
- Mental Health
- Gratitude
- Resilience
- Purpose and Joy
- Brain Injury Prevention
- Avoiding Toxicity
- Sleep

❖ How to Make Change

❖ Free Resources

tndisability.org/brain-health



BRAIN HEALTH

HOW TO HAVE A HEALTHY BRAIN THROUGHOUT LIFE

Our brain controls everything about us: our moods and emotions, our movements, thoughts and words. Some habits, like eating junk food, not exercising, smoking and drinking alcohol can harm our brain. Unhealthy habits can lead to early loss of memory and thinking skills and sometimes dementia - a disorder that effects memory, personality and reasoning.

We can make changes right now - no matter what age we are - that will improve our brains and the quality of our lives.

HERE'S WHERE TO START:

Suggestions are based on current research.

EAT WELL

- The best diet for a healthy brain includes lots of vegetables, fruits, whole grains, healthy fats (avocados, nuts and seeds), and legumes (beans, peas and lentils) and NO eggs, meat or dairy. This is a vegan diet.
- If you feel that you can't be a vegan, the next best choice for brain health is vegetarian, which is no meat or fish. If you can't be a vegetarian, eat as many healthy, meatless meals as you can.
- Beware of trendy diets. They can often help you lose weight in the short term, but may not be good for your body in the long term.

Avoid junk food, fast food restaurants and most processed (man-made, factory-made) **foods.** These foods often contain a lot of sugar, salt and fat.

Guidelines for the Prevention of Alzheimer's Disease: "Vegetables, legumes (beans, peas, lentils), fruits, and whole grains should replace meats and dairy products as primary staples of the diet."

GREEN TEA: Did you know that **green tea** is both **neuro-protective (protects the brain)** and **neuro-restorative (heals the brain)**? That means if you drink green tea and have an accident that hurts your brain, it will help protect your brain from injury. Even if you begin to drink the tea *after* the injury, it will help.

PLANT FOODS VS ANIMAL FOODS: Did you know that **plant foods have 64 times more antioxidants** than animal foods? Antioxidants help protect cells in your body from damage, including brain cells.

DR. GREGER'S DAILY DOZEN APP: This free app helps you **keep track of the healthy foods** that you eat and helps you figure out what you are missing.

EXERCISE

Cardiovascular exercise - any exercise that raises your heart rate - is good for your whole body, including your brain. Other exercise, like yoga, is very good for your body and for relaxation. To really benefit your brain, add cardiovascular exercise which will increase blood flow to your brain. Examples of this type of exercise are walking quickly, jogging, dancing and riding a bike.

Too little exercise actually hurts the brain.

Cardiovascular exercise has been proven to:

- Fight Depression
- Manage Stress
- Control Blood Sugar Levels
- Help Fight Colds and Diseases
- Increase Focus
- Lower Blood Pressure
- Maintain a Healthy Weight
- Improve Memory

Exercise and better food choices can help you to keep a healthy weight. Studies have shown that having a heavier body makes us have a smaller brain. So keep your weight down and your brain healthy!

Tools and Ways to Help

Implications for Service Professionals

People with TBI will have a harder time using services and maintaining change if they do not receive the needed

ACCOMMODATIONS:

- Write things down/encourage them to take notes
- Set up alarms for appointments
- Repeat information, summarize, use visual aids
- Ask them to paraphrase
- Speak more slowly with pauses for comprehension
- Support efforts to be organized – notebooks, calendars, lists
- Education about brain injury, brain injury resources
- Judgement and impulsivity may be issues – help to plan ahead, anticipate triggers, think about consequences

HELPS Screening Tool

- ❑ **H**ead injury
- ❑ **E**mergency room
- ❑ **L**ose Consciousness
- ❑ **P**roblems in daily living
- ❑ **S**icknesses

HELPS Brain Injury Screening Tool

Consumer Information: _____

_____

_____

Agency/Screener's Information: _____

_____

H Have you ever **H**it your **H**ead or been **H**it on the **H**ead? ☐ Yes ☐ No

Note: Prompt client to think about all incidents that may have occurred at any age, even those that did not seem serious: vehicle accidents, falls, assault, abuse, sports, etc. Screen for domestic violence and child abuse, and also for service related injuries. A TBI can also occur from violent shaking of the head, such as being shaken as a baby or child.

E Were you ever seen in the **E**mergency room, hospital, or by a doctor because of an injury to your head? ☐ Yes ☐ No

Note: Many people are seen for treatment. However, there are those who cannot afford treatment, or who do not think they require medical attention.

L Did you ever **L**ose consciousness or experience a period of being dazed and confused because of an injury to your head? ☐ Yes ☐ No

Note: People with TBI may not lose consciousness but experience an "alteration of consciousness." This may include feeling dazed, confused, or disoriented at the time of the injury, or being unable to remember the events surrounding the injury.

P Do you experience any of these **P**roblems in your daily life since you hit your head? ☐ Yes ☐ No

Note: Ask your client if s/he experiences any of the following problems, and ask when the problem presented. You are looking for a combination of two or more problems that were not present prior to the injury.

- ☐ headaches
- ☐ dizziness
- ☐ anxiety
- ☐ depression
- ☐ difficulty concentrating
- ☐ difficulty remembering
- ☐ difficulty reading, writing, calculating
- ☐ poor problem solving
- ☐ difficulty performing your job/school work
- ☐ change in relationships with others
- ☐ poor judgment (being fired from job, arrests, fights)

S Any significant **S**icknesses? ☐ Yes ☐ No

Note: Traumatic brain injury implies a physical blow to the head, but acquired brain injury may also be caused by medical conditions, such as: brain tumor, meningitis, West Nile virus, stroke, seizures. Also screen for instances of oxygen deprivation such as following a heart attack, carbon monoxide poisoning, near drowning, or near suffocation.

Scoring the HELPS Screening Tool

A HELPS screening is considered positive for a *possible* TBI when the following 3 items are identified:

1.) An event that could have caused a brain injury (yes to H, E **or** S), **and**
2.) A period of loss of consciousness or altered consciousness after the injury or another indication that the injury was severe (yes to L or E), **and**
3.) The presence of two or more chronic problems listed under P that were not present before the injury.

Note:

- A positive screening is **not sufficient to diagnose TBI** as the reason for current symptoms and difficulties - other possible causes may need to be ruled out
- **Some individuals could present exceptions** to the screening results, such as people who do have TBI-related problems but answered "no" to some questions
- Consider positive responses within the context of the person's self-report and documentation of altered behavioral and/or cognitive functioning

The original HELPS TBI screening tool was developed by M. Picard, D. Scarisbrick, R. Paluck, 9/91, International Center for the Disabled, TBI-NET, U.S. Department of Education, Rehabilitation Services Administration, Grant #H128A00022. The Helps Tool was updated by project personnel to reflect recent recommendations by the CDC on the diagnosis of TBI. See http://www.cdc.gov/ncipc/pub-res/tbi_toolkit/physicians/mtbi/diagnosis.htm.

This document was supported in part by Grant 6 H21 MC 00039-03-01 from the Department of Health and Human Services (DHHS) Health Resources and Services Administration, Maternal and Child Bureau to the Michigan Department of Community Health. The contents are the sole responsibility of the authors and do not necessarily represent the official views of DHHS.

Over Time – What You Can Do

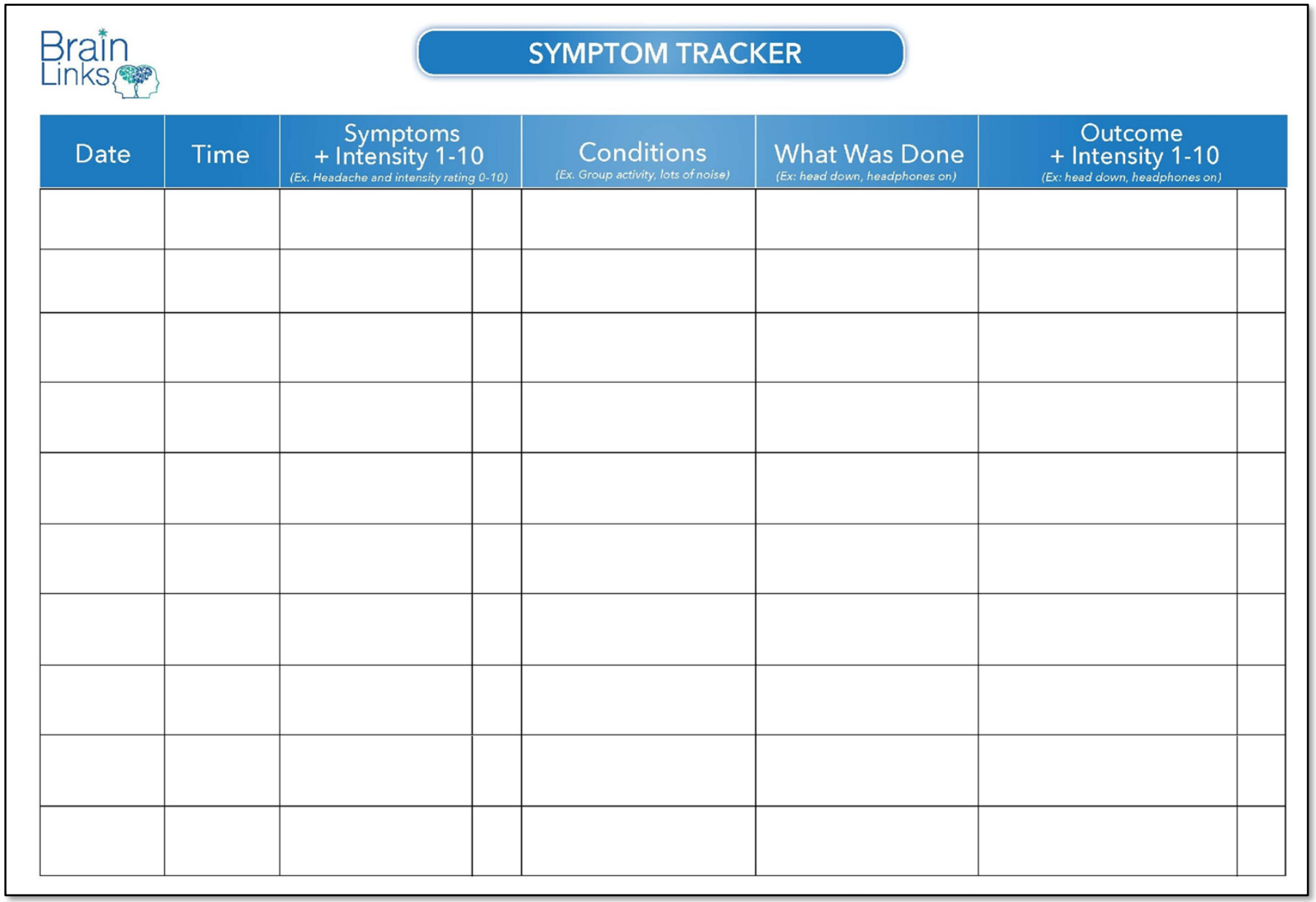
Think "What happened to you, not What is wrong with you?"

- ✓ Watch them socially
- ✓ Watch mood (depression, anxiety, mood swings)
- ✓ Behavior issues
- ✓ Help other people to stay involved
- ✓ Watch them physically-greater chance of another injury
- ✓ Be patient and consistent

If You See *Any* Problems

- Refer back to the doctor
- Remind doctor of the Concussion/TBI
- Tell doctor all changes that you are seeing
- Give doctor the Symptom Tracker
- Don’t hesitate to suggest what referrals you think may be needed

Symptom Tracker tool



Brain Links

SYMPTOM TRACKER

Date	Time	Symptoms + Intensity 1-10 (Ex. Headache and intensity rating 0-10)		Conditions (Ex. Group activity, lots of noise)	What Was Done (Ex: head down, headphones on)	Outcome + Intensity 1-10 (Ex: head down, headphones on)	

- Simple
- Quick
- List symptom
- Occurs during what
- What was done
- Outcomes

Over time, maybe only a few entries, you learn triggers and how to address them.

See more on YouTube

Small Changes to Help in a Big Way

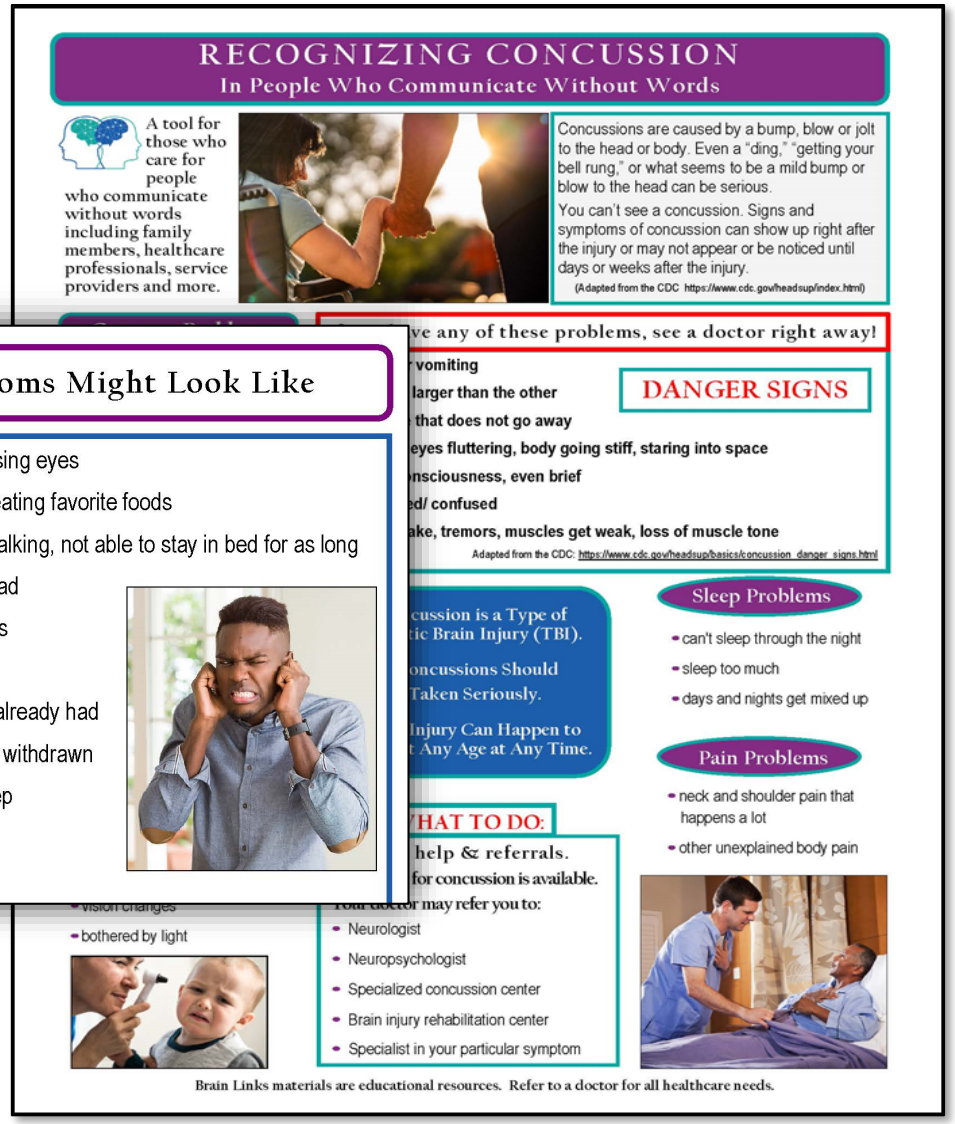
- Brain Health education
- Share the **Tennessee Brighter Futures Resource Pages**

- **Educate** others about Concussion, TBI and the connections to other co-occurring disorders, the need for screening and the tools that will help.
  - **Healthcare Providers about Concussion/TBI**
  - **All Treatment Programs** about TBI
  - **Police & Correctional & Probation Officers** about screening for TBI & other co-occurring disorders

Brain Links

Signs & Symptoms Tools

Spanish Available



RECOGNIZING CONCUSSION
In People Who Communicate Without Words

A tool for those who care for people who communicate without words including family members, healthcare professionals, service providers and more.

Concussions are caused by a bump, blow or jolt to the head or body. Even a "ding," "getting your bell rung," or what seems to be a mild bump or blow to the head can be serious.

You can't see a concussion. Signs and symptoms of concussion can show up right after the injury or may not appear or be noticed until days or weeks after the injury.

(Adapted from the CDC https://www.cdc.gov/headsup/index.html)

ve any of these problems, see a doctor right away!

- vomiting
- larger than the other
- that does not go away
- eyes fluttering, body going stiff, staring into space
- nsciousness, even brief
- d/ confused
- ake, tremors, muscles get weak, loss of muscle tone

DANGER SIGNS

Adapted from the CDC: https://www.cdc.gov/headsup/basics/concussion_danger_signs.html

cussion is a Type of ic Brain Injury (TBI).

oncussions Should Taken Seriously.

Injury Can Happen to t Any Age at Any Time.

Sleep Problems
- can't sleep through the night
- sleep too much
- days and nights get mixed up

Pain Problems
- neck and shoulder pain that happens a lot
- other unexplained body pain

HAT TO DO:

help & referrals.

for concussion is available.

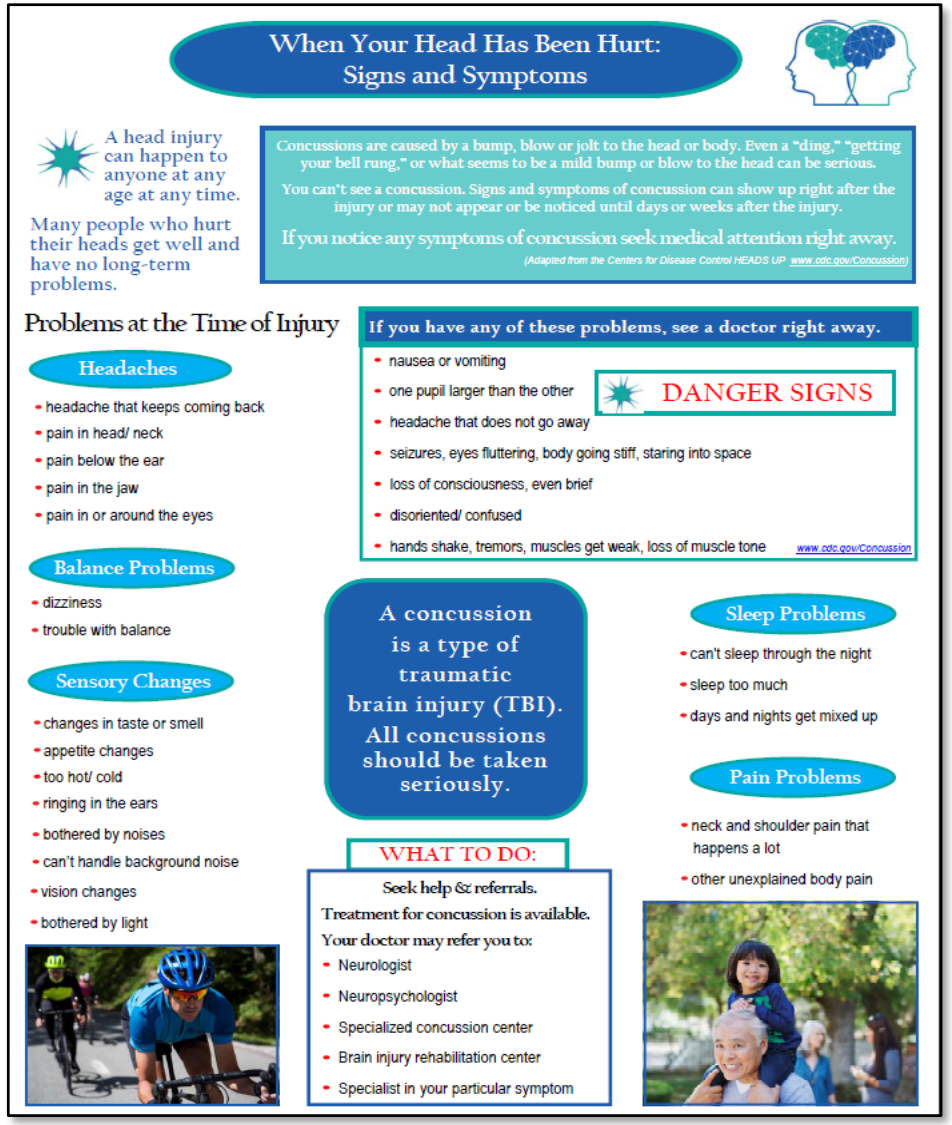
r may refer you to:
- Neurologist
- Neuropsychologist
- Specialized concussion center
- Brain injury rehabilitation center
- Specialist in your particular symptom

- vision changes
- bothered by light

Brain Links materials are educational resources. Refer to a doctor for all healthcare needs.

What Symptoms Might Look Like

- covering, squinting or closing eyes
- changes in appetite, not eating favorite foods
- changes in sleep, night walking, not able to stay in bed for as long
- touching/ holding their head
- bothered by light or noises
- forgetting routines
- changes in any skill they already had
- more clingy/ emotional or withdrawn
- change in appetite or sleep
- more tantrums/ disruptive
- stomach issues



When Your Head Has Been Hurt: Signs and Symptoms

A head injury can happen to anyone at any age at any time.

Many people who hurt their heads get well and have no long-term problems.

Concussions are caused by a bump, blow or jolt to the head or body. Even a "ding," "getting your bell rung," or what seems to be a mild bump or blow to the head can be serious.

You can't see a concussion. Signs and symptoms of concussion can show up right after the injury or may not appear or be noticed until days or weeks after the injury.

If you notice any symptoms of concussion seek medical attention right away.

(Adapted from the Centers for Disease Control HEADS UP www.cdc.gov/Concussion)

Problems at the Time of Injury

Headaches
- headache that keeps coming back
- pain in head/ neck
- pain below the ear
- pain in the jaw
- pain in or around the eyes

Balance Problems
- dizziness
- trouble with balance

Sensory Changes
- changes in taste or smell
- appetite changes
- too hot/ cold
- ringing in the ears
- bothered by noises
- can't handle background noise
- vision changes
- bothered by light

If you have any of these problems, see a doctor right away.
- nausea or vomiting
- one pupil larger than the other
- headache that does not go away
- seizures, eyes fluttering, body going stiff, staring into space
- loss of consciousness, even brief
- disoriented/ confused
- hands shake, tremors, muscles get weak, loss of muscle tone

DANGER SIGNS

www.cdc.gov/Concussion

A concussion is a type of traumatic brain injury (TBI). All concussions should be taken seriously.

WHAT TO DO:

Seek help & referrals.

Treatment for concussion is available.

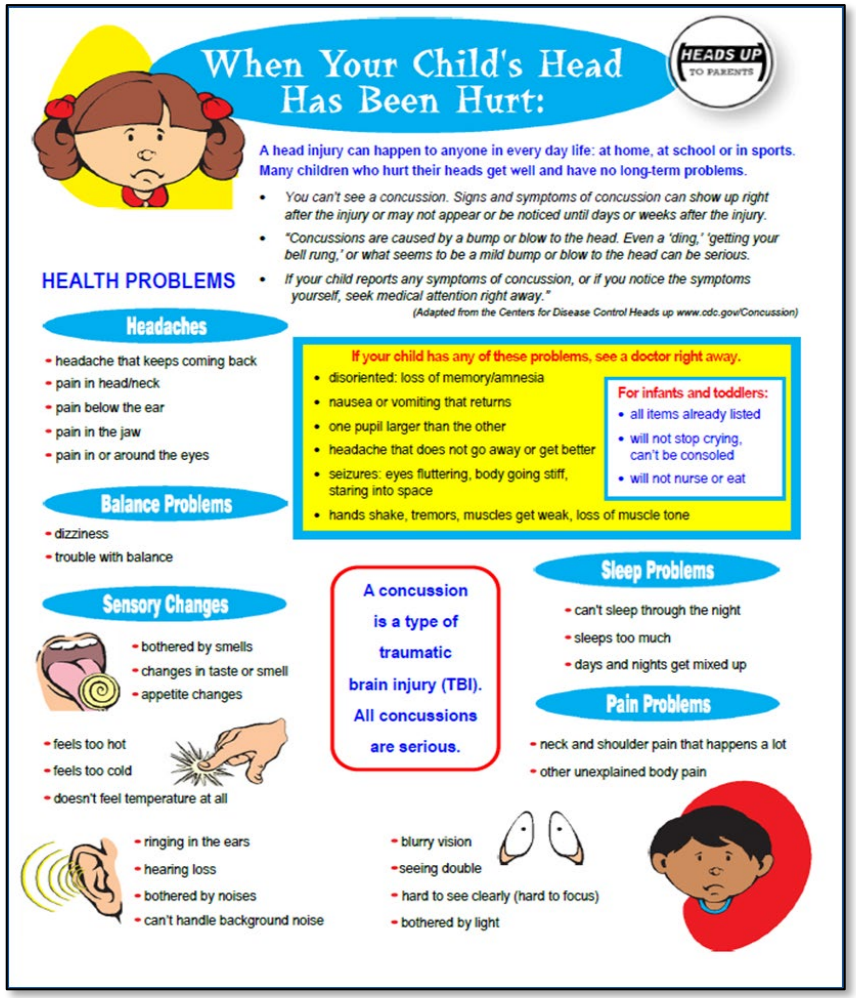
Your doctor may refer you to:
- Neurologist
- Neuropsychologist
- Specialized concussion center
- Brain injury rehabilitation center
- Specialist in your particular symptom

Sleep Problems
- can't sleep through the night
- sleep too much
- days and nights get mixed up

Pain Problems
- neck and shoulder pain that happens a lot
- other unexplained body pain

tndisability.org/brain

Signs & Symptoms Tools



When Your Child's Head Has Been Hurt:

HEADS UP TO PARENTS

A head injury can happen to anyone in every day life: at home, at school or in sports. Many children who hurt their heads get well and have no long-term problems.

- *You can't see a concussion. Signs and symptoms of concussion can show up right after the injury or may not appear or be noticed until days or weeks after the injury.*
- *"Concussions are caused by a bump or blow to the head. Even a 'ding,' 'getting your bell rung,' or what seems to be a mild bump or blow to the head can be serious.*
- *If your child reports any symptoms of concussion, or if you notice the symptoms yourself, seek medical attention right away."*

(Adapted from the Centers for Disease Control Heads up www.cdc.gov/Concussion)

HEALTH PROBLEMS

Headaches
- headache that keeps coming back
- pain in head/neck
- pain below the ear
- pain in the jaw
- pain in or around the eyes

Balance Problems
- dizziness
- trouble with balance

Sensory Changes
- bothered by smells
- changes in taste or smell
- appetite changes
- feels too hot
- feels too cold
- doesn't feel temperature at all
- ringing in the ears
- hearing loss
- bothered by noises
- can't handle background noise
- blurry vision
- seeing double
- hard to see clearly (hard to focus)
- bothered by light

If your child has any of these problems, see a doctor right away.
- disoriented: loss of memory/amnesia
- nausea or vomiting that returns
- one pupil larger than the other
- headache that does not go away or get better
- seizures: eyes fluttering, body going stiff, staring into space
- hands shake, tremors, muscles get weak, loss of muscle tone

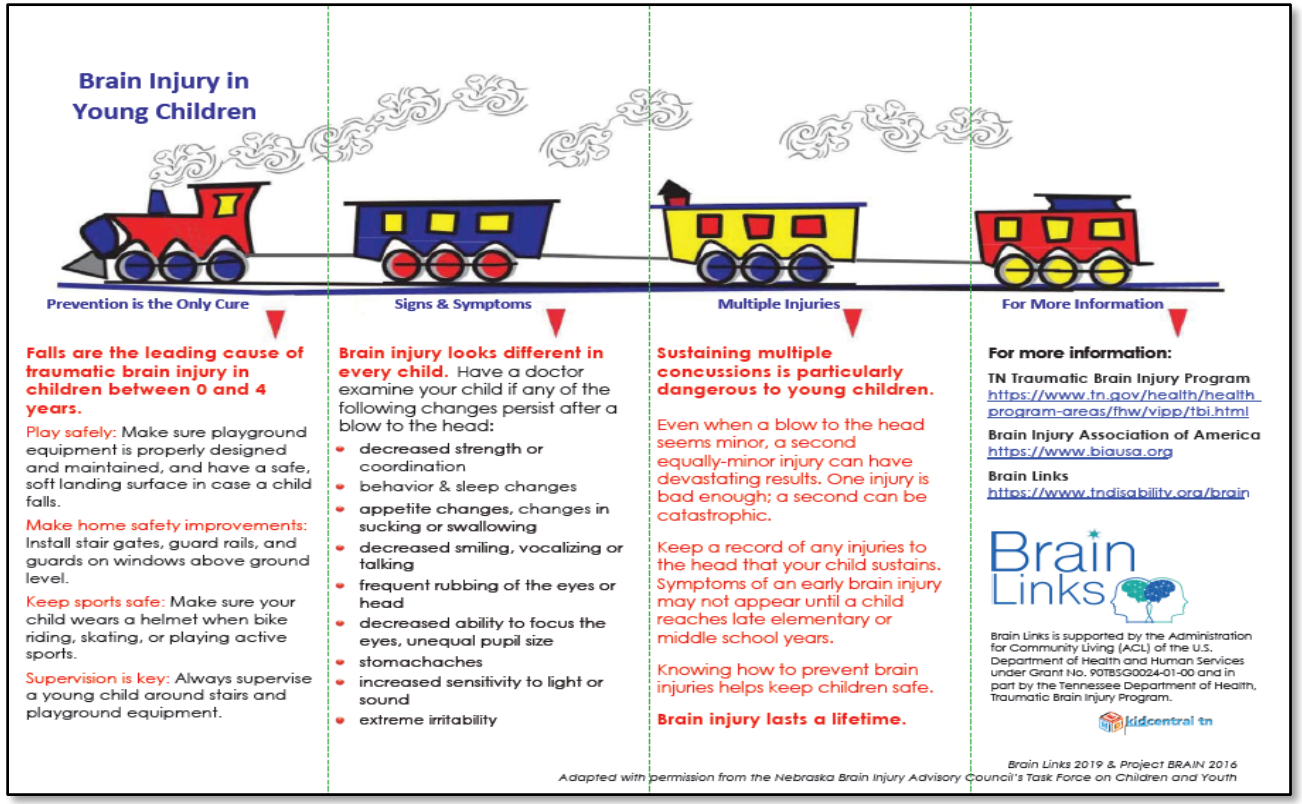
For infants and toddlers:
- all items already listed
- will not stop crying, can't be consoled
- will not nurse or eat

A concussion is a type of traumatic brain injury (TBI). All concussions are serious.

Sleep Problems
- can't sleep through the night
- sleeps too much
- days and nights get mixed up

Pain Problems
- neck and shoulder pain that happens a lot
- other unexplained body pain

Spanish Available



Brain Injury in Young Children

Prevention is the Only Cure

Falls are the leading cause of traumatic brain injury in children between 0 and 4 years.

Play safely: Make sure playground equipment is properly designed and maintained, and have a safe, soft landing surface in case a child falls.

Make home safety improvements: Install stair gates, guard rails, and guards on windows above ground level.

Keep sports safe: Make sure your child wears a helmet when bike riding, skating, or playing active sports.

Supervision is key: Always supervise a young child around stairs and playground equipment.

Signs & Symptoms

Brain injury looks different in every child. Have a doctor examine your child if any of the following changes persist after a blow to the head:
- decreased strength or coordination
- behavior & sleep changes
- appetite changes, changes in sucking or swallowing
- decreased smiling, vocalizing or talking
- frequent rubbing of the eyes or head
- decreased ability to focus the eyes, unequal pupil size
- stomachaches
- increased sensitivity to light or sound
- extreme irritability

Multiple Injuries

Sustaining multiple concussions is particularly dangerous to young children.

Even when a blow to the head seems minor, a second equally-minor injury can have devastating results. One injury is bad enough; a second can be catastrophic.

Keep a record of any injuries to the head that your child sustains. Symptoms of an early brain injury may not appear until a child reaches late elementary or middle school years.

Knowing how to prevent brain injuries helps keep children safe.

Brain injury lasts a lifetime.

For More Information

For more information:

TN Traumatic Brain Injury Program
https://www.tn.gov/health/health_program-areas/fhw/vipp/tbi.html

Brain Injury Association of America
https://www.biausa.org

Brain Links
https://www.tndisability.org/brain

Brain Links

Brain Links is supported by the Administration for Community Living (ACL) of the U.S. Department of Health and Human Services under Grant No. 90TBSG0024-01-00 and in part by the Tennessee Department of Health, Traumatic Brain Injury Program.

kidcentral tn

Adapted with permission from the Nebraska Brain Injury Advisory Council's Task Force on Children and Youth

School-Aged

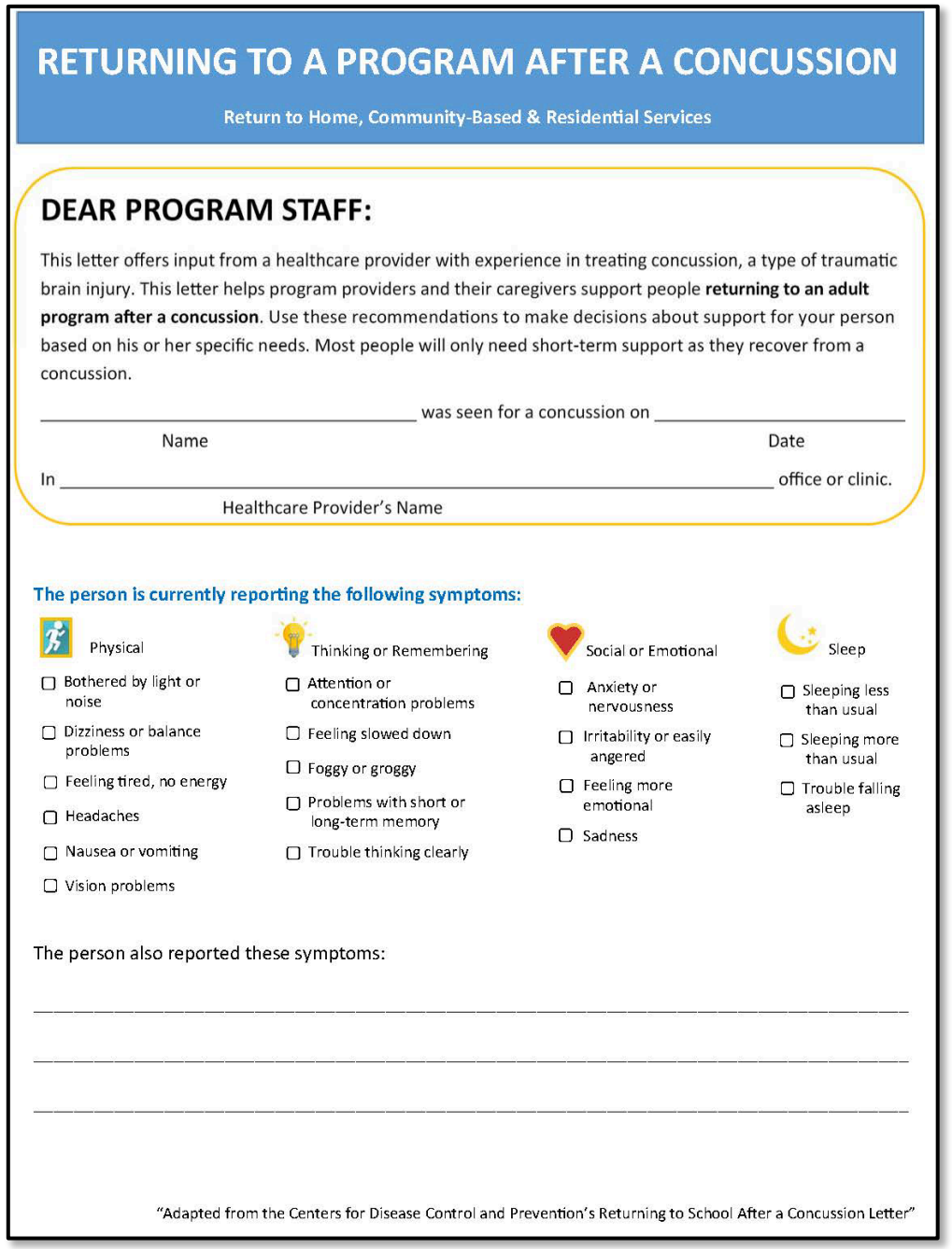
Young Children

tndisability.org/brain

Returning to a Program

- Date & Doctor's name
- Reported symptoms
- Check mark – cleared to return to program activities
- Danger signs
- Recommended short term changes

See more on YouTube



RETURNING TO A PROGRAM AFTER A CONCUSSION

Return to Home, Community-Based & Residential Services

DEAR PROGRAM STAFF:

This letter offers input from a healthcare provider with experience in treating concussion, a type of traumatic brain injury. This letter helps program providers and their caregivers support people **returning to an adult program after a concussion**. Use these recommendations to make decisions about support for your person based on his or her specific needs. Most people will only need short-term support as they recover from a concussion.

_____ was seen for a concussion on _____
Name Date

In _____ office or clinic.
Healthcare Provider's Name

The person is currently reporting the following symptoms:

Physical	Thinking or Remembering	Social or Emotional	Sleep
☐ Bothered by light or noise	☐ Attention or concentration problems	☐ Anxiety or nervousness	☐ Sleeping less than usual
☐ Dizziness or balance problems	☐ Feeling slowed down	☐ Irritability or easily angered	☐ Sleeping more than usual
☐ Feeling tired, no energy	☐ Foggy or groggy	☐ Feeling more emotional	☐ Trouble falling asleep
☐ Headaches	☐ Problems with short or long-term memory	☐ Sadness	
☐ Nausea or vomiting	☐ Trouble thinking clearly		
☐ Vision problems			

The person also reported these symptoms:

_____

_____

_____

"Adapted from the Centers for Disease Control and Prevention's Returning to School After a Concussion Letter"

When Concussion Symptoms Aren't Going Away


WHEN CONCUSSION SYMPTOMS ARE NOT GOING AWAY

A GUIDE FOR PARENTS OF CHILDREN WHO ARE FIVE AND UNDER

HAS YOUR CHILD HAD A CONCUSSION?

If your child has a concussion, also called a mild brain injury, there are certain steps you should take to help ease their symptoms. Usually concussion symptoms will clear by three months. For most children, symptoms will go away in two to four weeks. However, some children have symptoms that last longer than three months.

Here are some steps you should take when your child has a head injury.

FIRST THING AFTER INJURY

- Go to the doctor or emergency department.
- Follow the doctor's care plan. Watch your child carefully for changes.
- Have your child rest for the first one to three days as needed.
- Get a doctor's letter stating that your child has a concussion (or mild brain injury).
- Give copies of the letter to all childcare teachers and the school nurse. Keep a copy for yourself.

5 and Under


WHEN CONCUSSION SYMPTOMS ARE NOT GOING AWAY

A GUIDE FOR PARENTS OF CHILDREN WHO ARE SCHOOL-AGED

HAS YOUR CHILD HAD A CONCUSSION?

If your child has a concussion, also called a mild brain injury, there are certain steps you should take to help ease their symptoms. Usually concussion symptoms will clear by three months. For most children, symptoms will go away in two to four weeks. However, some children have symptoms that last longer than three months.

If you have a child in school, three months is too long to wait and see if symptoms go away. You need to take action earlier, along with the school, to help your child do well in school and stay up-to-date.

Here are some steps you should take when your child has a head injury.

FIRST THING AFTER INJURY

- Go to the doctor or emergency department.
- Follow the doctor's care plan. Watch your child carefully for changes.
- Have your child rest for the first one to three days as needed.
- Get a doctor's letter stating that your child has a concussion (or mild brain injury).
- Give copies of the letter to all teachers and coaches, as well as the school nurse and principal. Keep a copy for yourself.

School-Aged


WHEN CONCUSSION SYMPTOMS ARE NOT GOING AWAY

A GUIDE FOR ADULTS WITH CONCUSSION

HAVE YOU HAD A CONCUSSION?

If you have had a concussion, also called a mild brain injury, there are things you can do to feel better. Usually concussion symptoms will go away by three months. Most people feel better in two to four weeks. However, some people have symptoms that last longer than three months.

Remember: You don't have to hit your head to get a concussion. A hard bump to the body can also cause a concussion.

If you have an active lifestyle, three months may be too long to wait to see if symptoms go away. You need to act sooner to safely and successfully return to school, work and physical activity.

FIRST THING AFTER INJURY

- Go to the doctor or hospital.
- Rest for the first one to three days as needed.
- Follow the doctor's care plan.
- Watch carefully for changes.
- Have someone else watch, too.

Get a doctor's letter saying that you have a concussion (or mild brain injury) and when you may return part-time or full-time to school or work.

FIRST FEW DAYS TO WEEKS AFTER INJURY

After three days, start to ease back into daily routine, but try not to do too much. Too much activity can make symptoms last longer. Did you know that research also shows that too much rest can do the same? It is safest to find a balance. If you can, put off big work, legal or financial decisions during this time.

TRY NOT TO PUSH THROUGH YOUR SYMPTOMS

RETURNING TO COLLEGE
(OR OTHER TRAINING AFTER HIGH SCHOOL)

Ease back into school. You may need to start with a shorter schedule. Leave class as symptoms get worse and before they become too bad.
Take a break when you need one.
Start by talking to each teacher. Show them the doctor's note. Tell them what happened. Let them know how you are feeling and what you think may help you or what you may need to do.

Examples of helpful changes:

- *"I may need to wear sunglasses because I'm sensitive to light."*
- *"I may need to put my head down to rest. I'd like to do this rather than leave so I can still listen."*
- *"I can't handle a whole class yet, so I may need to leave early."*
- *"I may need extra time for this test/project because it takes longer for me to think and plan."*

Let teachers know that you do not expect these changes to last long, but you do need them now in order to do your best. If you need help in making these changes, talk to the school's Disability Services office.

Tennessee's TBI Service Coordinators are people who can help you at no cost. They know about concussion (brain injury) and can help with what you need. **800-882-0611**

Adults

Spanish Available

Problems Can Arise Even After Brain Injury Treatment

A GUIDE TO POSSIBLE CHANGES AFTER BRAIN INJURY

FOR YOUNG CHILDREN AGES 7 AND UNDER

This guide was designed to help parents and caregivers watch for changes that may follow a brain injury in young children.

Changes after brain injury may happen even years after a child's treatment ends, whether they completed rehabilitation, stayed at the hospital, etc. This guide addresses changes and gives tips for keeping your child's brain healthy throughout their life. **Keep this guide handy in case there are questions or concerns. You may never need this, but it will be helpful if your child does develop challenges.**

OUTCOMES AFTER BRAIN INJURY REHAB ARE DIFFERENT FOR EVERYONE

THEY WILL DEPEND ON MANY THINGS INCLUDING:

- Injury severity/Types of changes
- Support from family
- Mental health (depression, anxiety)
- Age at the time of injury
- Complications (infections, seizures, other injuries, etc.)
- Funding for rehab/Length of rehab/Willingness or ability to participate in rehab
- Assistance with transitioning from hospital to home and childcare/school
- As they get older: Motivation to improve, ability to adapt to changes and support from friends

There is no cut-off date for brain injury recovery. Improvement happens quickly for some children and more slowly for others. Some children may have negative changes over time as they develop. The choices you make for your child today can prevent some of those. Positive changes can continue throughout life.

THINGS TO WATCH FOR IN YOUNG CHILDREN - First weeks or months after injury

Expect the best, plan for the best...but be armed with knowledge.

Once your child comes home, their physical injuries may heal quickly, but they may continue to struggle in other areas like remembering and learning. Changes in these other areas can be hard to see if you don't know what to look for. Your young child can't tell you areas where they need help. Watch for changes in thinking, behavior and slower development.

Spanish Available

A GUIDE TO POSSIBLE CHANGES AFTER BRAIN INJURY

FOR SCHOOL-AGED CHILDREN AND ADULTS

This guide was designed to help people watch for changes that *may* follow a brain injury.

Changes after brain injury may happen even years after the person's treatment ends, whether they completed rehabilitation, hospitalization, etc. This guide gives ideas about how to address these changes. It will also give tips for keeping your brain healthy throughout your life.

Keep this guide handy in case there are questions or concerns.

OUTCOMES AFTER BRAIN INJURY REHAB ARE DIFFERENT FOR EVERYONE

THEY WILL DEPEND ON MANY THINGS INCLUDING:

- Injury severity/Types of changes
- Support from family and friends
- Motivation to improve and ability to adapt to changes
- Mental health (ie depression, anxiety)
- Age at the time of injury
- Complications (things like infections, seizures, other injuries, etc.)
- Supports for transitioning to home or work (employer, transportation, etc.)
- Funding for rehab/Length of rehab/Willingness or ability to participate in rehab

There is no cut-off date for brain injury recovery. Positive change can continue for years. Improvement happens quickly for some people and more slowly for others. Some people may have negative changes over time or as they age. Some negative changes can be prevented by the choices you make today.

THINGS TO WATCH FOR IN CHILDREN

Your child's immediate physical injuries may heal quickly, but they may continue to struggle in other areas. The changes in these other areas can be hard to see if you don't know what you are looking for. Consider whether the following types of problems may be related to the injury.

Academic (School) Changes: Falling behind in class, difficulty learning new information, putting off school work, forgetting assignments, leaving items behind at school, trouble saying or writing what they mean

Social Changes: Losing friends, difficulty making new friends, not knowing how to act or speak in different situations, not understanding facial cues or social skills (like knowing it is time to end a conversation or that they are making someone uncomfortable), acting younger than their friends, laughing or crying too easily

Behavior Changes: Not acting like themselves, getting into fights, acting without thinking first, making poor decisions, making inappropriate sexual comments, using abusive words or tone, letting friends talk them into doing the wrong things, letting others mistreat or abuse them, alcohol use disorder, drug use disorder, trouble with the law

Physical Changes: Pain, a physical change from the injury that gets worse, reaching developmental milestones more slowly, sleep changes

Mental Health Changes: Becoming depressed or anxious, difficulty coping with change or handling stress, worrying at night and not sleeping, pushing friends and family away, spending too much time alone, doing things to hurt yourself, feeling stuck or unmotivated, developing addictive behaviors

See Suicide Warning Signs: https://www.tn.gov/health/health-program-areas/fhw/vipp/suicide-prevention/warning-signs.html

tndisability.org/brain

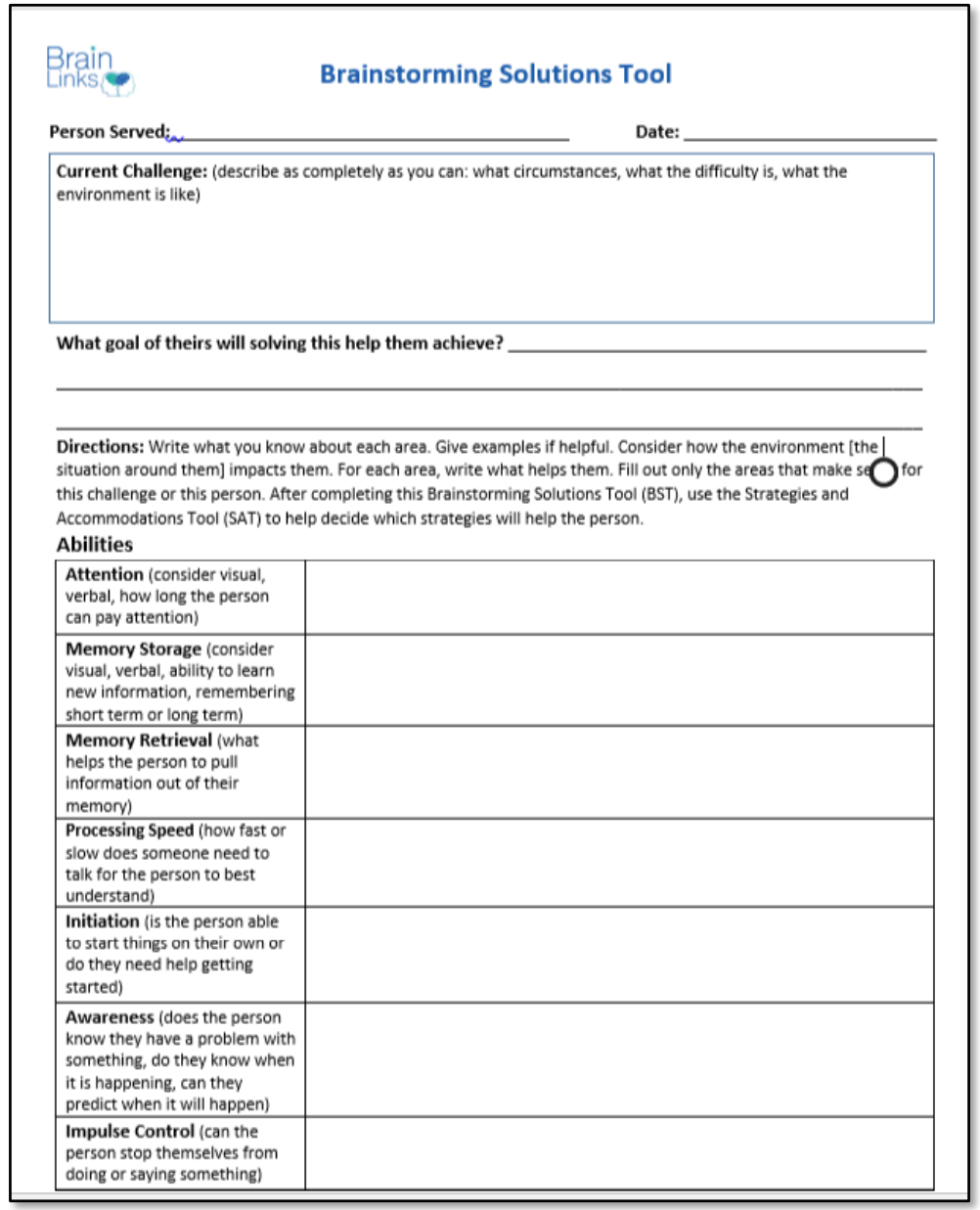
Determining Strengths & Challenges

See more on YouTube

Use:

- Speech and Language Evaluation
- Neuropsychology Evaluation
- Other Evaluations

- and the Brainstorming Solutions Tool



Brain Links

Brainstorming Solutions Tool

Person Served: _____ **Date:** _____

Current Challenge: (describe as completely as you can: what circumstances, what the difficulty is, what the environment is like)

What goal of theirs will solving this help them achieve? _____

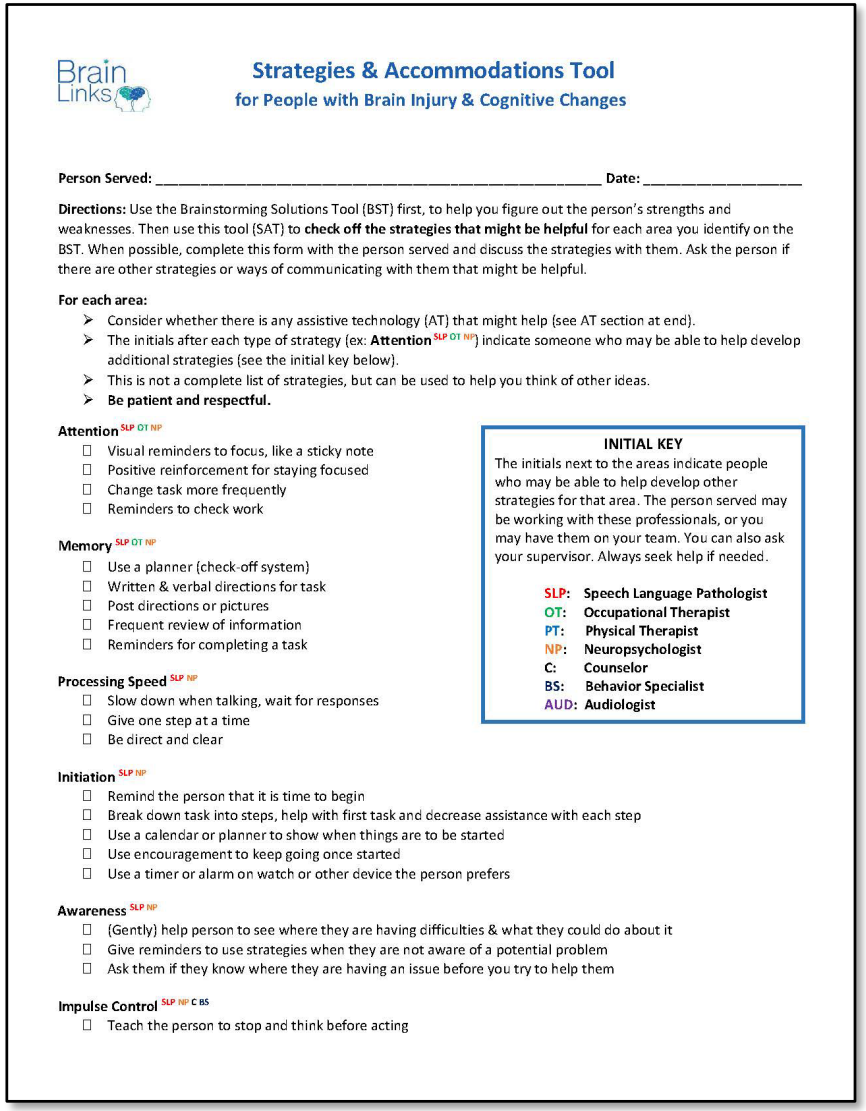
Directions: Write what you know about each area. Give examples if helpful. Consider how the environment [the situation around them] impacts them. For each area, write what helps them. Fill out only the areas that make sense for this challenge or this person. After completing this Brainstorming Solutions Tool (BST), use the Strategies and Accommodations Tool (SAT) to help decide which strategies will help the person.

Abilities

Attention (consider visual, verbal, how long the person can pay attention)	
Memory Storage (consider visual, verbal, ability to learn new information, remembering short term or long term)	
Memory Retrieval (what helps the person to pull information out of their memory)	
Processing Speed (how fast or slow does someone need to talk for the person to best understand)	
Initiation (is the person able to start things on their own or do they need help getting started)	
Awareness (does the person know they have a problem with something, do they know when it is happening, can they predict when it will happen)	
Impulse Control (can the person stop themselves from doing or saying something)	

Strategies & Accommodations Tool

- Used along with the Brainstorming Solutions Tool
- Matches area for area plus Assistive Technology
- Initial Key – who can help
- Lots of choices of strategies to try



Brain Links

Strategies & Accommodations Tool
for People with Brain Injury & Cognitive Changes

Person Served: _____ **Date:** _____

Directions: Use the Brainstorming Solutions Tool (BST) first, to help you figure out the person's strengths and weaknesses. Then use this tool (SAT) to **check off the strategies that might be helpful** for each area you identify on the BST. When possible, complete this form with the person served and discuss the strategies with them. Ask the person if there are other strategies or ways of communicating with them that might be helpful.

For each area:

- Consider whether there is any assistive technology (AT) that might help (see AT section at end).
- The initials after each type of strategy (ex: **Attention** SLP OT NP) indicate someone who may be able to help develop additional strategies (see the initial key below).
- This is not a complete list of strategies, but can be used to help you think of other ideas.
- **Be patient and respectful.**

Attention SLP OT NP
- ☐ Visual reminders to focus, like a sticky note
- ☐ Positive reinforcement for staying focused
- ☐ Change task more frequently
- ☐ Reminders to check work

Memory SLP OT NP
- ☐ Use a planner (check-off system)
- ☐ Written & verbal directions for task
- ☐ Post directions or pictures
- ☐ Frequent review of information
- ☐ Reminders for completing a task

Processing Speed SLP NP
- ☐ Slow down when talking, wait for responses
- ☐ Give one step at a time
- ☐ Be direct and clear

Initiation SLP NP
- ☐ Remind the person that it is time to begin
- ☐ Break down task into steps, help with first task and decrease assistance with each step
- ☐ Use a calendar or planner to show when things are to be started
- ☐ Use encouragement to keep going once started
- ☐ Use a timer or alarm on watch or other device the person prefers

Awareness SLP NP
- ☐ (Gently) help person to see where they are having difficulties & what they could do about it
- ☐ Give reminders to use strategies when they are not aware of a potential problem
- ☐ Ask them if they know where they are having an issue before you try to help them

Impulse Control SLP NP C BS
- ☐ Teach the person to stop and think before acting

INITIAL KEY
The initials next to the areas indicate people who may be able to help develop other strategies for that area. The person served may be working with these professionals, or you may have them on your team. You can also ask your supervisor. Always seek help if needed.

- SLP: Speech Language Pathologist
- OT: Occupational Therapist
- PT: Physical Therapist
- NP: Neuropsychologist
- C: Counselor
- BS: Behavior Specialist
- AUD: Audiologist

See more on YouTube

Other Resources

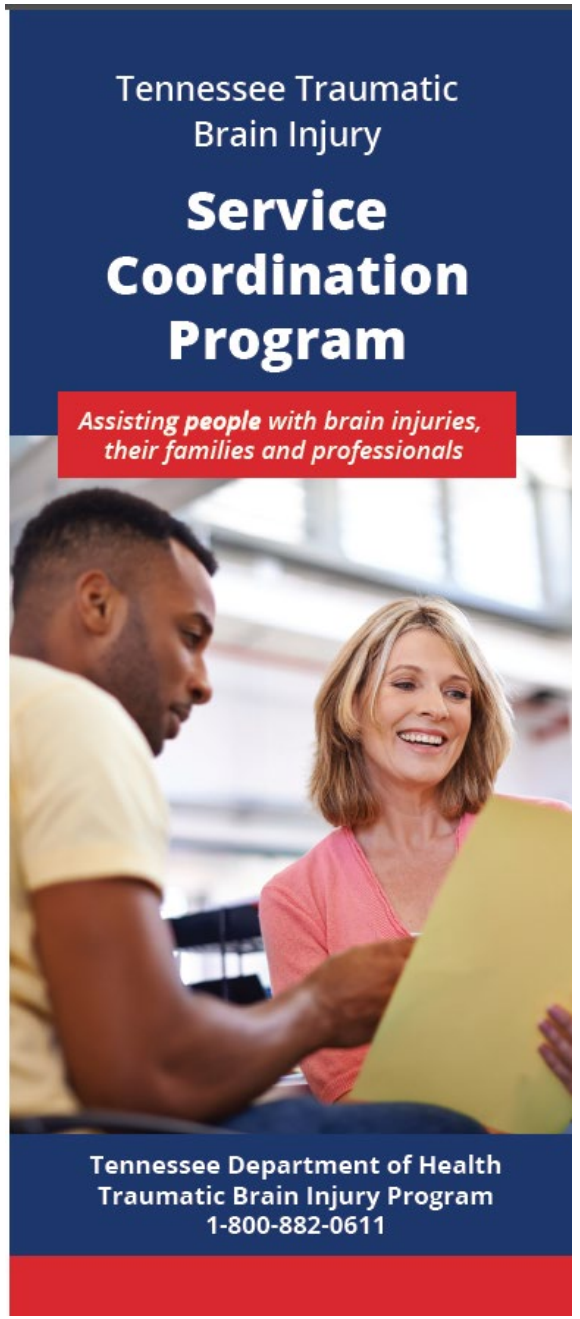
- Service Coordinators – TN's TBI Program
  - Will provide help
  - No cost

- Virtual Support Groups

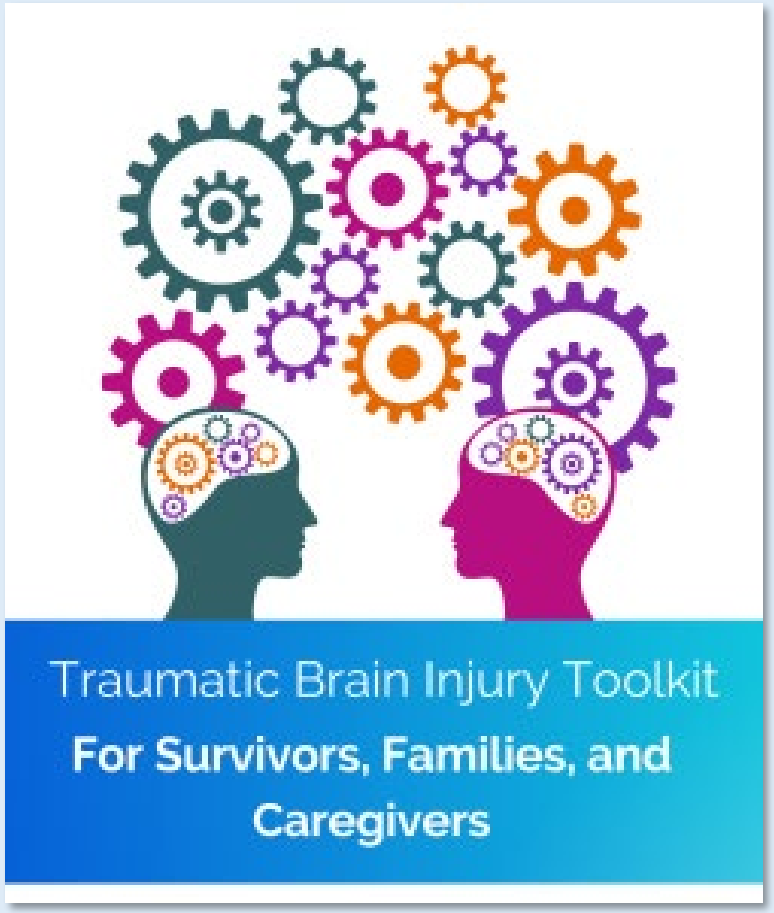
http://www.braininjurytn.org/service-coordination.html

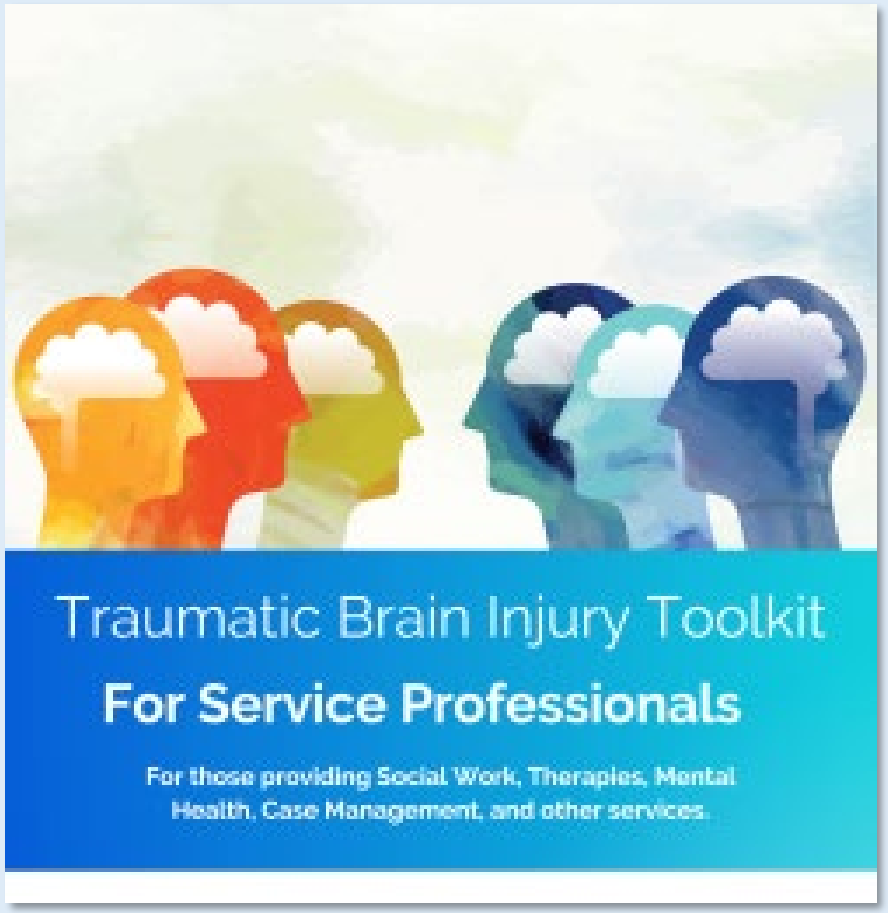
- TN Family Support Program

https://www.tn.gov/didd/for-consumers/family-support.html



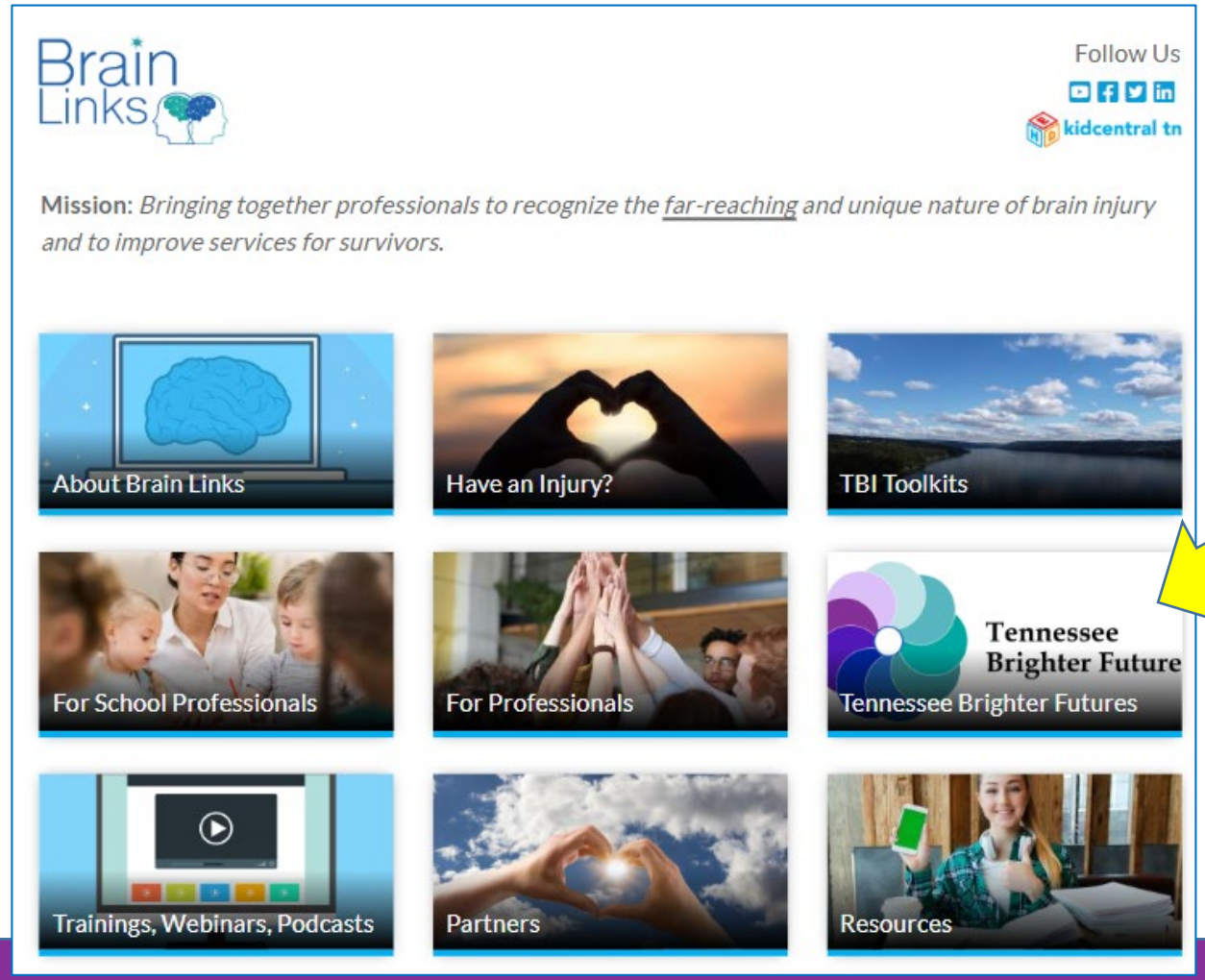
Online TBI Toolkits for You





Tennessee
Brighter Futures

TN Brighter Futures Website



tndisability.org/brain

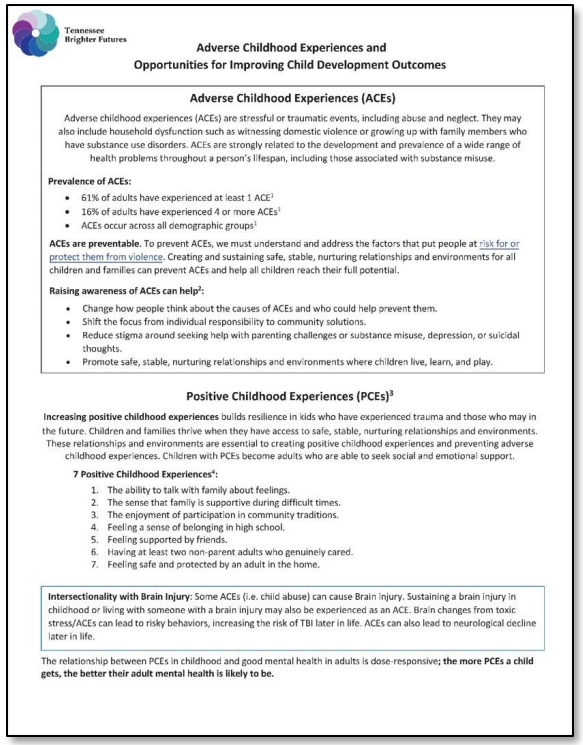
1

2

Systems of Support

We Add New Resource Pages Every Meeting

ACEs



Tennessee Brighter Futures

Adverse Childhood Experiences and Opportunities for Improving Child Development Outcomes

Adverse Childhood Experiences (ACEs)

Adverse childhood experiences (ACEs) are stressful or traumatic events, including abuse and neglect. They may also include household dysfunction such as witnessing domestic violence or growing up with family members who have substance use disorders. ACEs are strongly related to the development and prevalence of a wide range of health problems throughout a person's lifespan, including those associated with substance misuse.

Prevalence of ACEs:

- 61% of adults have experienced at least 1 ACE[1]
- 16% of adults have experienced 4 or more ACEs[1]
- ACEs occur across all demographic groups[1]

ACEs are preventable. To prevent ACEs, we must understand and address the factors that put people at risk for or protect them from violence. Creating and sustaining safe, stable, nurturing relationships and environments for all children and families can prevent ACEs and help all children reach their full potential.

Raising awareness of ACEs can help[2]:

- Change how people think about the causes of ACEs and who could help prevent them.
- Shift the focus from individual responsibility to community solutions.
- Reduce stigma around seeking help with parenting challenges or substance misuse, depression, or suicidal thoughts.
- Promote safe, stable, nurturing relationships and environments where children live, learn, and play.

Positive Childhood Experiences (PCEs)[3]

Increasing positive childhood experiences builds resilience in kids who have experienced trauma and those who may in the future. Children and families thrive when they have access to safe, stable, nurturing relationships and environments. These relationships and environments are essential to creating positive childhood experiences and preventing adverse childhood experiences. Children with PCEs become adults who are able to seek social and emotional support.

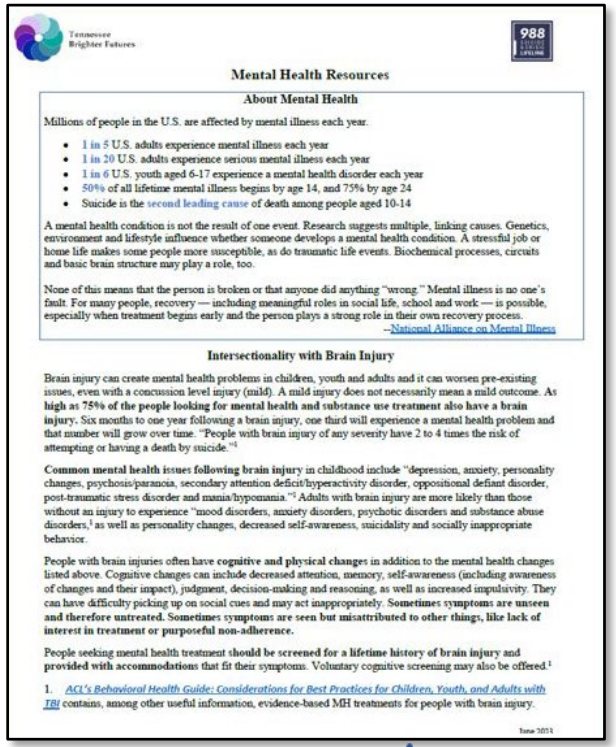
7 Positive Childhood Experiences[4]:

1. The ability to talk with family about feelings.
2. The sense that family is supportive during difficult times.
3. The enjoyment of participation in community traditions.
4. Feeling a sense of belonging in high school.
5. Feeling supported by friends.
6. Having at least two non-parent adults who genuinely cared.
7. Feeling safe and protected by an adult in the home.

Intersectionality with Brain Injury: Some ACEs (i.e. child abuse) can cause Brain Injury. Sustaining a brain injury in childhood or living with someone with a brain injury may also be experienced as an ACE. Brain changes from toxic stress/ACEs can lead to risky behaviors, increasing the risk of TBI later in life. ACEs can also lead to neurological decline later in life.

The relationship between PCEs in childhood and good mental health in adults is dose-responsive; **the more PCEs a child gets, the better their adult mental health is likely to be.**

Mental Health



Tennessee Brighter Futures

988

Mental Health Resources

About Mental Health

Millions of people in the U.S. are affected by mental illness each year.

- 1 in 5 U.S. adults experience mental illness each year
- 1 in 20 U.S. adults experience serious mental illness each year
- 1 in 6 U.S. youth aged 6-17 experience a mental health disorder each year
- 50% of all lifetime mental illness begins by age 14, and 75% by age 24
- Suicide is the second leading cause of death among people aged 10-14

A mental health condition is not the result of one event. Research suggests multiple, linking causes. Genetics, environment and lifestyle influence whether someone develops a mental health condition. A stressful job or home life makes some people more susceptible, as do traumatic life events. Biochemical processes, circuits and basic brain structure may play a role, too.

None of this means that the person is broken or that anyone did anything "wrong." Mental illness is no one's fault. For many people, recovery — including meaningful roles in social life, school and work — is possible, especially when treatment begins early and the person plays a strong role in their own recovery process.
–National Alliance on Mental Illness

Intersectionality with Brain Injury

Brain injury can create mental health problems in children, youth and adults and it can worsen pre-existing issues, even with a concussion level injury (mild). A mild injury does not necessarily mean a mild outcome. As **high as 75% of the people looking for mental health and substance use treatment also have a brain injury.** Six months to one year following a brain injury, one third will experience a mental health problem and that number will grow over time. "People with brain injury of any severity have 2 to 4 times the risk of attempting or having a death by suicide."[1]

Common mental health issues following brain injury in childhood include "depression, anxiety, personality changes, psychosis/paranoia, secondary attention deficit/hyperactivity disorder, oppositional defiant disorder, post-traumatic stress disorder and mania/hypomania."[2] Adults with brain injury are more likely than those without an injury to experience "mood disorders, anxiety disorders, psychotic disorders and substance abuse disorders,[3] as well as personality changes, decreased self-awareness, suicidality and socially inappropriate behavior.

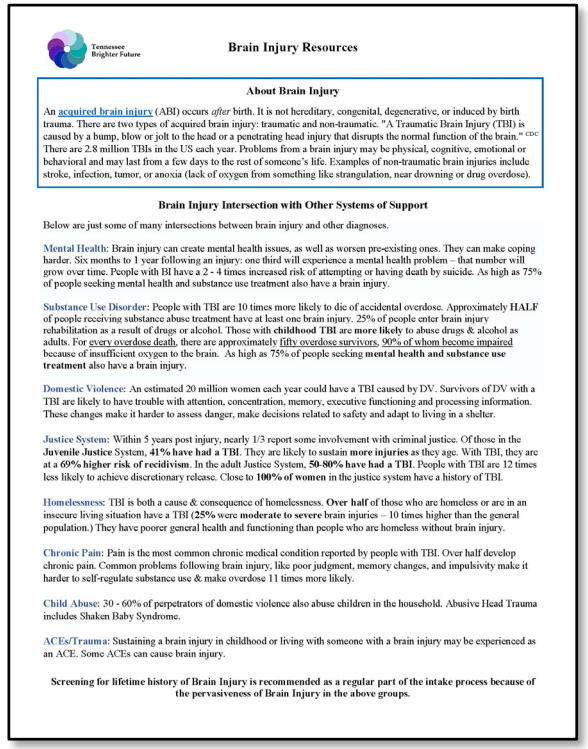
People with brain injuries often have **cognitive and physical changes** in addition to the mental health changes listed above. Cognitive changes can include decreased attention, memory, self-awareness (including awareness of changes and their impact), judgment, decision-making and reasoning, as well as increased impulsivity. They can have difficulty picking up on social cues and may act inappropriately. **Sometimes symptoms are unseen and therefore untreated. Sometimes symptoms are seen but misattributed to other things, like lack of interest in treatment or purposeful non-adherence.**

People seeking mental health treatment **should be screened for a lifetime history of brain injury and provided with accommodations** that fit their symptoms. Voluntary cognitive screening may also be offered.[1]

1. *ACL's Behavioral Health Guide: Considerations for Best Practices for Children, Youth, and Adults with TBI* contains, among other useful information, evidence-based MH treatments for people with brain injury.

June 2023

Brain Injury



Tennessee Brighter Future

Brain Injury Resources

About Brain Injury

An acquired brain injury (ABI) occurs *after* birth. It is not hereditary, congenital, degenerative, or induced by birth trauma. There are two types of acquired brain injury: traumatic and non-traumatic. "A Traumatic Brain Injury (TBI) is caused by a bump, blow or jolt to the head or a penetrating head injury that disrupts the normal function of the brain." CDC There are 2.8 million TBIs in the US each year. Problems from a brain injury may be physical, cognitive, emotional or behavioral and may last from a few days to the rest of someone's life. Examples of non-traumatic brain injuries include stroke, infection, tumor, or anoxia (lack of oxygen from something like strangulation, near drowning or drug overdose).

Brain Injury Intersection with Other Systems of Support

Below are just some of many intersections between brain injury and other diagnoses.

Mental Health: Brain injury can create mental health issues, as well as worsen pre-existing ones. They can make coping harder. Six months to 1 year following an injury: one third will experience a mental health problem – that number will grow over time. People with BI have a 2 - 4 times increased risk of attempting or having death by suicide. As high as 75% of people seeking mental health and substance use treatment also have a brain injury.

Substance Use Disorder: People with TBI are 10 times more likely to die of accidental overdose. Approximately HALF of people receiving substance abuse treatment have at least one brain injury. 25% of people enter brain injury rehabilitation as a result of drugs or alcohol. Those with **childhood TBI** are **more likely** to abuse drugs & alcohol as adults. For every overdose death, there are approximately fifty overdose survivors, 90% of whom become impaired because of insufficient oxygen to the brain. As high as 75% of people seeking **mental health and substance use treatment** also have a brain injury.

Domestic Violence: An estimated 20 million women each year could have a TBI caused by DV. Survivors of DV with a TBI are likely to have trouble with attention, concentration, memory, executive functioning and processing information. These changes make it harder to assess danger, make decisions related to safety and adapt to living in a shelter.

Justice System: Within 5 years post injury, nearly 1/3 report some involvement with criminal justice. Of those in the **Juvenile Justice** System, **41% have had a TBI**. They are likely to **sustain more injuries** as they age. With TBI, they are at a **69% higher risk of recidivism**. In the adult Justice System, **50-80% have had a TBI**. People with TBI are 12 times less likely to achieve discretionary release. Close to **100% of women** in the justice system have a history of TBI.

Homelessness: TBI is both a cause & consequence of homelessness. **Over half** of those who are homeless or are in an insecure living situation have a TBI **(25% were moderate to severe brain injuries** – 10 times higher than the general population.) They have poorer general health and functioning than people who are homeless without brain injury.

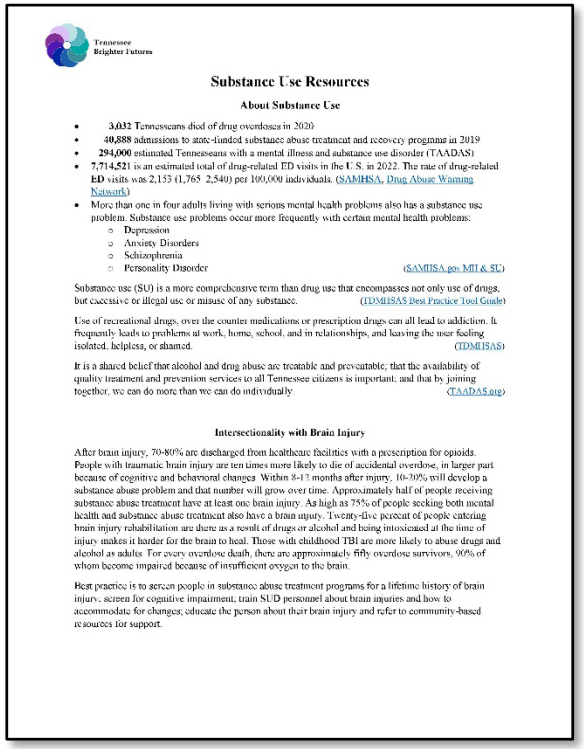
Chronic Pain: Pain is the most common chronic medical condition reported by people with TBI. Over half develop chronic pain. Common problems following brain injury, like poor judgment, memory changes, and impulsivity make it harder to self-regulate substance use & make overdose 11 times more likely.

Child Abuse: 30 - 60% of perpetrators of domestic violence also abuse children in the household. Abusive Head Trauma includes Shaken Baby Syndrome.

ACEs/Trauma: Sustaining a brain injury in childhood or living with someone with a brain injury may be experienced as an ACE. Some ACEs can cause brain injury.

Screening for lifetime history of Brain Injury is recommended as a regular part of the intake process because of the pervasiveness of Brain Injury in the above groups.

Substance Use



Tennessee Brighter Futures

Substance Use Resources

About Substance Use

- **3,032** Tennesseans died of drug overdoses in 2020
- **40,888** admissions to state-funded substance abuse treatment and recovery programs in 2019
- **294,000** estimated Tennesseans with a mental illness and substance use disorder (TAADAS)
- **7,714,521** is an estimated total of drug-related ED visits in the U. S. in 2022. The rate of drug-related **ED** visits was 2,153 (1,765 2,540) per 100,000 individuals. (SAMHSA, Drug Abuse Warning Network)
- More than one in four adults living with serious mental health problems also has a substance use problem. Substance use problems occur more frequently with certain mental health problems:
  - Depression
  - Anxiety Disorders
  - Schizophrenia
  - Personality Disorder (SAMHSA.gov MH & SU)

Substance use (SU) is a more comprehensive term than drug use that encompasses not only use of drugs, but excessive or illegal use or misuse of any substance. (TDMHSAS Best Practice Tool Guide)

Use of recreational drugs, over the counter medications or prescription drugs can all lead to addiction. It frequently leads to problems at work, home, school, and in relationships, and leaving the user feeling isolated, helpless, or shamed. (TDMHSAS)

It is a shared belief that alcohol and drug abuse are treatable and preventable; that the availability of quality treatment and prevention services to all Tennessee citizens is important; and that by joining together, we can do more than we can do individually. (TAADAS.org)

Intersectionality with Brain Injury

After brain injury, 70-80% are discharged from healthcare facilities with a prescription for opioids. People with traumatic brain injury are ten times more likely to die of accidental overdose, in larger part because of cognitive and behavioral changes. Within 8-13 months after injury, 10-30% will develop a substance abuse problem and that number will grow over time. Approximately half of people receiving substance abuse treatment have at least one brain injury. As high as 75% of people seeking both mental health and substance abuse treatment also have a brain injury. Twenty-five percent of people entering brain injury rehabilitation are there as a result of drugs or alcohol and being intoxicated at the time of injury makes it harder for the brain to heal. Those with childhood TBI are more likely to abuse drugs and alcohol as adults. For every overdose death, there are approximately fifty overdose survivors, 90% of whom become impaired because of insufficient oxygen to the brain.

Best practice is to screen people in substance abuse treatment programs for a lifetime history of brain injury, screen for cognitive impairment, train SUD personnel about brain injuries and how to accommodate for changes; educate the person about their brain injury and refer to community-based resources for support.

tndisability.org/tennessee-brighter-futures

Tennessee
Brighter Futures

Brain Links Training Series

- Jan 11, 2024 — Cognitive Changes Following Brain Injury: Understanding Cognition & Developing Accommodations
- Feb 8, 2024 — Behavioral & Psychosocial Changes Following Brain Injury: Tips, Strategies & De-escalation

Designed for Service Providers across all the TBF Systems of Support

Tennessee Brighter Futures

Thank you and survey

Take the 1 minute survey!
Get a certificate of attendance

Brain Links

YouTube

LinkedIn