



NORTH DAKOTA
BRAIN INJURY
NETWORK

Pediatric Acquired Brain Injury

www.ndbin.org

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*Help for Today,
Hope for Tomorrow.*



Brain Injury Defined

Acquired Brain Injury (ABI)

Traumatic
Brain Injury (TBI)

External Events: assault,
fall, blast injury, motor
vehicle crash

Non-Traumatic
Brain Injury

Internal Events: stroke,
tumor, anoxia,
aneurysm, infection

North Dakota's Definition

"Brain injury means damage to the brain or the coverings of the brain which produces an altered mental state and results in a decrease in cognitive, behavioral, emotional, or physical functioning. The term does not include an insult of a degenerative or congenital nature."

NDCC 50-06.4

TBI Incidence Nationally

- ▶ 1.4 million children/yr in US
- ▶ 2.3 male to female
- ▶ Highest risk groups 15-19, then 0-4
- ▶ Only 1/6 admitted to hospital



Severity Continuum

Mild

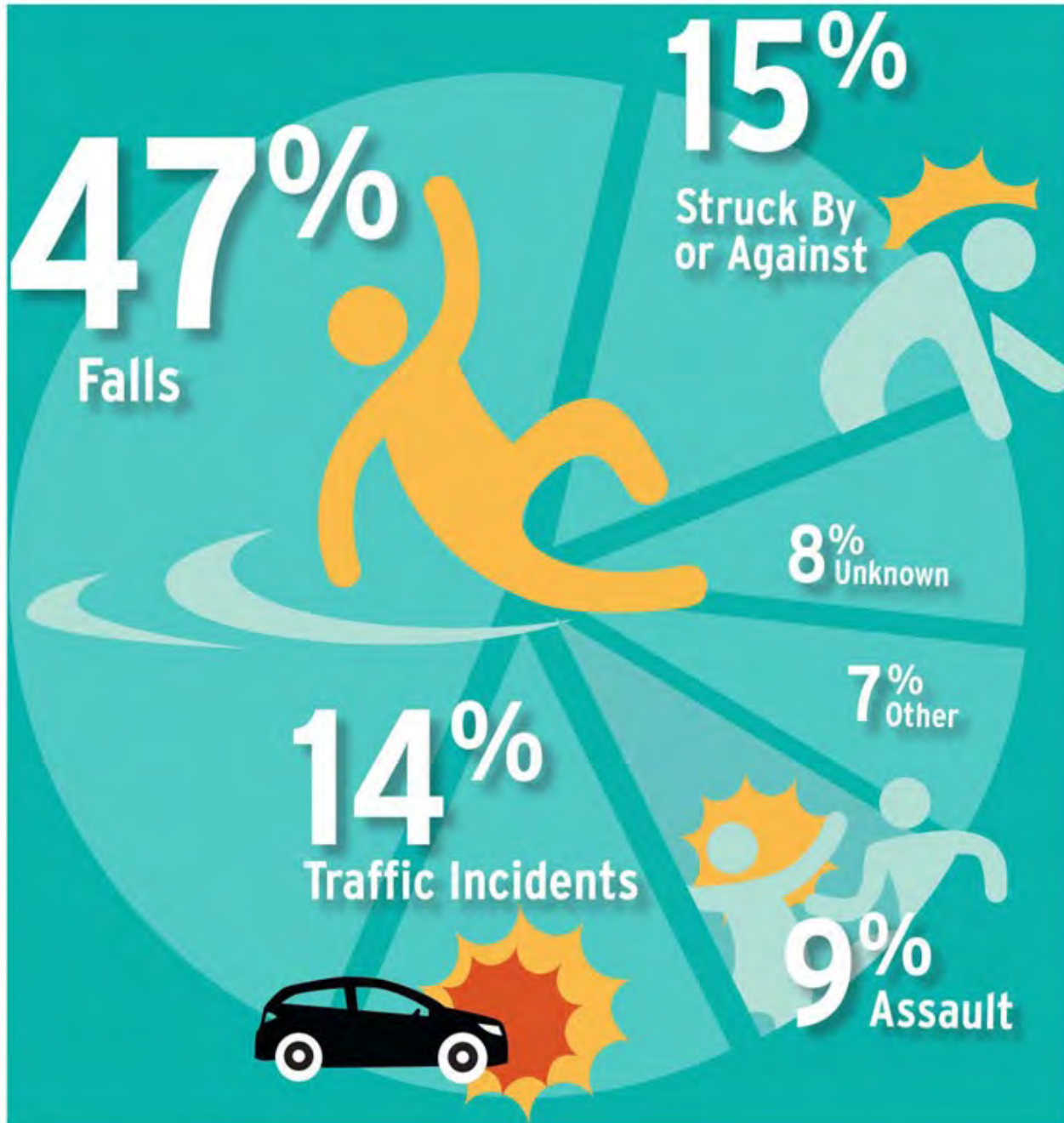
- 75-90%
LOC less 30min
15% have long term impairments

Moderate

- 10-30%
LOC between 30min-24hrs
30-50% have long term impairments

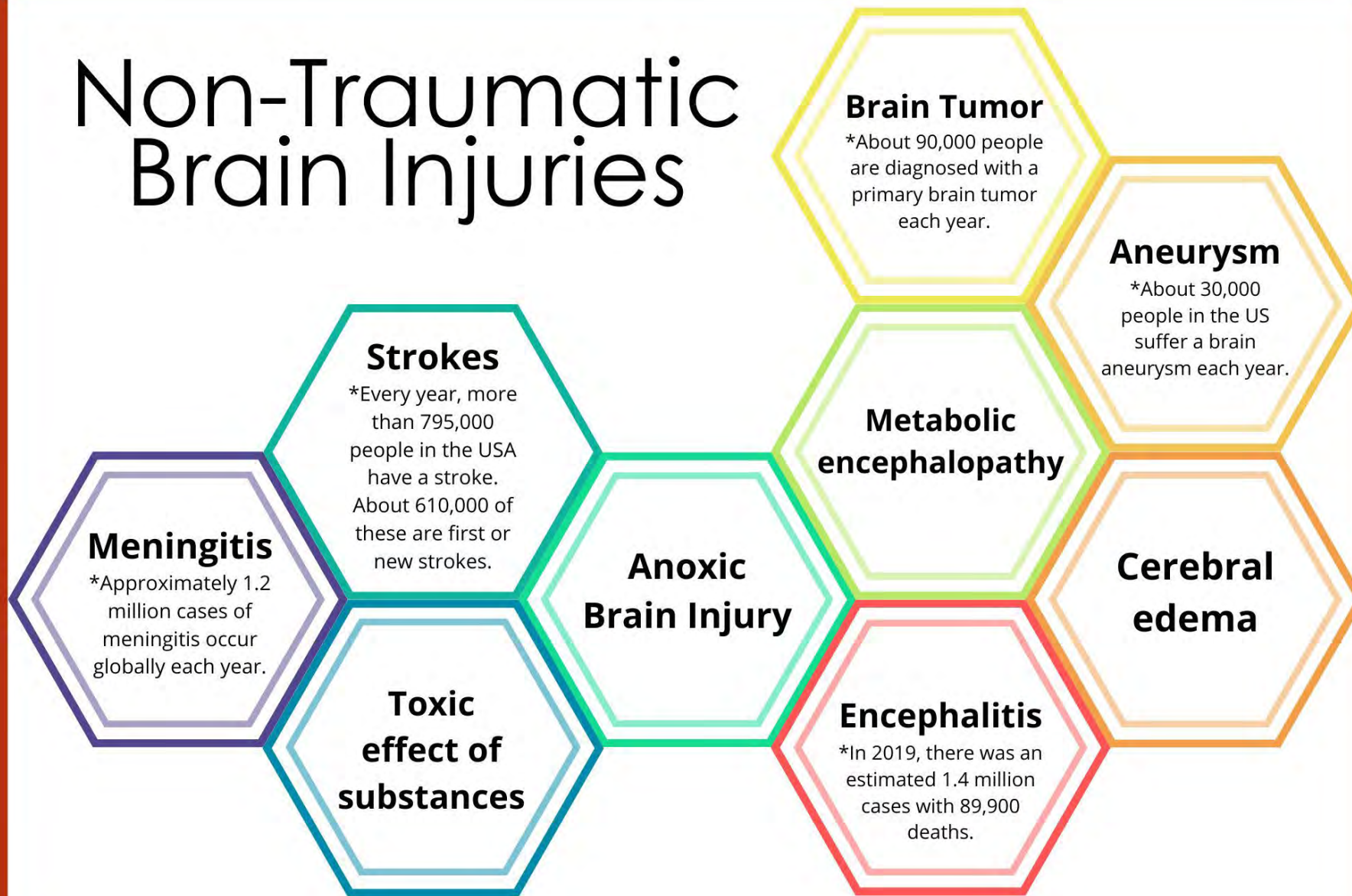
Severe

- 5-10%
LOC greater 24hrs
80% have long term impairments



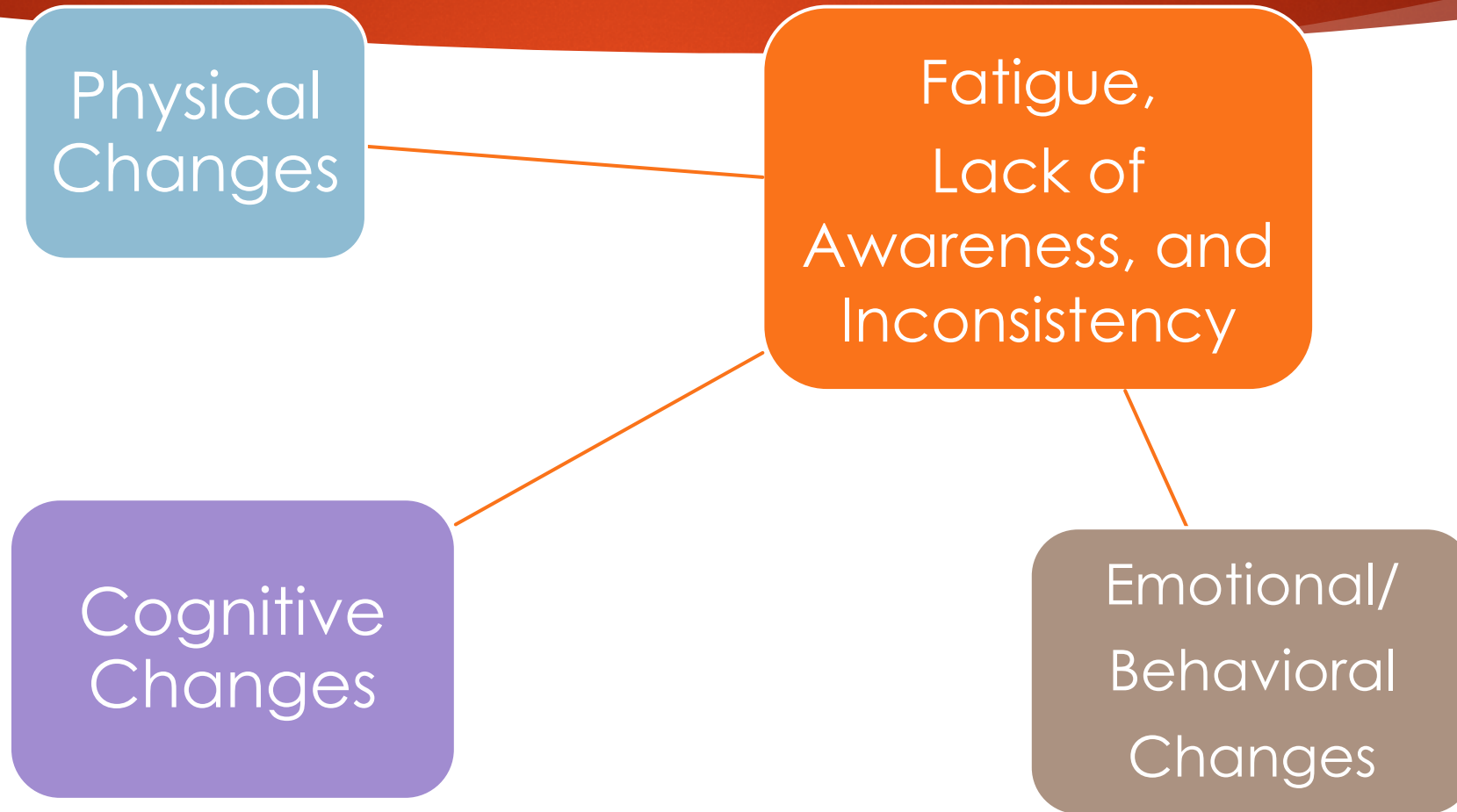
Leading Causes of TBI

Non-Traumatic Brain Injuries



Leading Causes of Non-traumatic BIs

Possible Consequences after a Brain Injury

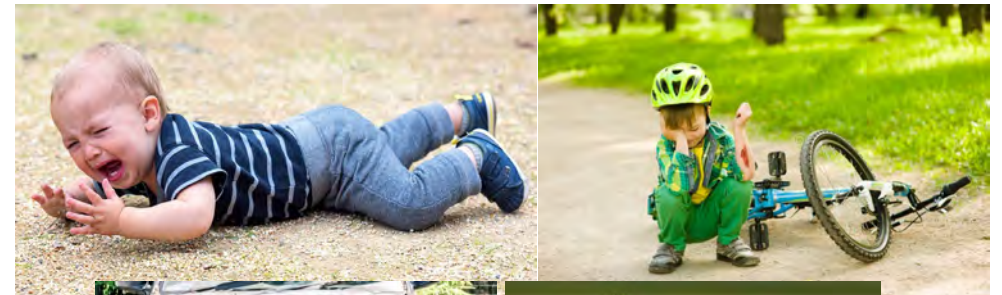


Outcome Predictors

- ▶ Severity of injury
- ▶ Age of child
- ▶ Child's previous functioning
- ▶ Family life and support system previous to injury
- ▶ Access to appropriate acute care and rehabilitation

Mild can be a Misnomer

- ▶ Degree of physical injury does not always determine the degree of difficulty related to long-term functioning.
- ▶ **“Multiple Mild”**
New understanding that multiple mild injuries has compounding effects



“

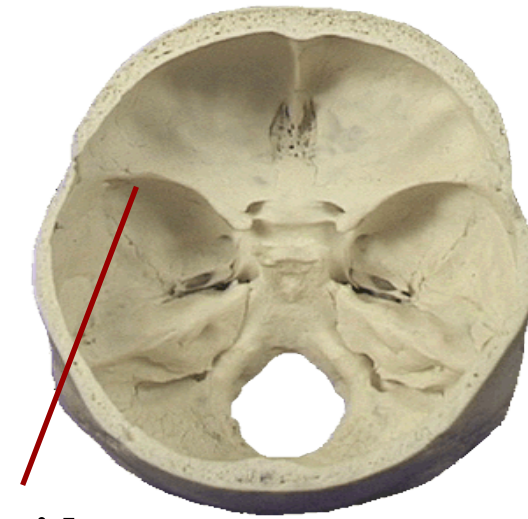
Traumatic brain injury is a **leading** cause of death and disability for children and teens.”



Skull Anatomy

The interior base of the skull is rough, with many bony protuberances.

These ridges can result in **injury to the temporal and frontal lobes** of the brain during rapid acceleration.



Bony ridges

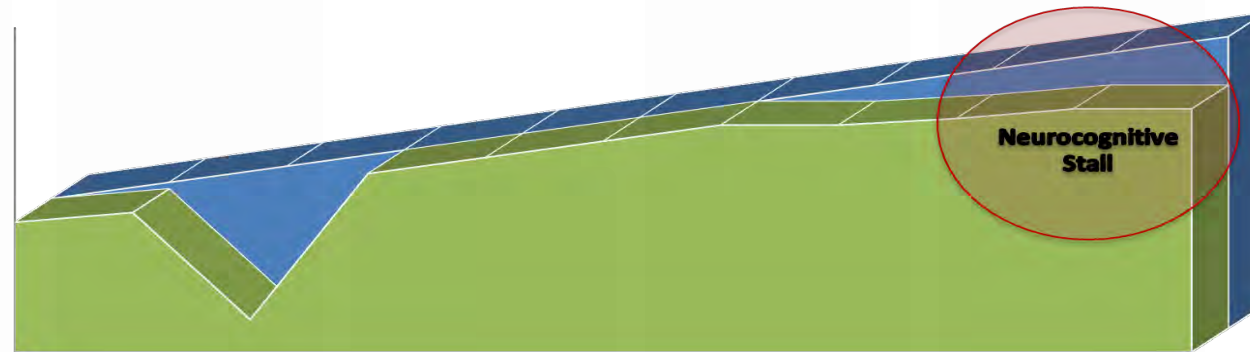
Unique to Children

- ▶ More likely to survive than adults
- ▶ Less likely to lose consciousness
- ▶ Myth that younger is better
- ▶ Less than 2% are referred for special education services

“Growing into the Injury”

Time **reveals** rather than **heals**

Performance



Injury

Development

■ Injury ■ Normal

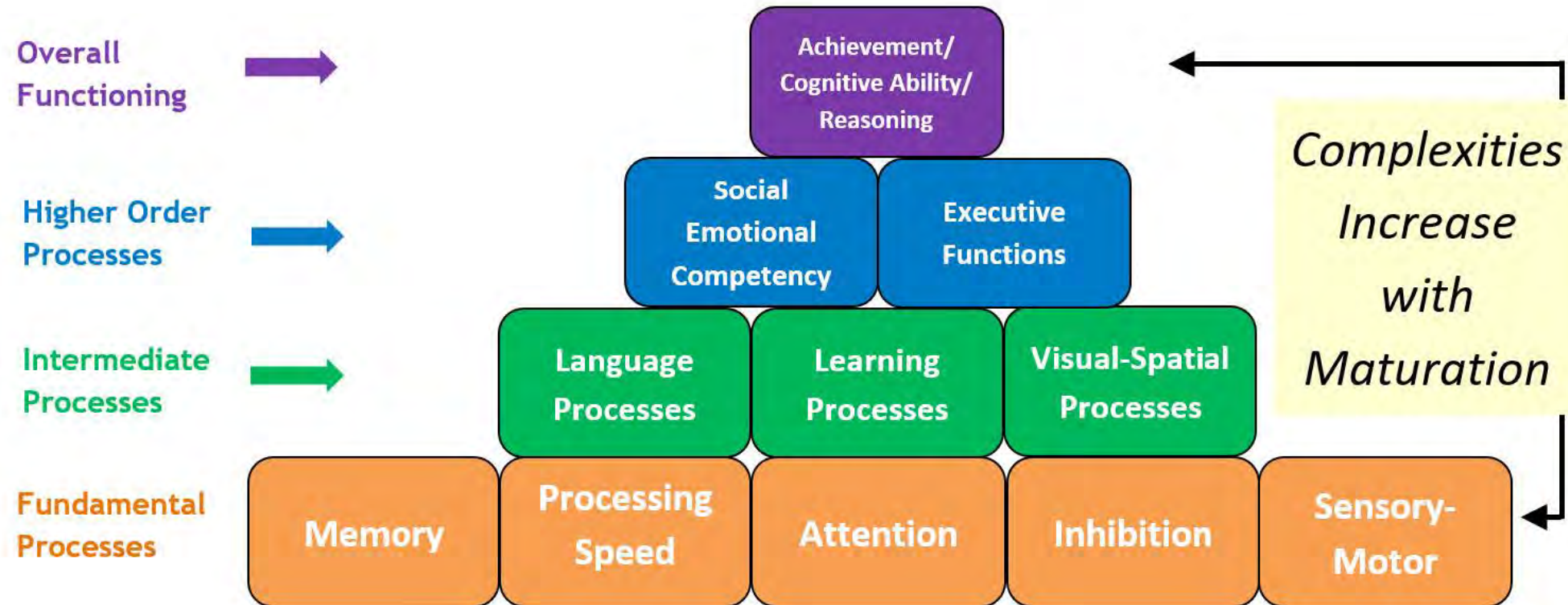
Why is TBI a “Silent Epidemic”?

- ▶ Lack of Understanding of Long-term Impact
- ▶ Not screened for
 - ▶ Older injuries forgotten
- ▶ Children appear and test “normal”
 - ▶ Do well on test, but not in real world
- ▶ Children misdiagnosed
 - ▶ TBI masks as other conditions/disabilities

Younger Injury

Benefits	Negatives
<ul style="list-style-type: none">• Earlier access to services• Growing up with awareness of injury and possible changes factored into vision of life plan	<ul style="list-style-type: none">• Unaware of all the ramifications- "growing into the injury"• Struggle to move beyond label• Unknown of life planning

Building Blocks of Brain Development[©]



Stages of Brain Development Post Brain Injury

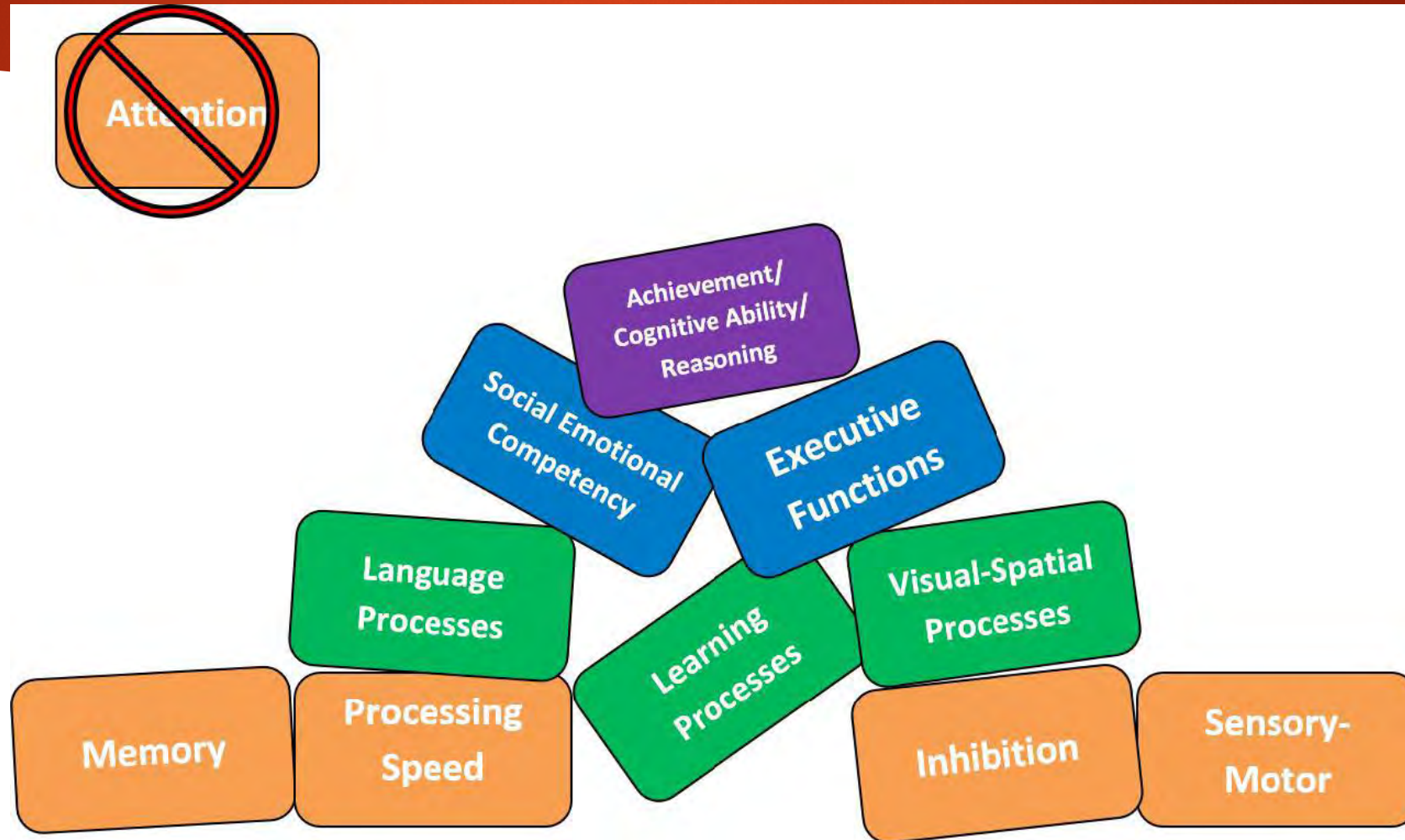


Image taken from CO Dept of Ed; BI in Children and Youth

Brain Injury in Adolescence/Young Adulthood

- ▶ Shift toward independence
- ▶ Injury creates an identity disconnect
 - ▶ Who am I now vs who should I have been?
- ▶ Grief over lost potential
- ▶ Unable to resolve sense of self
- ▶ Measures of Self worth
 - ▶ Education-Job- Family-Friends-Home



Intervention Challenges

- ▶ Lack of awareness of own challenges
- ▶ Deficits in building blocks impact later skills
- ▶ Poor response to traditional behavioral modification



TBI vs. ADHD & LD

- ▶ Retain old skills, difficulty with new learning
- ▶ Peaks and valleys of performance
- ▶ Importance of executive function
- ▶ Social and behavioral difficulties
- ▶ Poor response to behavior modification

Remember....

- ▶ No magic wand!
- ▶ Every brain injury is unique

“While the rest of the world is trying to get ahead of the ball, the brain injured person is trying to determine what the ball is, where the ball is, and perhaps even why the ball is.”—Survivor



Accommodations

- ▶ Frequent reviews
- ▶ Provide a TOUCHSTONE person
- ▶ Structured environment
- ▶ Focus on WHAT TO DO, not what not to do
- ▶ Focus on antecedents

"Unidentified traumatic brain injury is an unrecognized major source of social and vocational failure,"

Wayne A. Gordon, director of the Brain Injury Research Center at Mount Sinai School of Medicine in New York



Case Study 1



- ▶ Adam, 17 year old hockey player
- ▶ Was checked into the boards and felt dazed for several minutes after
- ▶ Later that same evening started having blurred vision and nausea
- ▶ At school the next day he went to the nurse complaining of a headache and went home sick for the day
- ▶ Symptoms continue for several weeks

Case Study 2



- ▶ 10 year old Christina, in MVA
- ▶ Unsure if she lost consciousness on the scene of accident
- ▶ Spent several weeks at level 1 trauma center
- ▶ Sustained a skull fracture, lost vision in one eye, rods inserted in back and legs

Case Study 3

- ▶ 18 month old, Jack, was born at 30 weeks
- ▶ Hydrocephalus, lead to a stroke
- ▶ Not making typical developmental gains related to physical components
- ▶ Appears on track with “Speech” (babbling) and vision (will track objects, etc)



Importance of Accurate Identification

- ▶ Receive appropriate interventions
- ▶ Prevent a cycle of failure
- ▶ Allows development of self advocacy skills
- ▶ Allows for awareness of potential cognitive stall

Screening for Brain Injury

- ▶ Important to even have it on your radar as a provider.
- ▶ Myth that younger is better and older injuries don't impact later development.
- ▶ Screenings are available.

NDBIN's Juvenile Screening

Name: _____ Current Age: _____ Interviewer Initials: _____ Date: _____



Pediatric Lifetime History of Traumatic Brain Injury & other Acquired Brain Injuries

(from the Colorado Brain Check Survey Screening Tool)

1. Please think about injuries your child (ages 5-21) has had during their entire lifetime, especially those that affected their head or neck. Thinking about those injuries, has your child had any of the following:

Has a physician diagnosed your child with a brain injury?

Yes No

If yes, go to question #3. If not, please indicate if there is a lifetime history of any of the following:

- Blow to the head (from sports, playing, biking, falling, getting hit by an object, etc.)
- Whiplash
- Motor vehicle crash resulting in any degree of injury or lack of injury).
- Assault/violence (child abuse, fights, firearm injury)
- NONE OF THE ABOVE (IF NO, GO TO QUESTION 2)

If yes to any of the above, indicate below if the injury resulted in any of the following:

Check all that apply:

- Concussion
- Loss of consciousness
For how long? _____
- Confusion or altered mental state
- Missed school
- Resulted in no problem



2. Please indicate if you have ever been told by a healthcare professional that your child has any of the following:

- Loss of oxygen at birth
- Brain tumor
- Cerebral palsy
- Loss of oxygen to the brain (Examples - a time they stopped breathing, had a near drowning or suffocating experience or experienced strangulation)
- Infection of the brain and/or sustained high fever
- Swelling of the brain (edema)
- Epilepsy or seizures
- Child maltreatment syndrome
- Brain bleed or hemorrhage
- Overdose of drugs/alcohol, inappropriate use of prescription drugs/over the counter meds
- Toxic effects or poisoning by substances
- NONE OF THE ABOVE (IF NO, GO TO QUESTION 3)

If yes to any in question 2, indicate below if the injury resulted in any of the following:

Check all that apply:

- Loss of consciousness
For how long? _____
- Confusion or altered mental state
- Missed school
- Resulted in no problem

3. Has your child ever been to the emergency department or received other medical care related to a brain injury or as identified in questions one or two?

Yes

At what age? _____

Please explain: _____

No

Complete this screening to determine if a person may have had a brain injury. It is important to note that this screening does not result in a diagnosis, is not intended to be used for eligibility determination and DOES NOT replace a face-to-face evaluation and assessment with a trained professional. This information should be treated as Protected Health Information. De-identified data may be analyzed for program evaluation.

This screening tool is adapted from the work of Pat L. Sample Ph.D. and Colorado State University.



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NDBIN's Juvenile Symptom Inventory



NORTH DAKOTA BRAIN INJURY NETWORK Juvenile Brain Injury Symptom Inventory

Name: _____ Date: _____

In recent weeks, how much have you been bothered by the following problems?

Please mark only one circle per item.

SECTION 1

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I lose or misplace important items (homework, backpack, phone)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I forget what people tell me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I forget what I've read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I lose track of time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I forget what I did yesterday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I forget things I've just learned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I forget meetings and appointments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I forget to turn off the lights or my electronics (computer, game devices, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 2

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I have a hard time following conversations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can remember only one or two steps of instructions or directions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take too long to figure out what someone is trying to tell me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 3

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I have a hard time concentrating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am easily distracted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time concentrating in noisy places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time following conversations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time concentrating on challenging tasks (for example: homework or chores)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 4

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I say things without thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do things without thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not follow directions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I dominate conversations (for example: I talk more than other people in a conversation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I interrupt when others are speaking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 5

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
My body hurts a lot of the time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't get enough sleep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel tired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am bothered by light	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

NDBIN's Juvenile Symptom Inventory

SECTION 5

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I have a hard time focusing my eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time telling how near or far away objects are from me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 6

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I have a hard time understanding what people tell me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time understanding what I've read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time finding the right word when speaking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time getting people to understand what I am trying to say	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time finding the right words when writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 7

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I have a hard time keeping to a schedule (class, therapy, meetings)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time deciding which of my daily tasks I should do first	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time starting tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time switching from one task to another	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time completing tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time completing tasks correctly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 7

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I have a hard time completing tasks on time (homework and chores)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 8

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I have a hard time figuring out how to handle new problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time changing my mind when things change	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a hard time learning new ways of doing things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't understand why people do things differently than me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 9

	N/A I don't have this problem at all	I have this problem but it never bothers me	I am slightly bothered by this problem	I am very bothered by this problem	I am extremely bothered by this problem
I feel anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel irritated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I cry easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel depressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel traumatized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I overreact to things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I give permission for the information I added on this form to be entered at the NDBIN secured on-line web portal so I can receive information about brain injury strategies and accommodations.

Juvenile Signature: _____ Date: _____

Parent/Guardian Signature: _____ Date: _____

Tip Sheets!

SPEECH/LANGUAGE



Speech/language problems can result in difficulty expressing or understanding language, both verbal or written. May cause difficulty with social communication.

LOOK FOR:

- Slurred production of words/slowed rate of speech/rapid nonstop talking
- Difficulty finding the desired word when speaking or writing, following directions, or understanding what was said
- Lack of initiation or joining in conversation or experiencing social isolation
- Lacking verbal filter
- Dominate interactions with others

SPEECH/LANGUAGE ACCOMMODATIONS

- Don't be afraid to advocate for what you need: ask people to speak slower, repeat what they said, or to rephrase their question in a different way
- Use gestures or to help others understand
- Write down important points or tasks or use a voice recorder such as on a cell phone
- Try using paper notes or electronic devices to communicate your ideas if it is hard to say things out loud
- Try reading aloud to yourself in a place with no distractions and use a bookmark or finger to focus on one line at a time to avoid losing your place
- Speech-language therapists can help with communication as well as many other needs



PERSON-CENTERED PRACTICES

The person is priority - individual desires, goals, insight, and values should be respected and at the center of planning

The power to choose- decisions should be decided *WITH* the individual and not for

Community inclusion- individuals should have full access to the community while maintaining dignity

Services and supports- a multidisciplinary holistic approach to address needs of the individual including natural supports as desired

Inform- maintain open communication/adjust your approach to ensure clear understanding of options and decisions



Focus on strengths

Remember that the effects of a brain injury are different for each person



CITATIONS

www.ndbin.org • 1 (855) 866-1884 • info@ndbin.org



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Chronic Condition

Unfortunately, there is no cure for brain injury. There are many treatment options available and NDBIN is happy to help navigate the recovery process.

*Help for Today,
Hope for Tomorrow.*

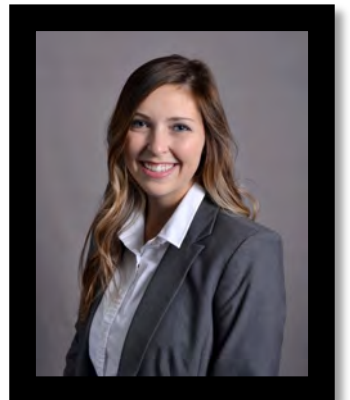
North Dakota Brain Injury Network

- ▶ Funded by Department of Health and Human Services
- ▶ Free service to individuals, family members and professionals
- ▶ Created to be the central source of brain injury support, information, and education
- ▶ Facilitate regional support groups and offer assistance to existing groups

Resource Facilitation



- ▶ FREE, evidenced-based service connecting individuals with BI, families and caregivers, and professionals with resources
- ▶ Provide support for individuals and families through ongoing follow up calls
- ▶ Provide information regarding state and local resources (ex. Housing, insurance, food assistance)
- ▶ Respond to requests for assistance, information, resources, and referral
- ▶ Counsel and be a support person for survivors and families
- ▶ Locate other professionals who can assist with recovery
- ▶ Develop new programs and resources for survivors, families, and professionals
- ▶ Support students/parents with return to school/sports with education and connecting to a TBI specialist if needed



Legislation

- ▶ NDBIN testifies for or against bills that impact our survivors
- ▶ Examples:
 - ▶ Seat Belt Laws
 - ▶ Advisory Council seats
 - ▶ Funding for adult foster care
 - ▶ Etc!

Education and Trainings

- ▶ Provide onsite trainings to facilities, and organizations
- ▶ Access to our FREE online courses can be found at:
ndbin.org/training
- ▶ 5 separate courses geared towards professionals, survivors and family members
- ▶ Intro to BI, Cognitive and Behavioral Consequences of TBI in Adults, Primary Care and TBI, Pediatric TBI and Substance Use and TBI

Education and Trainings Continued

- ▶ CEUs are available from the courses for:
 - ▶ OT, Nursing, Social Work, Counselor Examiners, SLP/Audiology, Psychology and EMT
- ▶ Webinar Wednesday's!
<https://www.ndbin.org/events/webinars>
- ▶ CBIS



SAVE THE DATE!

**Virtual Concussion
SYMPOSIUM**

September 15

No cost to attend

Registration is open:

https://and.qualtrics.com/jfe/form/SV_eA4yZc6MLx5yDUG

ndbin.org



**NATIONAL
DISABILITY
BRAIN INJURY
NETWORK**

Mind Matters Conference



- ▶ March 20 & 21, 2025
Baymont by Wyndham (2611 Old Red Trail)
Mandan, North Dakota
- ▶ This annual conference features nationally renowned speakers and highlights new research, trends, practice strategies, and collaborative models of care.

Unmasking Brain Injury

- ▶ Part of a national awareness effort
 - ▶ <http://unmaskingbraininjury.org/>
- ▶ NDBIN hosts events across ND
 - ▶ Over 100 total masks
- ▶ Will be on display at Med School February 11-14!



ND Brain Injury Advisory Council

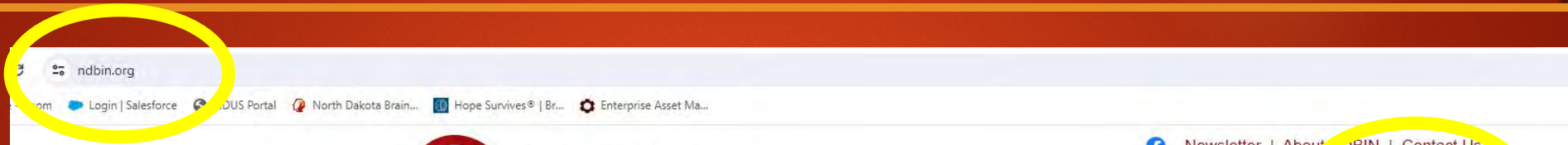
- ▶ Governor Advisory Council created in 2017
- ▶ Meets quarterly
- ▶ Gains in representation from survivors and family members!

Survivor Connections



- ▶ Phone call system where expert survivors of brain injury are paired up with new survivors of brain injury and hold monthly calls with one another to provide each other with support, resources and education

How to refer



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New Infographics

The North Dakota Brain Injury Network (NDBIN) has a variety of infographics available to help American Indian survivors of a brain injury.

- [View the new resources](#)



Brain Injury Guide

View this helpful guide from NDBIN. It provides information to individuals with a brain injury.



Brain Injury ID Card

An individual with a brain injury may request a free brain injury identification card from NDBIN.



Brain Injury Screenings

Find out where screenings are happening or schedule one in your community.



FREE Certified Brain Injury Specialist Training

June 11 & 12
8:30 am – 4:30 pm
Via Zoom



NORTH DAKOTA
BRAIN INJURY
NETWORK

Contact us today!

855.866.1884

www.ndbin.org

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NORTH
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