Bucks County BrainSTEPS Team Presents: Brain Injury and Supports

Bucks County Intermediate Unit

LEARN
FLOURISH
CONTRIBUTE

Sarah Krusen, MA CCC/SLP CBIST
Speech Language Pathologist
Bucks IU #22 Brain Injury Programs
BrainSTEPS Team Leader
Bucks County Intermediate Unit #22
skrusen@bucksiu.org

BrainSTEPS:
Primary Support Program for All Types & Severities of Acquired Brain Injury

BrainSTEPS

Strategies Teaching Educators, Parents, & Students

A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

Assists
students, schools & families
following
Acquired brain injury

BrainSTEPS

STEPS:

Strategies

Teaching

Educators

Parents &

Students

Created in 2007 by:
PA Department of Health

Unique funding partnership:
PA Department of Health;
PA Department of Education,
Bureau of Special Education

Implemented by:
All 29 Educational Intermediate Units

Under direction from:
Brain Injury Association of Pennsylvania

BrainSTEPS
Strategies Teaching Educators, Parents, & Students
A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

pennsylvania
DEPARTMENT OF HEALTH

pennsylvania
DEPARTMENT OF EDUCATION

BRAIN INJURY ASSOCIATION OF PENNSYLVANIA

BrainSTEPS

Strategies Teaching Educators, Parents, & Students

A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

ACQUIRED BRAIN INJURIES-EDUCATIONAL SUPPORT FOR STUDENTS IN PENNSYLVANIA

YOUR NAME HERE

pennsylvania DEPARTMENT OF HEALTH

BRAIN INJURY ASSOCIATION OF PENNSYLVANIA

pennsylvania DEPARTMENT OF EDUCATION

BrainSTEPS

Strategies Teaching Educators, Parents, & Students

A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

BRAINSTEPS

STATE DIRECTOR

Dr. Brenda Eagan-Johnson, CBIS-AP
brenda@brainsteps.net
724-944-6542
www.brainsteps.net

pennsylvania DEPARTMENT OF HEALTH

BRAIN INJURY ASSOCIATION OF PENNSYLVANIA

pennsylvania DEPARTMENT OF EDUCATION

Objectives

- Use person-centered planning, a wraparound approach & trauma-informed care to help support the educational needs of student with brain injury

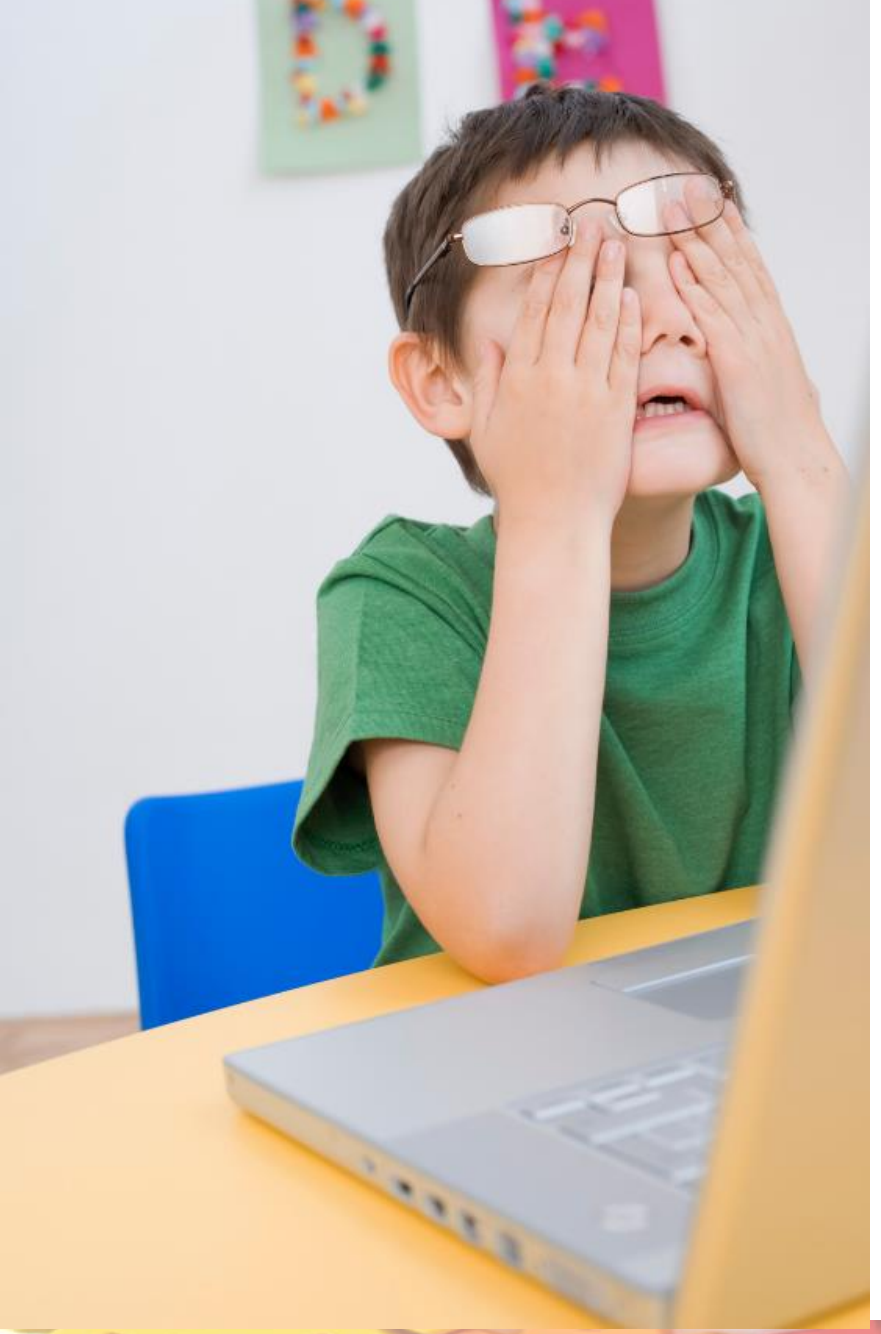
- Identify students to refer to the BrainSTEPS Program for consultation & training support

What is Acquired Brain Injury?

- Traumatic Brain Injuries (TBI)
  (includes Concussions)

- Non-Traumatic Brain Injuries (nonTBI)

** Any child who has a brain injury that occurs AFTER the birth process can be referred to BrainSTEPS*



The majority
of children who sustain an ABI will return to school with at least
one impact……

cognitive,
physical,
emotional,
social,
and/or
behavioral

Medical Versus Educational Identification

- Medically, TBI is a "leading" cause of disability in children & adolescents

(Centers for Disease Control)

- Educationally, TBI is considered "low incidence"
  - Lack of pre-service teacher training
  - Lack of in-service teacher training

The Problem:

Nationwide, many children & adolescents with TBI are misidentified & under-identified at school, leading to inappropriate educational supports.

Why the Discrepancy

- Not all children who sustain an ABI experience lasting effects
- Effects of ABI mimics other disabilities
- Effects of brain injury can be latent
- Parents may not want their child labeled as having a brain injury
- May be served via 504 (no data on this)

Students with Acquired Brain Injuries

Have unique learning needs

- Cognitive
- Physical
- Emotional/Behavioral
- Sensory

Child's Brain

Adult's Brain

A Child's Brain

Is an acquired brain injury

(brain injury occurring at any point after birth)

really that different from congenital brain injuries or other learning disabilities?

Yes!

ABI Occurs to a Developing Brain

1. Damage to the brain is sudden

2. Damage occurs to a developing brain
   - New issues may emerge over time

A child's brain is not fully developed until the

mid-late 20s. . .

What does this mean?

A student who sustains a prior ABI may experience new difficulties with behavior & learning as the years progress.

Development Without Brain Injury

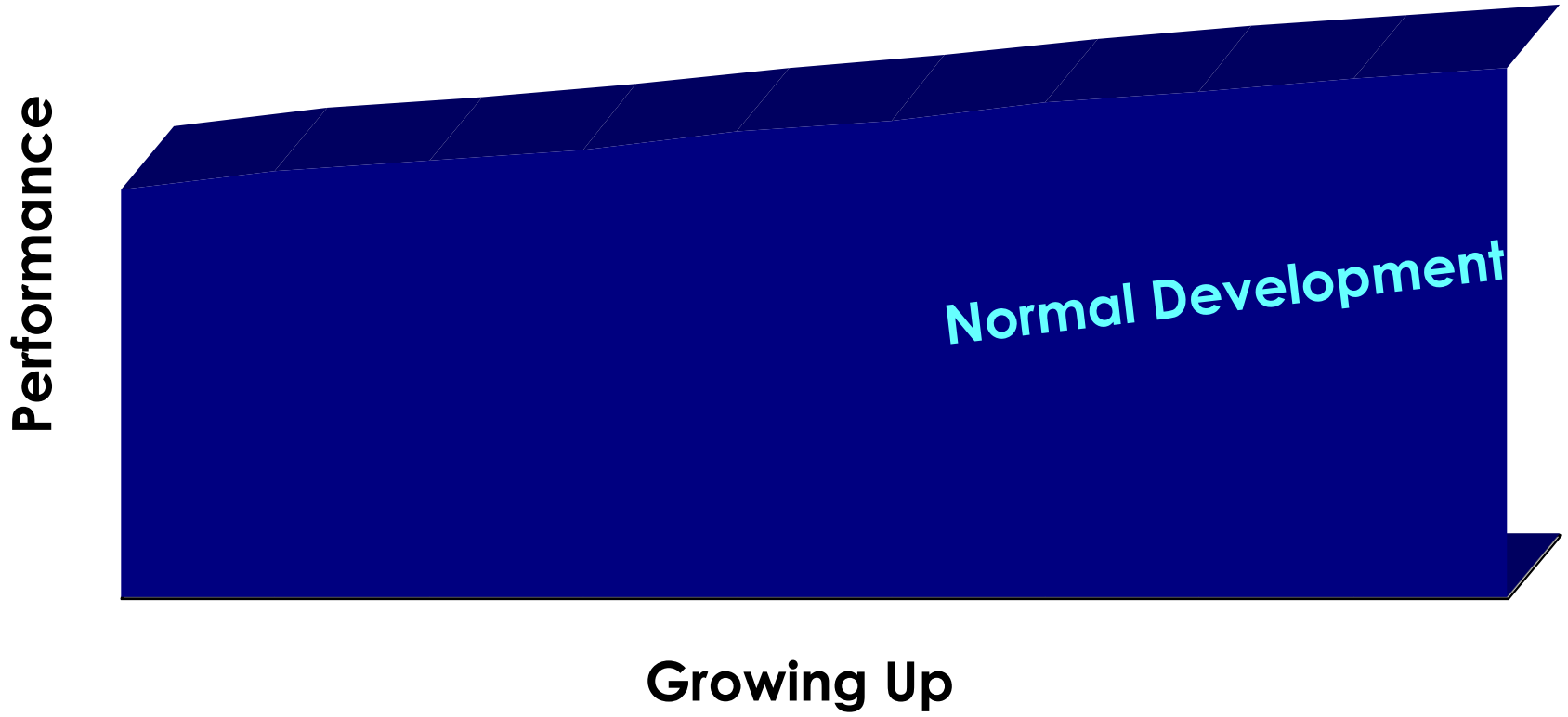


Diagram by Dr. Sandra Chapman, University of Texas

Pediatric Brain Injury: 2 Stages

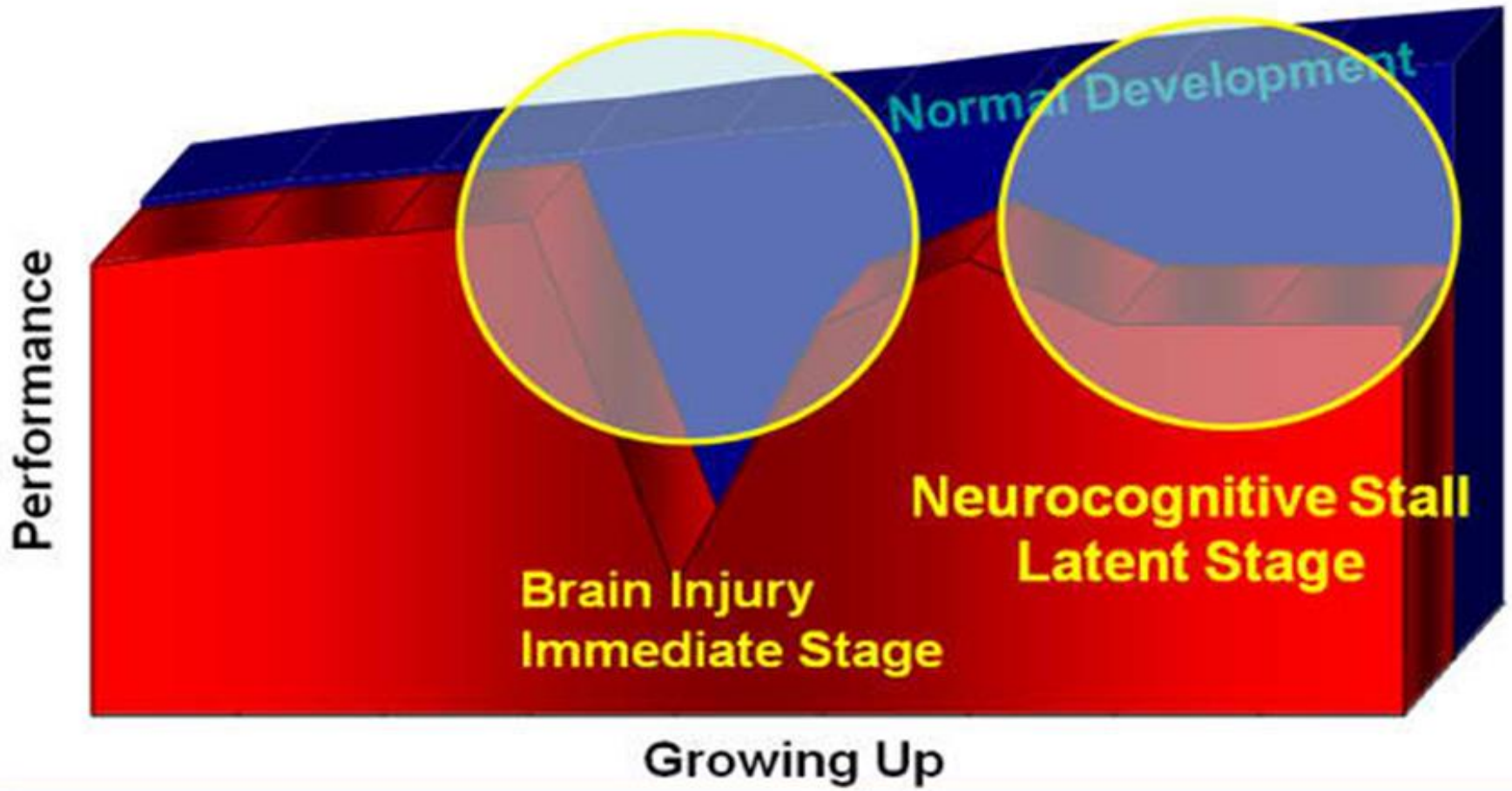


Diagram by Dr. Sandra Chapman, University of Texas

ABI Occurs to a Developing Brain

3. Students typically retain prior knowledge-memories remain intact.
    - New learning is difficult, prior strategies may not work
    - Reconciliation of old self versus new self

4. May not have had a difficult time learning, behaving, or communicating before, but now they may.
    - More extreme discrepancies, scattered performance

ABI Occurs to a Developing Brain

5. Mental health issues often overlay the ABI such as PTSD, depression, anxiety, panic, adjustment issues, & grief
   - Can be organic- caused by damage to the brain
   - Or because the student remembers how life used to be

ABI Occurs to a Developing Brain

6. May have been in regular general education prior to the ABI, but now may require special education.

7. Often, especially depending on severity, students may lose friends & peer support

ABI Occurs to a Developing Brain

8. Teaching students post-ABI is different due to scattered performance. Commonly used teaching strategies may not work

9. Frustration is common after ABI because students may not be able to tap into their full cognitive potential post-injury due attention issues & cognitive fatigue.

ABI Occurs to a Developing Brain

10. May exhibit lack of awareness of new injury-imposed deficits

11. Rapid gains tend to occur during the first 1-2 years. Initial goals/objectives on school plans will quickly become obsolete. Must frequently review & update monthly at least, then every 2-3 months initially.

The Return to School

The return to school can be devastating if the health care facility (hospital or rehabilitation center) & the child's home school do not interact as soon as possible & as frequently as possible

Carter & Savage, 1988;
Ylvisaker et al., 1991;
Begali, 1992;
Mira, Tucker, & Tyler, 1992;
Lash, 1992

An unfortunate reality is that many children begin to have serious academic & behavioral difficulties some years after their injury, which are subsequently attributed to:

- Laziness
- Oppositional nature
- Emotional instability

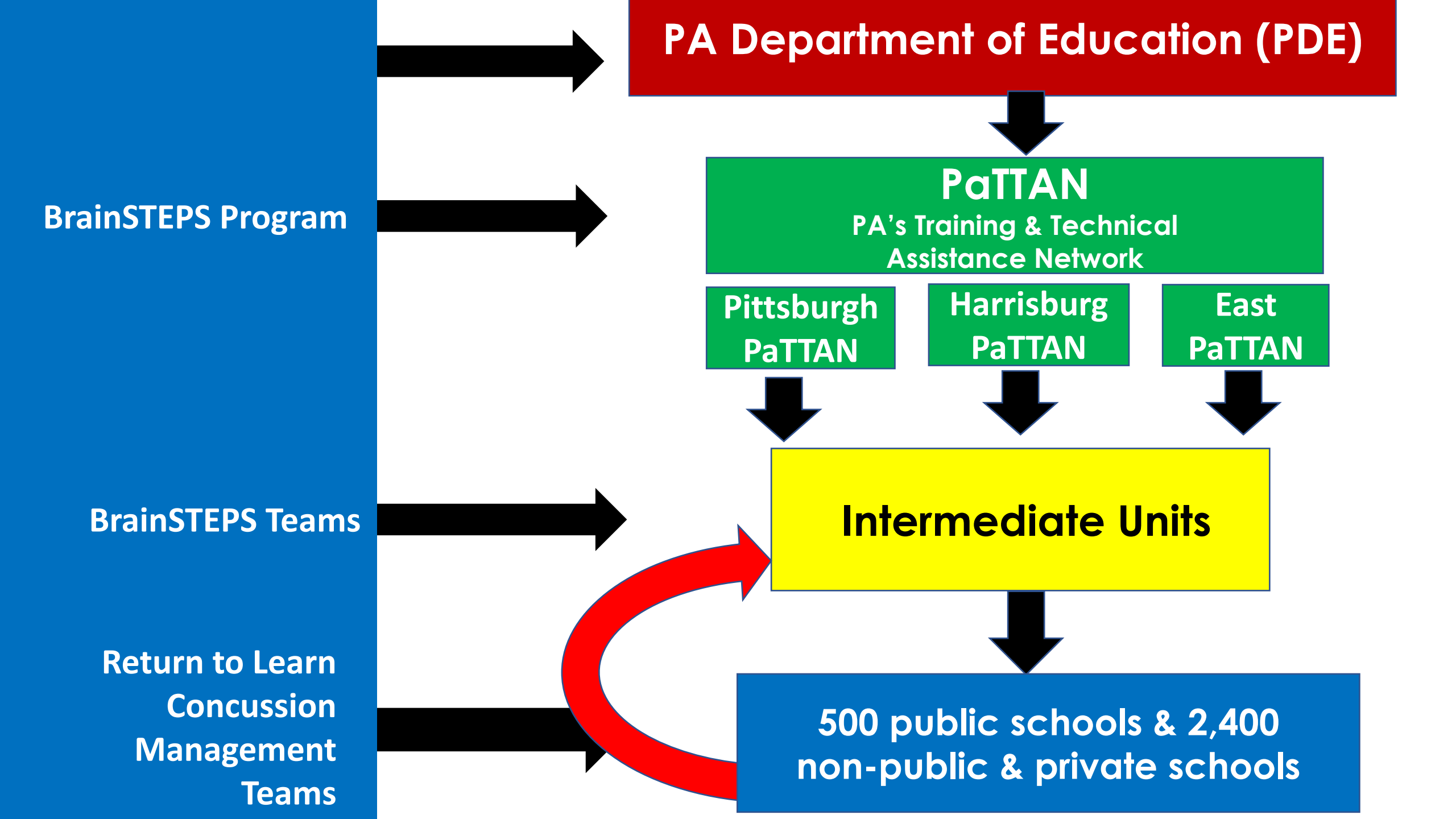
--Dr. Mark Ylvisaker

Pennsylvania BrainSTEPS

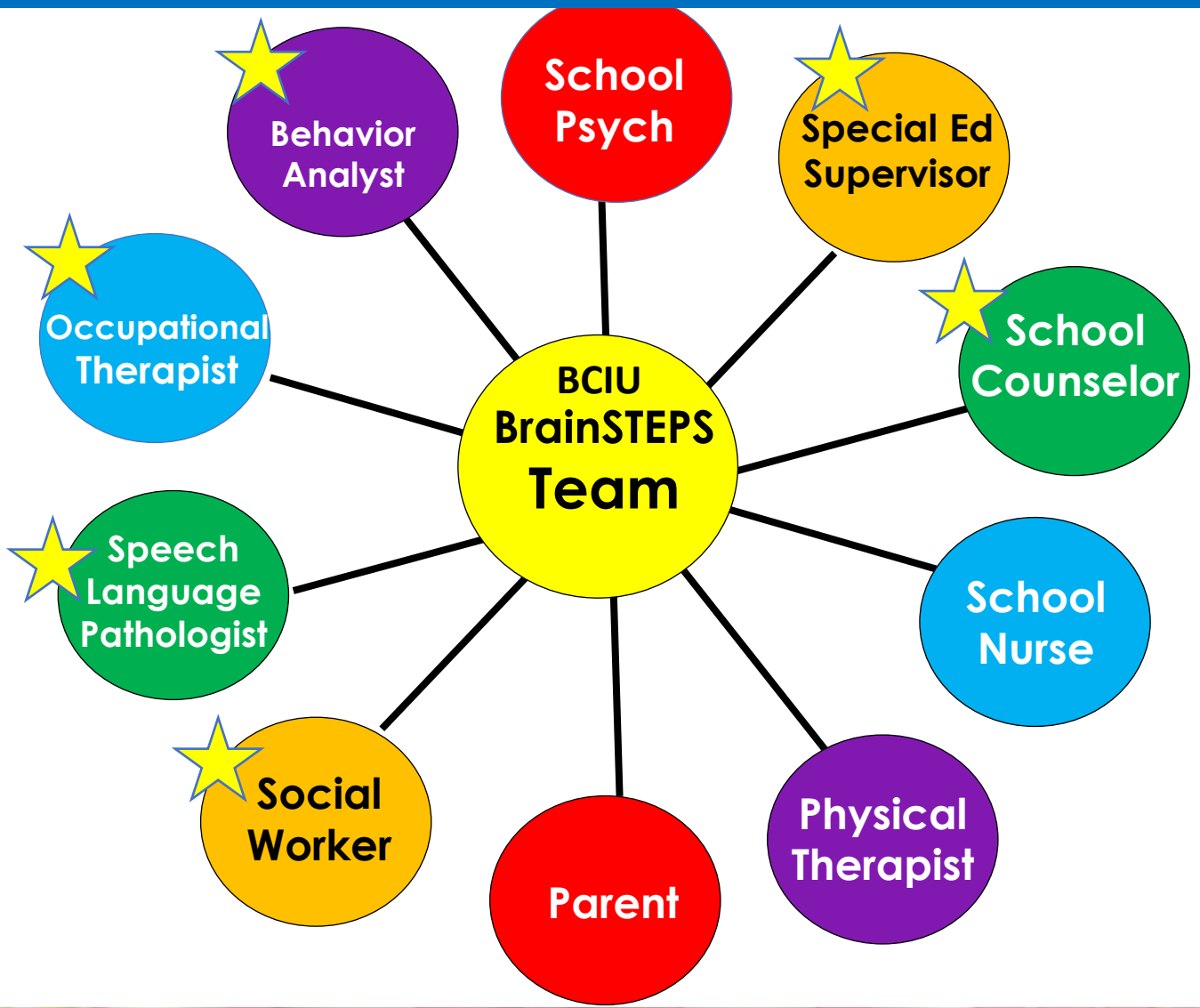
- BrainSTEPS Brain Injury Consulting Teams cover the entire state of Pennsylvania

- **200+ Brain Injury Consultants**
  - Educational professionals
  - Medical & Rehab professionals
  - Family members

State Database for Referrals & Tracking of student data by BrainSTEPS consultants


PA Department of Education (PDE)
BrainSTEPS Program
PaTTAN
PA's Training & Technical Assistance Network
Pittsburgh PaTTAN
Harrisburg PaTTAN
East PaTTAN
BrainSTEPS Teams
Intermediate Units
Return to Learn Concussion Management Teams
500 public schools & 2,400 non-public & private schools

BrainSTEPS Team members



BrainSTEPS Teams Can:

- ✓ Prepare the student for return to school (BrainSTEPS Framework)
- ✓ Communicate with the district, family, medical, & rehabilitation professionals
- ✓ Gather medical, rehab, & educational records to assist the school in making educational recommendations (BrainSTEPS Framework)
- ✓ Conduct student observations
- ✓ Provide peer, parent & school training

BrainSTEPS Teams Can:

- ✓ Assist in student transitions serving as a consistent point of contact for students through the years
- ✓ Offer families support, education & connections to community resources
- ✓ Monitor all referred students annually until graduation

What is a BrainSTEPS Framework

- BrainSTEPS frameworks…
  - Can help bridge the medical information into the academic model in the acute/initial phase of return to learn or later.
  - Allow schools and students to follow a customized plan that incorporates their specific needs due to their brain injury
  - Can be adjusted as needed through the steps of initial return to learn or post return to learn.
  - Can be used as more long-term supports are being put into place
  - Can and should change as needed given the various needs and recovery patterns of that student.
  - Can be used for students who are years post their injuries

Medical vs. Academic Supports

- BrainSTEPS frameworks help bridge the medical information into the academic model in the acute/initial or even after the acute/initial phase of return to learn.

Medical:

- Rehabilitation Treatment Specification System (RTSS) is the idea of using treatment ingredients and learning mechanisms within a unified framework (Hart et al., 2014, 2018)
  - 3 Core Components:
    - Targets
    - Ingredients
    - Mechanisms of Action
- ***BrainSTEPS Frameworks use this same idea in the academic setting.***

Medical Components of RTSS	Academic/ BrainSTEPS Framework	Outcome
Targets Measurable aspects of function or behavior expected to improve as a result of treatment	**School Based Targets:** The behavior changes that have been observed as a result of the brain injury (e.g., physical, learning, emotional) and need support. These consider the environment and activity trigger	**Targets:** School and student have shared understanding of the barriers for return to learn.
Ingredients Actions carried out by the clinician Active Ingredients- actions thought to produce change in the target	**School Based Ingredients:** The academic adjustments put into place for that specific student.	**Ingredients:** School and student have shared plan on how to navigate these barriers during the return to learn process
Mechanisms of Action Hypotheses of how the ingredients induce change in specified targets (Nunn, K, et al 2023)	**School Based Mechanisms of Action:** The completed framework shared with the entire school team that works with the student, with the expectation that both school and student will utilize supports/adjustments in return to learn.	**Mechanism of Action:** School and student have shared document that can regularly be adjusted as need to fit the student's changing needs until either they are cleared or have more permanent supports in place (e.g., 504 plan or IEP).

Name: Student Smith Date of Framework: 3/7/23 Completed by _BrainSTEPS (input from school, student, family)_____
Date of Concussion: 1/20/23

Physical Changes:	Environment: ✓ Home? ✓ School? ✓ What class(es) are symptoms occurring in? ✓ Time of Day?	Activity Triggers What is the student *doing* when onset of symptoms are observed?	Academic Adjustments/Accommodations	
			Using Now	To Explore
Headaches	Various	• Student reported she is unsure of what triggers her headaches, but they are reduced on the weekends and when she is not in school	Currently has a 504 with some accommodations from prior to her concussion	• Student should leave class a few minutes early to travel in a hallway that is less crowded and noisy to get to her next class. • Student should take brain breaks during her day to help manage her headaches.
Noise	Various	• Student reported that a noisy environment can bother her	Eats in a quiet environment	• Student to remove herself when needed from a noisy environment.
Vision	Various	• Student reported that her vision can go blurry, words can move around and looking up and down from the board can	The concussion doctor has recommended outpatient PT for Student	• Student should be provided with a completed set of written/copied notes for each class to reduce her looking up and down to take notes. • Student to listen to audio versions of notes and text when available to her. Student did note that this is not always helpful for comprehension so she may prefer to read.

Name: Student Smith Date of Framework: 3/7/23 Completed by _BrainSTEPS (input from school, student, family)_____
Date of Concussion: 1/20/23

		trigger her symptoms.		• If Student is reading longer text/novels allow extended time for her to read this information. Due to her current visual/vestibular deficits reading may trigger symptoms.
Light	Various	• Student reported computer and outdoor light can bother her		• Student should dim light on computer screen. • Student should sit away from bright lights/windows. • Student may wear a hat with a visor and/or sunglasses in school. Student did not seem to want to do this in class but offered it as an option.
Sleep	Various	• Student is going home from school and napping for hours. She is having difficulty going and staying asleep at night.		• Student should start cutting back on her naps in the afternoon in 30-minute increments to increase the quality of her night sleep. • Student should avoid electronics/phone 45-60 minutes prior to bedtime.
Thinking & Learning Changes	<u>Environment:</u> ✓ Home? ✓ School? ✓ What class(es) are symptoms occurring in? ✓ Time of Day?	<u>Activity Triggers</u> What is the student *<u>doing</u>* when onset of symptoms are observed?	Academic Adjustments/Accommodations Using Now	To Explore
Lower attention and concentration	Various	• Student reported that she is easily distracted and		• Student and her teachers should check in with each other on understanding and focus.

Name: Student Smith Date of Framework: 3/7/23 Completed by _BrainSTEPS (input from school, student, family)_____
Date of Concussion: 1/20/23

		having trouble focusing		• Teachers to work with Student to identify where she should be focusing her brain energy in her particular classes.
Memory and processing	Various	• Student feels that it's taking her longer to process and retain information. That her memory is impaired.		• Allow Student extended time to complete work. • Allow Student to use her notes to refer to information and demonstrate that she has the ability to understand and apply the content knowledge without relying solely on memory. • Shorten writing assignments to allow Student to demonstrate the ability to creatively write without it being overly cognitively taxing on her brain while she is healing. • Teachers to work with Student on identifying the MOST ESSENTIAL content in their subject areas. Work with Student to focus on the understanding of those concepts.
Behavioral & Social Changes:	Environment: ✓ Home? ✓ School? ✓ What class(es) are symptoms occurring in? ✓ Time of Day?	Activity Triggers What is the student *doing* when onset of symptoms are observed?	Academic Adjustments/Accommodations Using Now	To Explore
Anxious and stressed	Various	• Student reported she is processing everything and feels more anxious and stressed than normal for herself	Student has an outside provider she is working with for strategies and support.	• Clear communication with Student and her teachers of what the concrete expectations are in their class. Be clear on "do this and don't do that" vs. do what you can.

Brain Injury Points to Remember

1. Every brain injury is different.
2. Pre-existing deficits can be exacerbated by brain injury.
    - Brain injury disrupts normal brain development.
    - The developmental stage at time of injury matters.
3. Brain injury can impact the ability to learn new material.
    - The student may be able to tell you something he or she learned one day, but not be able to remember it the next day. This is common after brain injury.
4. A brain injury can impact all areas of functioning.
    - Cognitive (thinking/remembering), Emotional, Physical, Sleep Disturbance.
5. The impact of brain injury can be latent; we often see the impact over time.
    - As the brain develops and changes over the years, new effects from a previous brain injury may emerge

Brain Injury Points to Remember

6. Executive Function Skills are commonly affected by brain injury.
    - During the elementary years, teachers act as the student's frontal lobe (responsible for executive function skills). As students age and their frontal lobe develops, teachers pass that responsibility on to them. This is when additional learning or behavior issues may emerge. It is helpful to establish an organization system that can follow the student through each transition to support the student during these times.
7. Cognitive fatigue is common following brain injury.
    - Academic adjustments and structured breaks ***prior to the onset*** of fatigue can help.
    - Allowing structured access to preferred activities/areas of strength.
8. Students with brain injury should be monitored closely, especially during the initial years post-injury, as many changes are possible that can result in the need for school and academic adjustments.

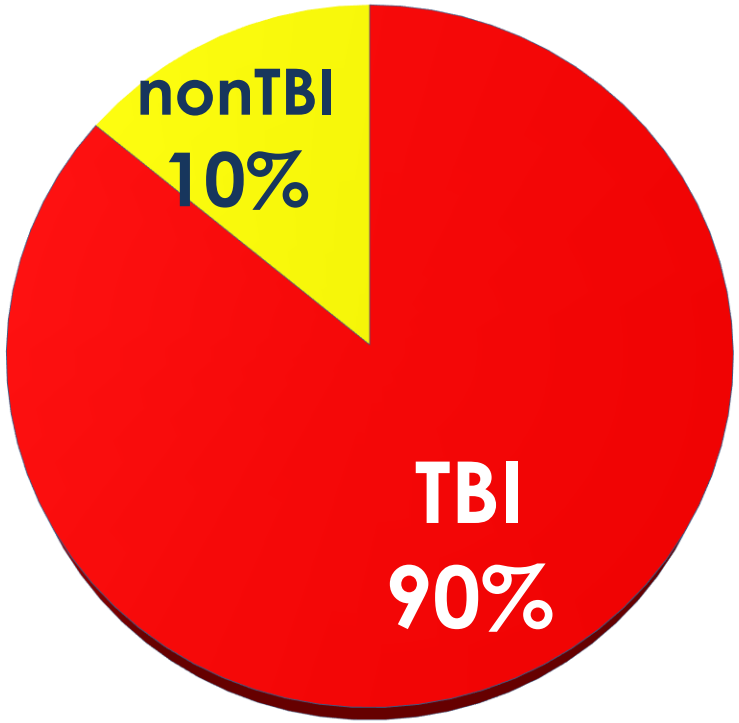
Secondary Support Program Created by BrainSTEPS Just for Concussions

BrainSTEPS
Strategies Teaching Educators, Parents, & Students
A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

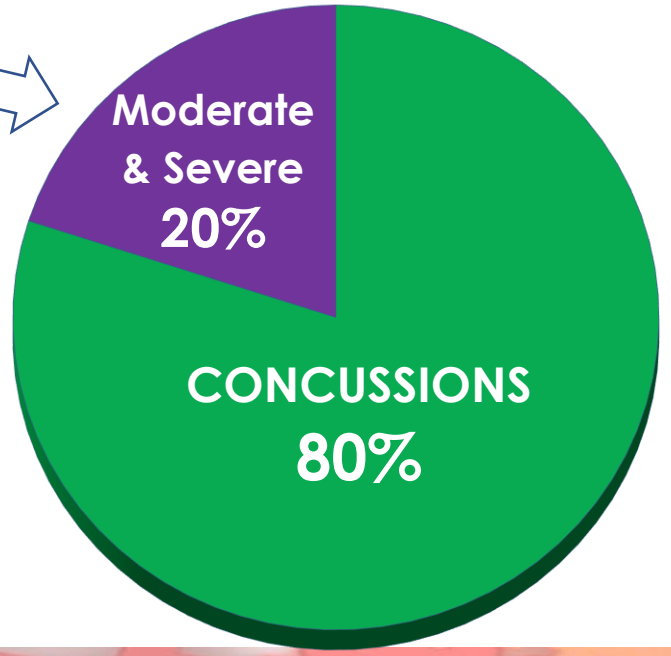
Return to Learn Concussion Management Team (RTL CMT) *Ancillary Model*

**Trained over 3,000 RTL CMTs since 2013*

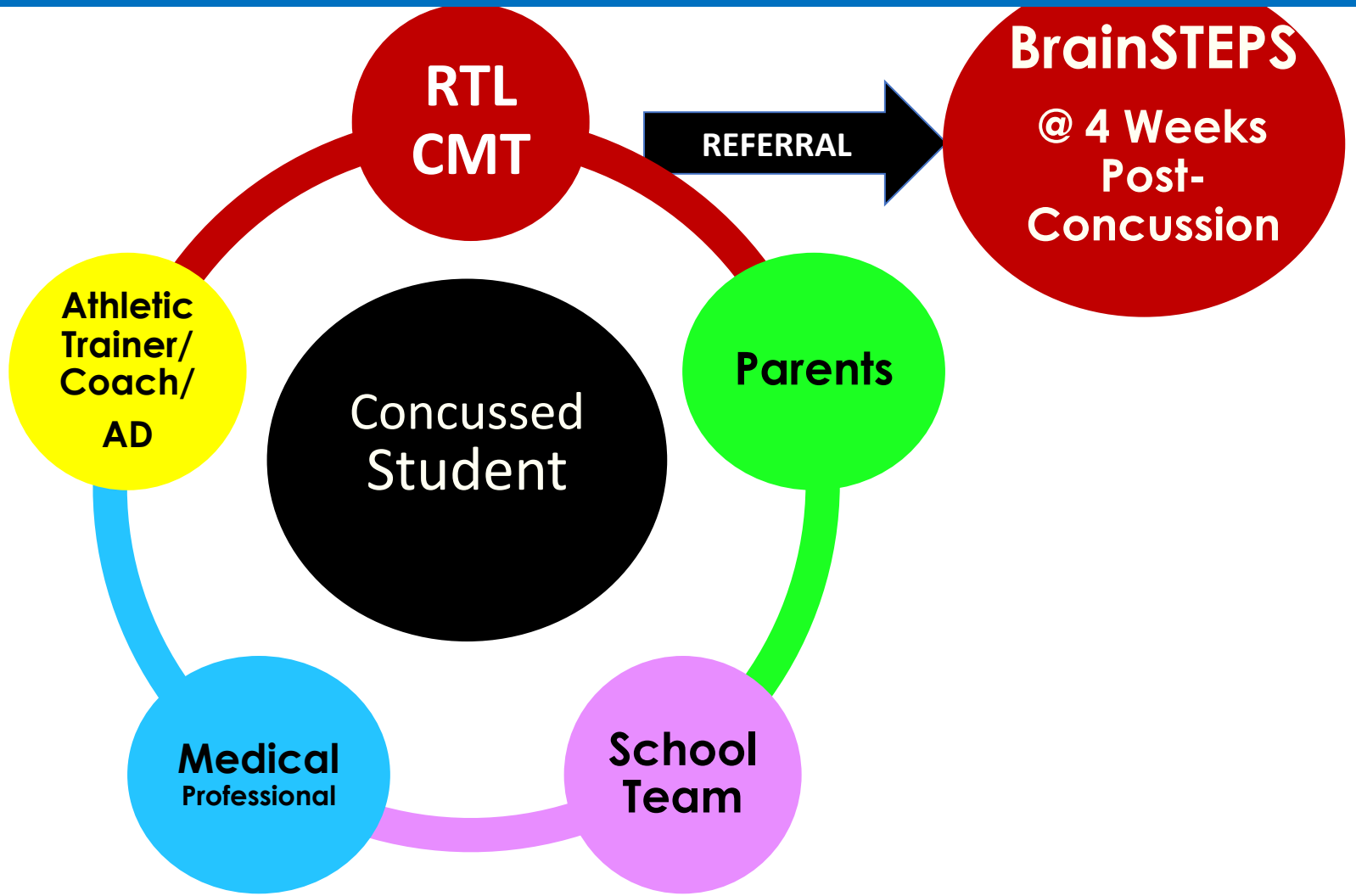
BrainSTEPS Student Brain Injury Causes



TBI Severities



BrainSTEPS 2 Layered Support for Concussions



BrainSTEPS Return to Learn Concussion

Students who are appropriately academically supported use less *cognitive energy* during the initial phases of recovery, therefore students:

- Experience less symptoms (# & severity)

  (Majerske, Mihalik, & Ren, 2008)

- Potentially recover faster, reducing long-term school impacts

  (Brown et al., 2014)

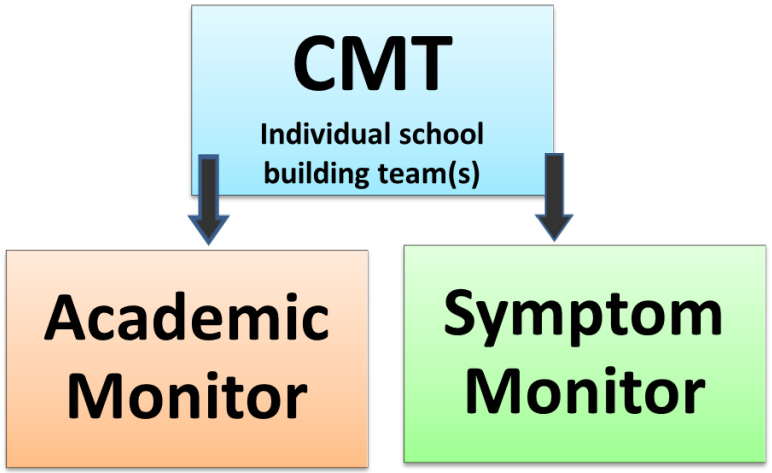
BrainSTEPS:

Return to Learn Concussion Management Team Model

CMTs consist of 2 designated monitors

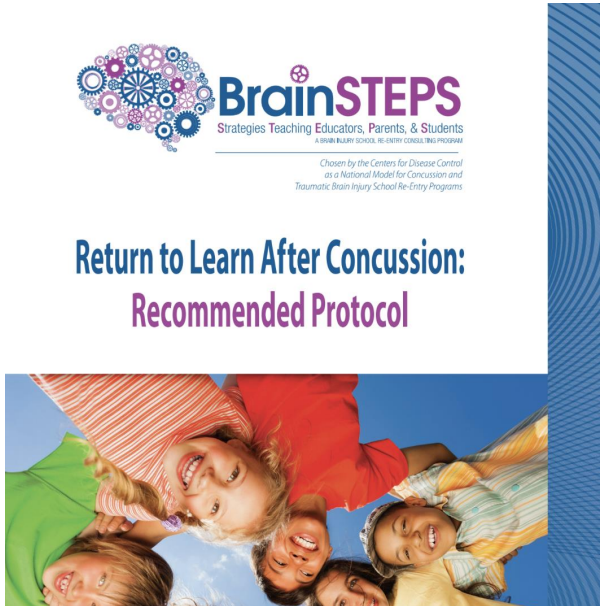
- Academic Monitor
  - (School Psych, Guidance Counselor)
- Symptom Monitor
  - (School Nurse)

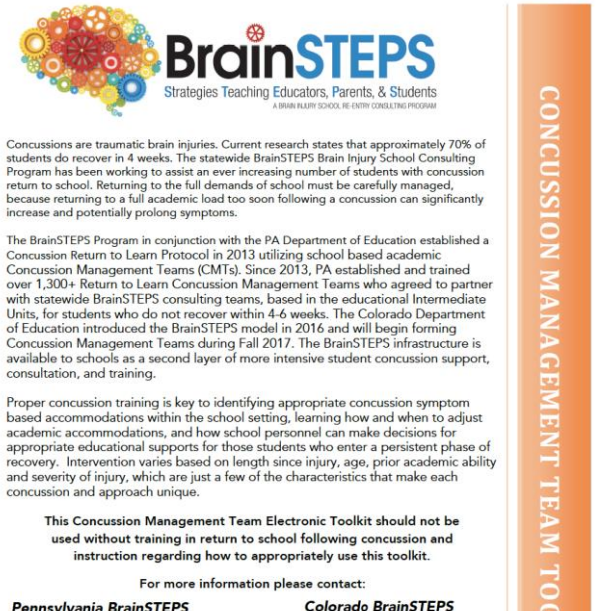
+ Team Members

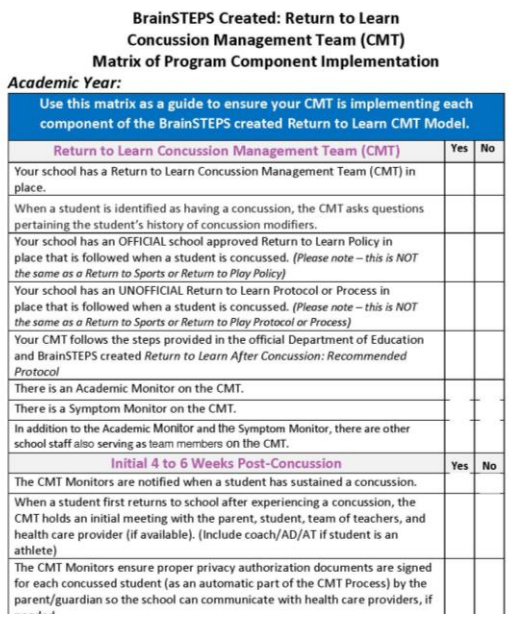


BrainSTEPS:

Return to Learn Concussion Management Team Model







BrainSTEPS Created: Return to Learn Concussion Management Team (CMT) Matrix of Program Component Implementation

Academic Year:

Use this matrix as a guide to ensure your CMT is implementing each component of the BrainSTEPS created Return to Learn CMT Model.		
Return to Learn Concussion Management Team (CMT)	**Yes**	**No**
Your school has a Return to Learn Concussion Management Team (CMT) in place.		
When a student is identified as having a concussion, the CMT asks questions pertaining the student's history of concussion modifiers.		
Your school has an OFFICIAL school approved Return to Learn Policy in place that is followed when a student is concussed. *(Please note – this is NOT the same as a Return to Sports or Return to Play Policy)*		
Your school has an UNOFFICIAL Return to Learn Protocol or Process in place that is followed when a student is concussed. *(Please note – this is NOT the same as a Return to Sports or Return to Play Protocol or Process)*		
Your CMT follows the steps provided in the official Department of Education and BrainSTEPS created *Return to Learn After Concussion: Recommended Protocol*		
There is an Academic Monitor on the CMT.		
There is a Symptom Monitor on the CMT.		
In addition to the Academic Monitor and the Symptom Monitor, there are other school staff also serving as team members on the CMT.		
Initial 4 to 6 Weeks Post-Concussion	**Yes**	**No**
The CMT Monitors are notified when a student has sustained a concussion.		
When a student first returns to school after experiencing a concussion, the CMT holds an initial meeting with the parent, student, team of teachers, and health care provider (if available). (Include coach/AD/AT if student is an athlete)		
The CMT Monitors ensure proper privacy authorization documents are signed for each concussed student (as an automatic part of the CMT Process) by the parent/guardian so the school can communicate with health care providers, if		

- 5.5 hour, asynchronous, online, interactive 7 module course
- 3 resource tools are provided to CMTs to implement the protocol
- Teams register at **concussions.brainsteps.net**

RTL CMT Training Site

BrainSTEPS
Strategies Teaching Educators, Parents, & Students

Home About Course Presenters Admin Inbox My Acc

Take the Official BrainSTEPs Interactive Video Course: Return to Learn Concussion Management Team Training

A nationally recognized model for brain injury school-based educational consulting, delivering training to thousands of educational professionals for over a decade. Earn up to 6.5 professional development credit hours in Colorado and Pennsylvania.

Go to Course

COLORADO Department of Education | MINDSOURCE BRAIN INJURY NETWORK | BRAIN INJURY ASSOCIATION OF PENNSYLVANIA | pennsylvania DEPARTMENT OF EDUCATION | pennsylvania DEPARTMENT OF HEALTH

About the Course

This course is designed to train members of the school building's Return to Learn Concussion Management Team (CMT) how to manage student concussions for the initial 4-6 weeks post concussion. CMT members will learn how to monitor a student's academics and post-concussion symptoms while gathering appropriate data to justify educational decisions. Second, CMT members will learn how to ensure concussed students receive appropriate educational supports during the initial 4-6 weeks post concussion to promote faster recovery. School staff serving on the CMT will learn how concussion affects learning and strategies they can employ to help students remain in school throughout the recovery process.

Learn More

Course Outline

Introduction to the Return to Learn CMT Training — 15 M
Presented by Janet Tyler, Ph.D., CBIST

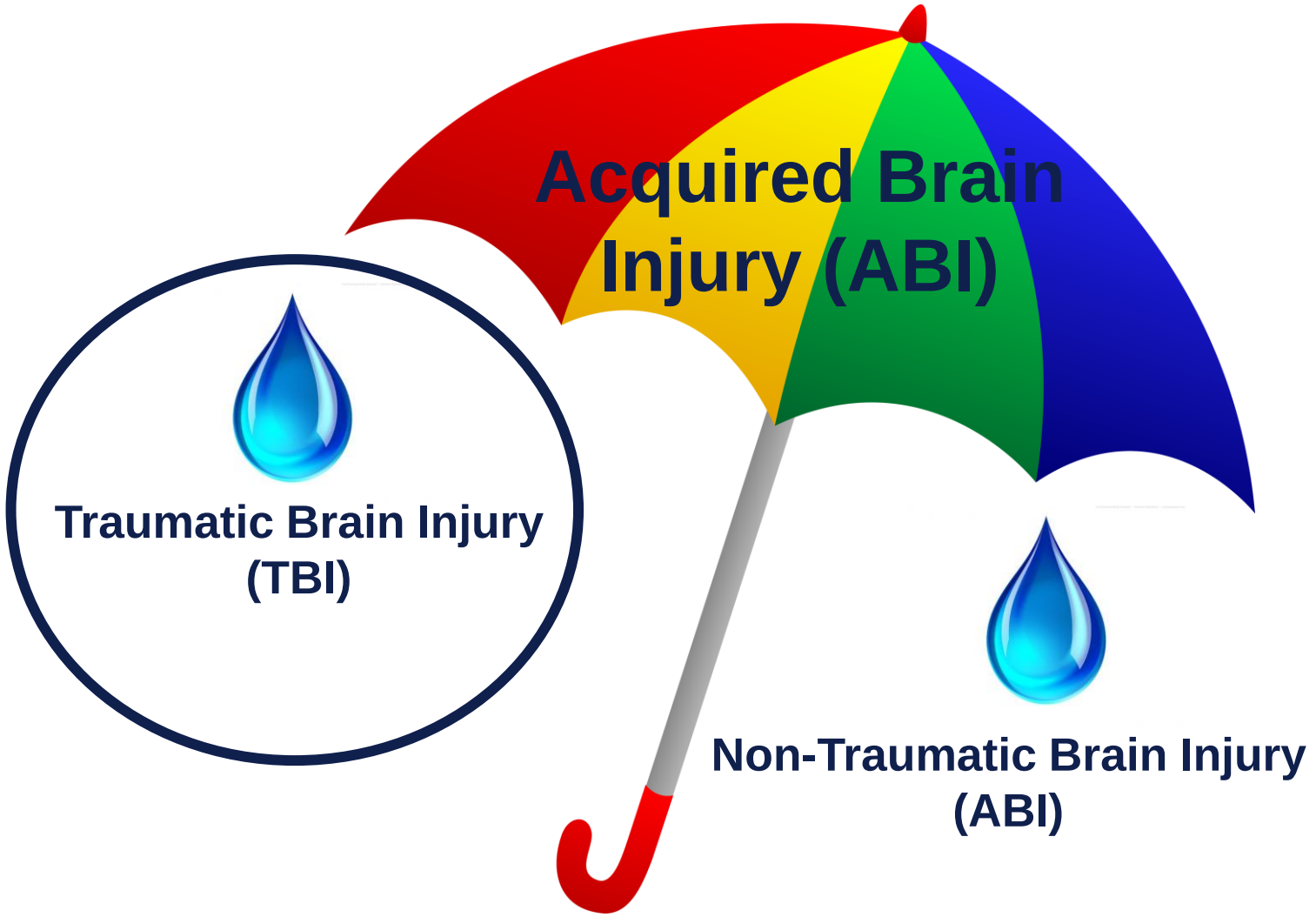
Concussions: What You Need to Know From a Medical Perspective — 45 M
Presented by Mark Halstead, MD

Concussions: What You Need to Know From an Educational Perspective — 20 M
Presented by Brenda Eagan Brown, MEd, CBIS

Academic Planning for the Return to Learn Concussion Management Team - Part 1 — 50 M
Presented by Brenda Eagan Brown, MEd, CBIS

Academic Planning for the Return to Learn Concussion Management Team - Part 2 — 67 M

ABI vs. TBI



LEARN
FLOURISH
CONTRIBUTE

Concussion Definition

- A “traumatically induced transient disturbance of brain function.” Traumatic brain injuries have varying severity, ranging from mild, transient symptoms to extended periods of altered consciousness. Prognosis is usually good, and most patients experience complete resolution of symptoms
- Occurs as a result of either a **direct** or **indirect injury** to the head.
- Early symptoms of a concussion are due primarily to a “functional disturbance rather than structural injury.”
- “Neurochemical and neurometabolic events” after an injury to the head result in an alteration of neurologic function. Acceleration, deceleration, or rotation of the head result in acute axonal injury via disruption of neurofilament organization. The release of electrolytes through ion channel depolarization leads to a release of neurotransmitters and subsequent neurologic dysfunction. Changes to glucose metabolism decreased cerebral blood flow, and mitochondrial dysfunction also occurs

Ferry 2022

Bucks County Intermediate Unit

Warning!!!!

Symptoms may not present themselves until 24hrs, 48hrs, or even 72hrs after the possible concussion!!!!!

BrainSTEPS Return to Learn Concussion

Students who are appropriately academically supported use less *cognitive energy* during the initial phases of recovery, therefore students:

- Experience less symptoms (# & severity)

  (Majerske, Mihalik, & Ren, 2008)

- Potentially recover faster, reducing long-term school impacts

  (Brown et al., 2014)

Bucks County Intermediate Unit

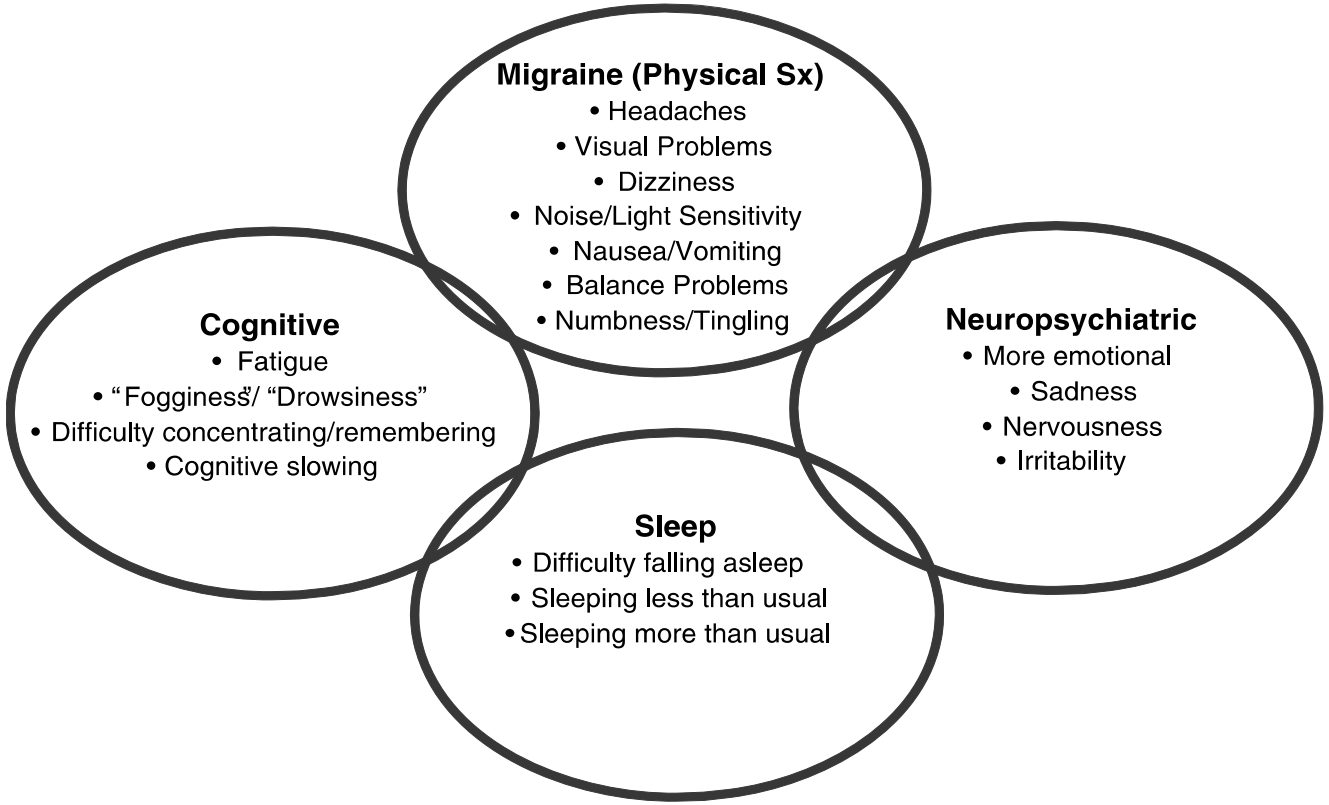
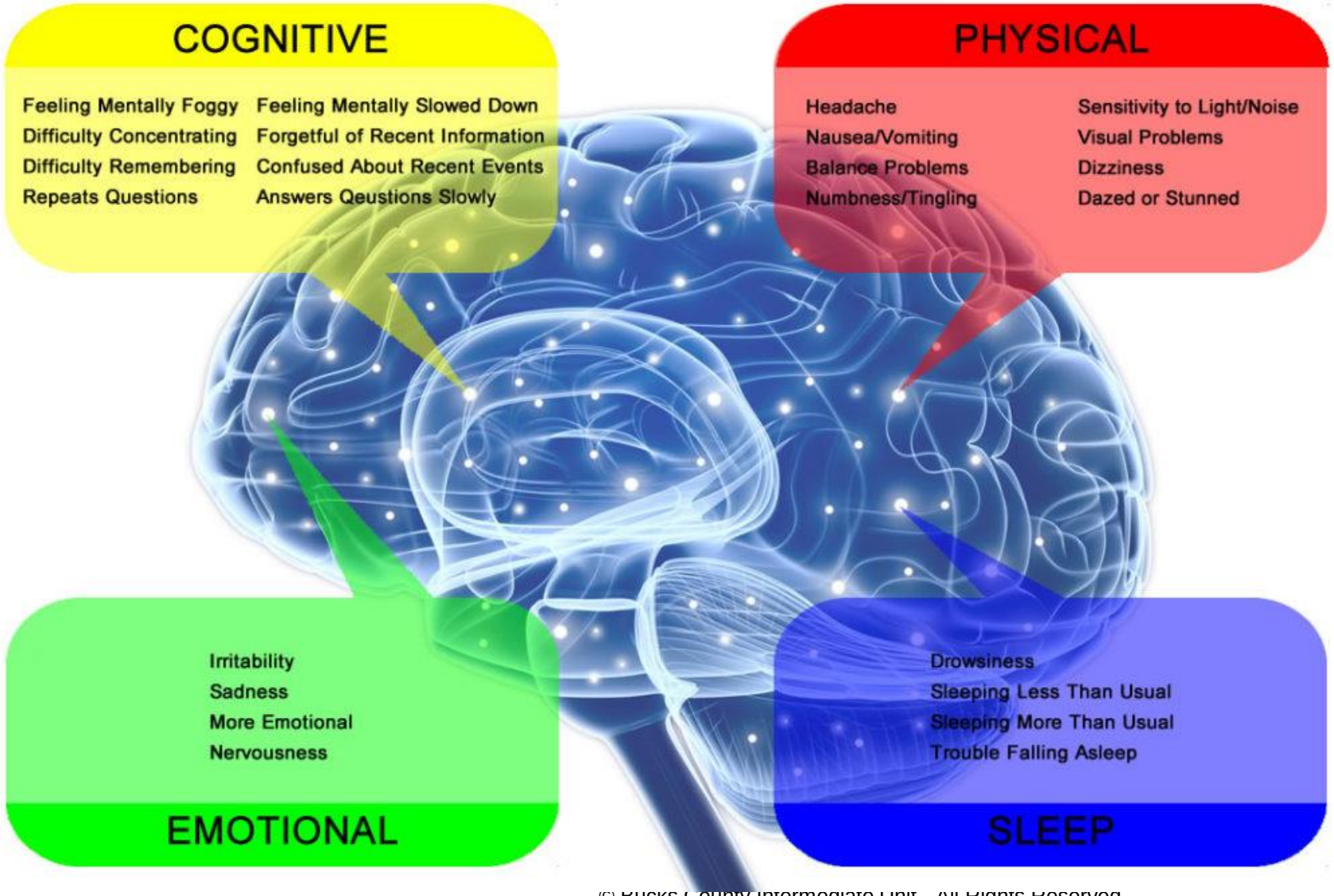


Figure 1. Post-Concussion Symptom Scale, grouped into 4 symptom clusters.

Lau et. el 2011

Concussion Video (Cantu)



Multi-Agency Involvement

Systems of Care = Silos

Possible Contributors

MEDICAL

- Primary care physicians
- Concussion specialists
- Physical Therapists
- Occupational Therapists
- Psychologists or Therapists
- Neuropsychologists
- Vision
- Speech Pathologists
- Chiropractors
- Acupuncture
- Neurologists

LEARN
FLOURISH
CONTRIBUTE

What's at stake...

MEDICAL

- Return too early, repeat injury
- Hold out too long
  - Create barriers to return to learn
  - Increase possible school refusal
  - Student identifies as medically fragile

LEARN
FLOURISH
CONTRIBUTE

Primary Goal: To get their patients medically recovered from a concussion

MEDICAL

- Medically assess concussion and advise family
- They may make academic recommendations, but the schools are the experts on supporting students
- Recommendations are more of a guideline
- Communication with medical and school is essential

LEARN
FLOURISH
CONTRIBUTE

Possible Contributors

ACADEMIC

- Teachers
- IEP Case Managers
- School Counselors
- School Nurses
- Principals
- Aids/Teaching Assistants

LEARN
FLOURISH
CONTRIBUTE

What's at stake...

ACADEMIC

- Grades
- GPA
- Class Rank
- Was struggling prior to concussion
- Credits, credit deficient, credit recovery
- Keystones
- Course recommendations

LEARN
FLOURISH
CONTRIBUTE

Primary goal: To thoughtfully manage students and academics as they recover from a concussion

ACADEMIC

- Are the experts in their schools and academics
- By having a graduated plan to discuss with families from the onset shows you are the expert in return to learn
- Use medical to guide academic
- Communication, communication, communication
- Manage expectations, alleviate concerns

LEARN
FLOURISH
CONTRIBUTE

Possible Contributors

HOME

- Parents
- Siblings
- Step-parents
- Step-siblings
- Multiple homes
- Level of support- may vary home to home
- Resources-not all have equal access
- Knowledge of concussions

LEARN
FLOURISH
CONTRIBUTE

What's at stake...

HOME

- Disruption of family system (checks and balances)
- Child has a brain injury, what does that mean?
- Job vs. parent demands to go to appointments, therapy, etc.
- Money: co-pays, travel, job

LEARN
FLOURISH
CONTRIBUTE

Primary Goal: To keep see their child/teen fully recover

HOME

- Most likely getting the perspective from the student on how they feel school is going
- Working with parents/students allows open communication
- Creating and supporting plans from the onset often helps alleviate the stress and worry at home about school

LEARN
FLOURISH
CONTRIBUTE

Possible Contributors

ATHLETICS & ACTIVITIES

- Athletic trainers
- Parents
- In School/Out of School Sports Coaches
- Lifting Coaches
- Specialized Coaches

LEARN
FLOURISH
CONTRIBUTE

What's at stake…

ATHLETICS & ACTIVITIES

- Extra curricular athletics and activities
- Levels of competition
- Hopes for scholarships
- Identification of self through athletics & activities

LEARN
FLOURISH
CONTRIBUTE

Primary Goal: Safe Return to Play

ATHLETICS & ACTIVITIES

- Return to play with school athletics should be guided by ATC with input from school team on how that student is performing in school
- Return to play with non-school teams is up to the family and that sport/activity
- Many concussion specialists will clear students early for aerobic non-contact exercise based on research of the benefits.

LEARN
FLOURISH
CONTRIBUTE

Concussion Modifiers

- Previous Concussions
  - Time in between concussions
  - Number Severity and Duration
- Sex-Female athletes suffer concussions about twice as often as male participants in the same sport (Ferry 2022)
- Age
- Genetics
- Prior mental health needs
- Prior learning needs
- Prior Attention Disorders
- Migraine history

Harmon et. el 2013

- **Persistent symptoms post concussion** also called **post-concussion syndrome** occurs when symptoms of a mild traumatic brain injury last longer than expected after an injury.
- These symptoms may include headaches, dizziness, and problems with concentration and memory. They can last weeks to months. (Mayo Clinic)
- When looking at a prolonged recovery it is important to narrow down and focus on a plan for the persistent symptoms vs. a one size fits most approach that may have been implemented initially.

Other observed contributions…

- Family dynamics
  - How family has responded to concussion
  - Family support
- Medical management
- Social functioning prior to the concussion
- Student's academic learning style
- School demand
- Prior events that may have impacted school performance
- Inconsistent medical recommendations
- Multiple medical providers
- Student's identification and loss of academics, athletics, and/or other activities

Concussion Timeline

- School is notified
- Teachers are notified
- School person to talk to student about symptoms
- Information from medical provided
- Family involved

Concussion

1st – 3rd week

- Most students should not be out more than the first 24hrs to 72hrs
- Schools/Family to communicate on initial plan
- Monitor this plan for the first week, more if needed

- 70% of kids should recover in the first few weeks with proper initial support
- 30% will take longer due to many possible factors
- BrainSTEPS can support these students with a more individualized plan, earlier if needed…

4th-6th Week

LEARN
FLOURISH
CONTRIBUTE

Schools should present themselves as the experts in return to learn…

- Schools know their school culture, curriculum and supports best
- School nurses/counselor are the communication pipeline to the teachers for student identified with concussion
- Schools understand the virtual platforms and book/paper needs for each class
- Schools understand how the online grading systems work and can work with families to understand why that system might not accurately reflect how the student is really doing academically.

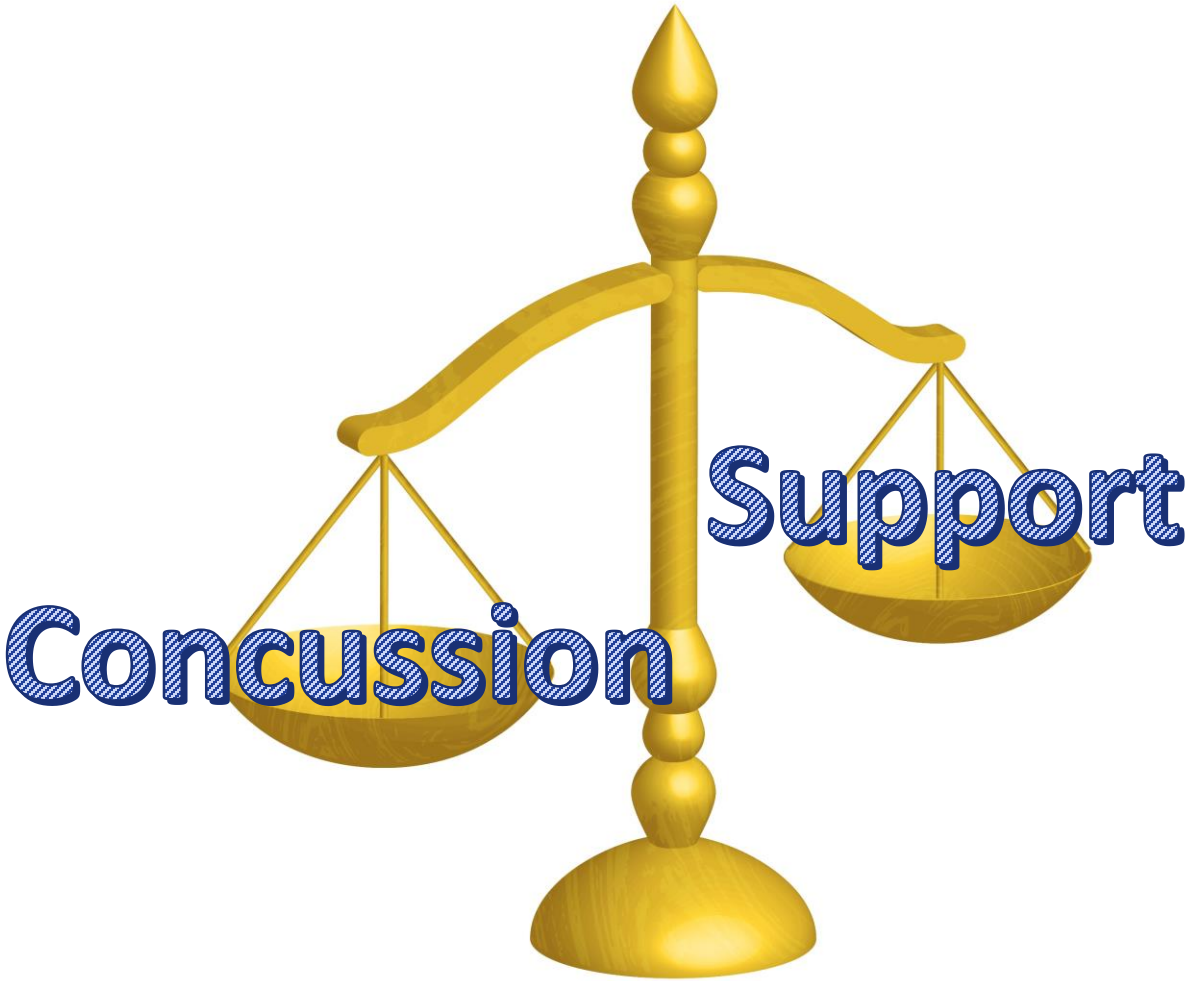
LEARN
FLOURISH
CONTRIBUTE

Schools should present themselves as the experts in return to learn…

- Schools should have a plan that can be shared with the family at every stage of return to learn
  - This should include all the teachers the student encounters in a day
  - This allows schools to help the student and family manage expectations
  - This allows schools to consistently support all students that have a reported concussion in school
- All involved with students should understand how concussion can impact students and look different in different students
  - Learning style
  - Concussion modifiers
  - Previous strengths/needs

LEARN
FLOURISH
CONTRIBUTE

It’s all about BALANCING…



LEARN
FLOURISH
CONTRIBUTE

Bucks County Intermediate Unit

Concussion by age…

LEARN
FLOURISH
CONTRIBUTE

Elementary School Students

What to notice…

- Are there certain times of day and/or activities the child seems to act out, become tired, change in behavior etc.?
- Do they have more trouble during unstructured times?
- Has their participation and/or accuracy in responses changed?

What to ask…

- Does your head bother you?
- Does looking up and down from the board make you eyes or head feel weird?
- Has school or school work changed for you since your concussion?

LEARN
FLOURISH
CONTRIBUTE

Supporting Elementary School Students

First few days…
- Assessing/observing the student throughout the day
- Front load breaks the first few days
- Allow student to be a passive learner
- Offer a quiet place to eat lunch
- Avoid crowded/loud places throughout the school

First few weeks…(if symptoms persist)
- Look at student's schedule
- Try to schedule around math/reading
- Schedule two 20-minute breaks regardless of symptoms
- Avoid chorus, band, noisy environments (if noise is a trigger)
- Minimize copying from the board, have student be an auditory learner

LEARN
FLOURISH
CONTRIBUTE

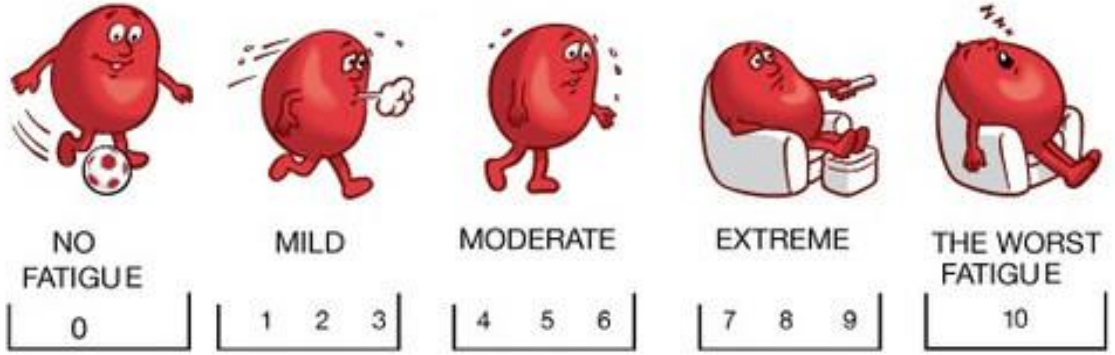
Supporting Elementary School Students

Remember…

- Brain break is not going on to do another activity. A brain break is when there is no other stimuli for a given period of time.
- Elementary school students might not have the vocabulary to express how they feel. It often can come out in their emotions..
  - More emotional
  - Quick to respond verbally/physically
  - Shut down/refuse
- Use of visuals to help with symptom management if needed “my brain feels my body feels.”

LEARN
FLOURISH
CONTRIBUTE

My brain feels…



Source: 4.bp.blogspot.com

My body feels…

Are you in pain?

LEARN
FLOURISH
CONTRIBUTE

Middle School Students

What to notice…

- Are they missing certain classes?
- Is work not getting done?
- Has the quality of work changed?
- Are they missing school?
- Has their mood changed?

What to ask…

- Are you having symptoms from your concussion?
- What classes do you feel you are being most successful in right now?
- What classes are you struggling the most in right now?
- What are some of the other teachers doing that is working?
- What are some things that you feel are not working?

LEARN
FLOURISH
CONTRIBUTE

Supporting Middle School Students

First few days…

- Assessing/observing the student throughout the day
- Ask them how they feel
- Let them leave class a few minutes early to travel in less crowded hallways
- Allow student to be a passive learner
- Offer a quiet place to eat lunch
- Avoid crowded/loud places throughout the school

First few weeks…(if symptoms persist)

- Discuss with the student when and/or what are making symptoms worse
- Work with student to help them understand where to spend their brain energy and where to save their brain energy
- Discuss avoiding band, chorus, noisy environments

LEARN
FLOURISH
CONTRIBUTE

Supporting Middle School Students

Remember…

- Middle school students are still learning to be self-advocates. Their executive skills are still developing.
- Counselors, nurses, teachers should be using the same vocabulary to help the learn to monitor their symptoms and use supports when needed.
- It's not always beneficial to remove all workload from the student while they are concussed. It is a balance with each individual student and each course.
- AVOID saying:
  - "Do what you can.."
  - "We'll do that later…"
- Be specific as possible

LEARN
FLOURISH
CONTRIBUTE

High School Students

What to notice…

- Are they missing certain classes?
- Is work not getting done?
- Has the quality of work changed?
- Are they missing school?
- Has their mood changed?

What to ask…

- Are you having symptoms from your concussion?
- What classes do you feel you are being most successful in right now?
- What classes are you struggling the most in right now?
- What are some of the other teachers doing that is working?
- What are some things that you feel are not working?

LEARN
FLOURISH
CONTRIBUTE

Supporting High School Students

First few days…

- Have a discussion on management of expectations and plan
- Ask them how they feel
- Let them leave class a few minutes early to travel in less crowded hallways
- Allow student to be a passive learner and discuss what that looks like
- Offer a quiet place to eat lunch
- Avoid crowded/loud places throughout the school

First few weeks…(if symptoms persist)

- Discuss with the student when and/or what are making symptoms worse
- Work with student to help them understand where to spend their brain energy and where to save their brain energy
- Work with them to prioritize their academic needs
- Continue to manage expectations and reinforce the positives

LEARN
FLOURISH
CONTRIBUTE

Supporting High School Students

Remember:

- Most students regardless of their previous achievement levels are concerned about school demand and missing work.
- Front load the support and be specific.
- Create a plan with student for each class/course
- Keep lines of communication open throughout the recovery process. This may be a few days to a few weeks or months.
- Many students feel that because the injury is invisible, people don't believe that they don't feel well.
- Just because a student is participating in after school activities, laughing in the hallway, and/or "looks" better, doesn't mean they are better.

LEARN
FLOURISH
CONTRIBUTE

Our Team at Bucks IU BrainSTEPS

Team Leader:
Sarah Krusen (speech pathologist) skrusen@bucksiu.org

Team Members:
Lesley Hirsh (Occupational Therapist) lhirsh@bucksiu.org
Kelly McElrath (Behavior Analyst) kmcelrath@bucksiu.org
Heather Karmazin (School Counselor) hkarmazin@bucksiu.org
Marci Cianni (Social Worker) mcianni@bucksiu.org

Program Supervisor:
Erin Carson ecarson@bucksiu.org

LEARN
FLOURISH
CONTRIBUTE

BrainSTEPS Peer Reviewed Articles

Factors impacting educational outcomes for students with traumatic brain injury in BrainSTEPS

LIBBY CROOK[1], JESSICA S. RICCARDI[1], BRENDA EAGAN-JOHNSON[2], MONICA VACCARO[2] & ANGELA H. CICCIA[3]

[1]*Communication Sciences, Case Western Reserve University, Cleveland, OH, USA,* [2]*Brain Injury Association of Pennsylvania, Pittsburgh, PA, USA, and* [3]*Department of Psychological Sciences, Case Western Reserve University, Cleveland, OH, USA*

Abstract

Purpose: To describe child pre-injury and injury factors impacting post-injury educational outcomes for students with traumatic brain injury (TBI) participating in a state-wide, school-based, school re-entry consultation program, BrainSTEPS in Pennsylvania.
Method: Retrospective analysis of a BrainSTEPS annual follow-up survey.
Result: A total of 296 parent surveys were completed. Analysis revealed a significant difference between levels of severity of TBI and current educational placement ($p < 0.001$), receipt of current therapy ($p < 0.05$) and need for additional consult ($p < 0.05$). Severity of TBI was not related to other examined educational outcome variables (i.e. school performance, current symptoms). History of TBI, symptoms and treatment were not found to be associated with educational outcomes.
Conclusion: These results both support findings from previous studies, and extend previous work by highlighting ongoing needs, including continued, individualised support, of children who sustain a moderate–severe TBI during childhood, and are currently in the chronic stages of injury, with consideration of pre- and post- injury factors. Programs such as BrainSTEPS provide identification of educational needs and provide needed services and supports for children with TBI. Sensitive, validated measures are needed to further understand the role of pre-injury and injury factors on educational outcomes, particularly in programs like BrainSTEPS.

Keywords: *children; brain injury; education; long-term outcomes; injury factors; services and supports*

Introduction

Sustaining a traumatic brain injury (TBI) during childhood has unique impacts on development and functioning over time (Greenham, Ryan, & Anderson, 2017), with deficits spanning executive functioning, cognition, behaviour, and social participation (Beauchamp et al., 2011; Catroppa et al., 2017; Narad et al., 2017; Ryan et al., 2016). These deficits occur acutely and can persist throughout development, ultimately impacting everyday participation including education (Kingery et al., 2017; Ryan et al., 2016). In children with TBI, the most

children with mild TBI, children who sustain moderate–severe TBI present with more global deficits and poorer school performance (Babikian et al., 2015). Regardless of severity of injury, impairments in overall school performance are persistent (Kingery et al., 2017; Petranovich et al., 2020). Outcomes following TBI are influenced by a variety of factors, including injury factors (e.g. mechanism of injury, severity of TBI), personal factors (e.g. age at injury) and service provision (Babikian et al., 2015; Petranovich et al., 2020).

Although further investigation is needed, measures

BrainSTEPS Article Published 9/2022 in the International Journal of Speech-Language Pathology

ASHA American Speech-Language-Hearing Association

PERSPECTIVES

SIG 16

Technical Report

Serving Students With Acquired Brain Injury: Understanding Long-Term Need and Outcomes After the BrainSTEPS Program

Jessica Salley Riccardi,[a] Libby Crook,[a] Brenda Eagan-Johnson,[b] Monica Vaccaro,[b] and Angela H. Ciccia[a]

[a] Department of Psychological Sciences, Case Western Reserve University, Cleveland, OH [b] Brain Injury Association of Pennsylvania, Chambersburg

ARTICLE INFO

Article History:
Received March 22, 2021
Revision received May 10, 2021
Accepted August 26, 2021

Editor-in-Chief: Brenda L. Beverly
Editor: Celeste Domsch

https://doi.org/10.1044/2021_PERSP-21-00059

ABSTRACT

Purpose: The purpose of this study was to inform school-based services for children with acquired brain injury (ABI) by describing and analyzing functional student-outcome data from a state-wide, school-based, school re-entry consultation program, BrainSTEPS (Strategies Teaching Educators, Parents, and Students), in Pennsylvania.
Method: A nonexperimental, retrospective analysis was conducted with data collected during a pilot follow-up survey for BrainSTEPS. Caregivers reported on 337 students with ABI participating in BrainSTEPS.
Results: Most students post-ABI who were participating in BrainSTEPS were enrolled in regular education and reported no ongoing symptoms, as well as no parent perception of need for additional BrainSTEPS consultation during the time period of the follow-up survey. Current receipt of therapy was significantly associated with injury type, χ^2 (1, n = 329) = 16.72, $p < .001$. A multiple logistic regression was significant ($p < .001$) in predicting the need for additional BrainSTEPS consultation. More severe injuries, educational placement postinjury of regular education with a 504 plan (compared to regular education), and current receipt of therapy significantly increased the odds of need for consultation.
Conclusions: Due to the wide range of experiences of students in this sample, hospital-to-school transition services, educational supports and services, and long-term follow-up must be individualized for children with ABI. Speech-language pathologists are critical members of the school-based academic team for students with ABI to decrease long-term unmet needs.

Experiencing an acquired brain injury (ABI), of any severity, during childhood is associated with physical, be- (Anderson et al., 2012; Babikian et al., 2015; Durber et al., 2017; Fay et al., 2009; Mangeot et al., 2002; Snyder et al.,

BrainSTEPS Article Published 8/2021 in ASHA Perspectives

Brain Impairment (2021), 1–16
doi:10.1017/BrImp.2021.10

CAMBRIDGE UNIVERSITY PRESS

ORIGINAL ARTICLE

Academic and post-secondary participation of students with ABI after the BrainSTEPS program

Jessica Salley Riccardi[1]*, Brenda Eagan-Johnson[2], Monica Vaccaro[3] and Angela H. Ciccia[4]

[1]Student in Communication Sciences, Department of Psychological Sciences, Case Western Reserve University, Cleveland, OH, USA, [2]BrainSTEPS Project Director, Brain Injury Association of Pennsylvania, Chambursburg, PA, USA, [3]Director of Programs, Brain Injury Association of Pennsylvania, Chambursburg, PA, USA and [4]Associate Professor, Department of Psychological Sciences, Case Western Reserve University, Cleveland, OH, USA
*Corresponding author. Email: jxs1654@case.edu

(Received 27 October 2020; revised 13 April 2021; accepted 29 April 2021)

Abstract

Purpose: To describe and analyze educational and post-high school participation of individuals who sustained an acquired brain injury (ABI) during childhood and participated in a state-wide school-based brain injury support program, BrainSTEPS in Pennsylvania (BrainSTEPS).

Method: Retrospective analysis of programmatic information and data collected through electronic and phone surveys during a follow-up survey for a statewide, school-based, school consultation program for students with ABI.

Participants: Caregivers reported on 190 individuals with ABI who participated in Pennsylvania's BrainSTEPS Program.

Results: Individuals post-ABI who participated in the BrainSTEPS were most likely to have experienced a mild ABI in high school due to sports. Post-injury, students were most likely to be enrolled in regular education, have graduated high school, pursued four-year college education and be attending post-secondary education and living with family. Additional significant relationships were not reported within the concussion or moderate-severe traumatic brain injury subgroups. Significant relationships for educational outcomes included higher likelihood of regular educational placement at the time of referral given an older grade at injury and regular educational placement before injury. For post-high school outcomes, a younger age at survey was associated with current attendance in post-secondary education, compared to other vocational options.

Conclusions: Individuals with a history of ABI before school age and during primary and secondary

BrainSTEPS Article Published 4/2021 in Brain Impairment

Article

Examining a Statewide Educational Consulting Program for Pediatric Brain Injury

Clinical Pediatrics
1–11

DOI: 10.1177/0009922817732146
journals.sagepub.com/home/cpj
SAGE

Rachel K. Myers, PhD, MS[1], Brenda L. Eagan-Brown, MEd[2], Alexandra T. Conway, BA[3], Drew A. Nagele, PsyD[2], Monica J. Vaccaro, MS[2], Sadiqa Kendi, MD[4], and Mark R. Zonfrillo, MD, MSCE[5,6]

Abstract

This study describes characteristics of students with acquired brain injury enrolled in a statewide educational consultation program and the program's support activities. Utilizing deidentified data from a statewide brain injury school consultation program, descriptive analyses of demographic and injury characteristics, including medical diagnosis (concussion/mild traumatic brain injury [TBI], moderate-severe TBI, and non-TBI), referral characteristics, educational placement, and the types of program activities were undertaken. 70% of students were referred for concussions/mild TBI and students were infrequently referred by medical professionals. Most students with concussion/mild TBI experienced recreational injuries (59%), while students with moderate/severe TBI commonly experienced road traffic injuries (48%). The greatest proportion of program team members' time was spent in consultation with school personnel (24%), communication with families (20%), and communication with school personnel (16%). Results suggest that the program addresses important communication and coordination needs among families, medical professionals, and educators and identifies opportunities to enhance program utilization.

Keywords

traumatic brain injury, concussion, education, postacute care, pediatric

Introduction

more likely to experience grade retention, and require more special education services than their noninjured

BrainSTEPS Article Published 9/2017 in Clinical Pediatrics

How to Refer a Student to BrainSTEPS

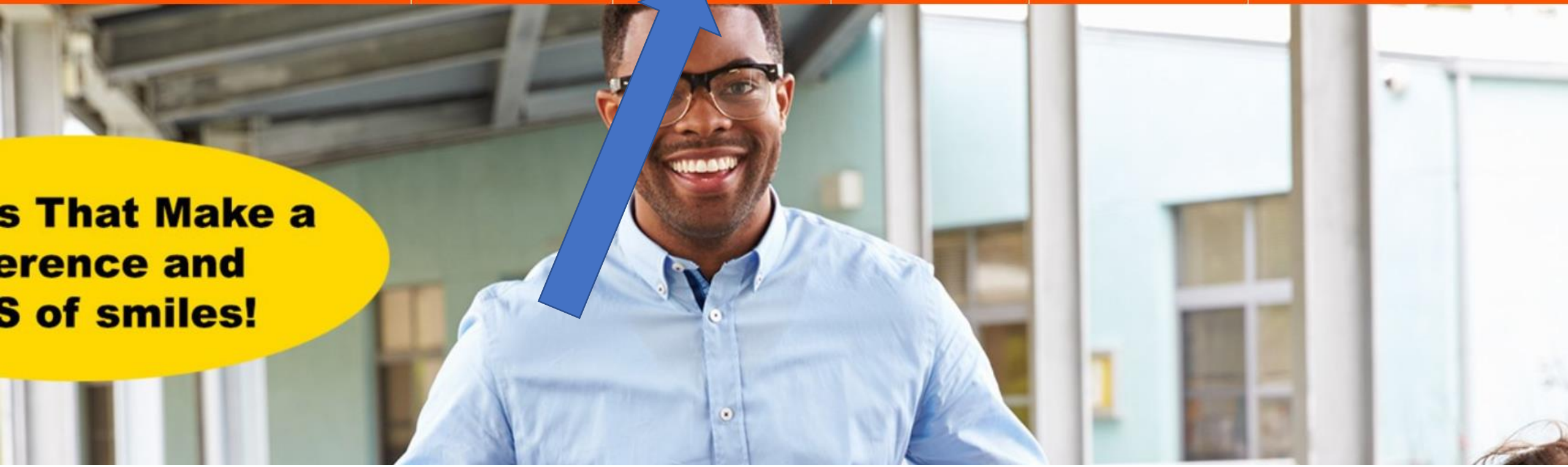
Bucks County BrainSTEPS Referrals

- Each district/building has a set of approved staff that can submit referrals to the Bucks IU
- BrainSTEPS Referrals in Bucks County need to be made through the Bucks IU referrals on the IU website
- If we receive a referral through the online portal at www.BrainSTEPS.net we will contact the point person and then walk them through the next steps.

Bucks County Intermediate Unit

Parent Portal | Employee Portal | Contact Us | Translate | Search | Search

About Us | Training, Workshops, and Events | Child-Student-Adult Services and Programs | Business and Operational Services | Educator/Administrator Services and Programs | Careers – Human Resources



C LD-STUDENT-ADULT SERVICES AND PROGRAMS

We are c ally growing and expanding our programs and services to best address the educational supports and requirements of the children, youth, and adult cks County. Bucks County is home to more than 96,000 public and private school students in over 270 schools, served by more than 9,000 edu As an educational service agency, we strive to ensure the optimal growth of all learners with innovative opportunities for academic growth and ement.

The Bucks IU provides specialized instruction in support of those with autism, emotional support needs, and multiple disabilities.

School/District Referral Form
PowerSchool Login Required

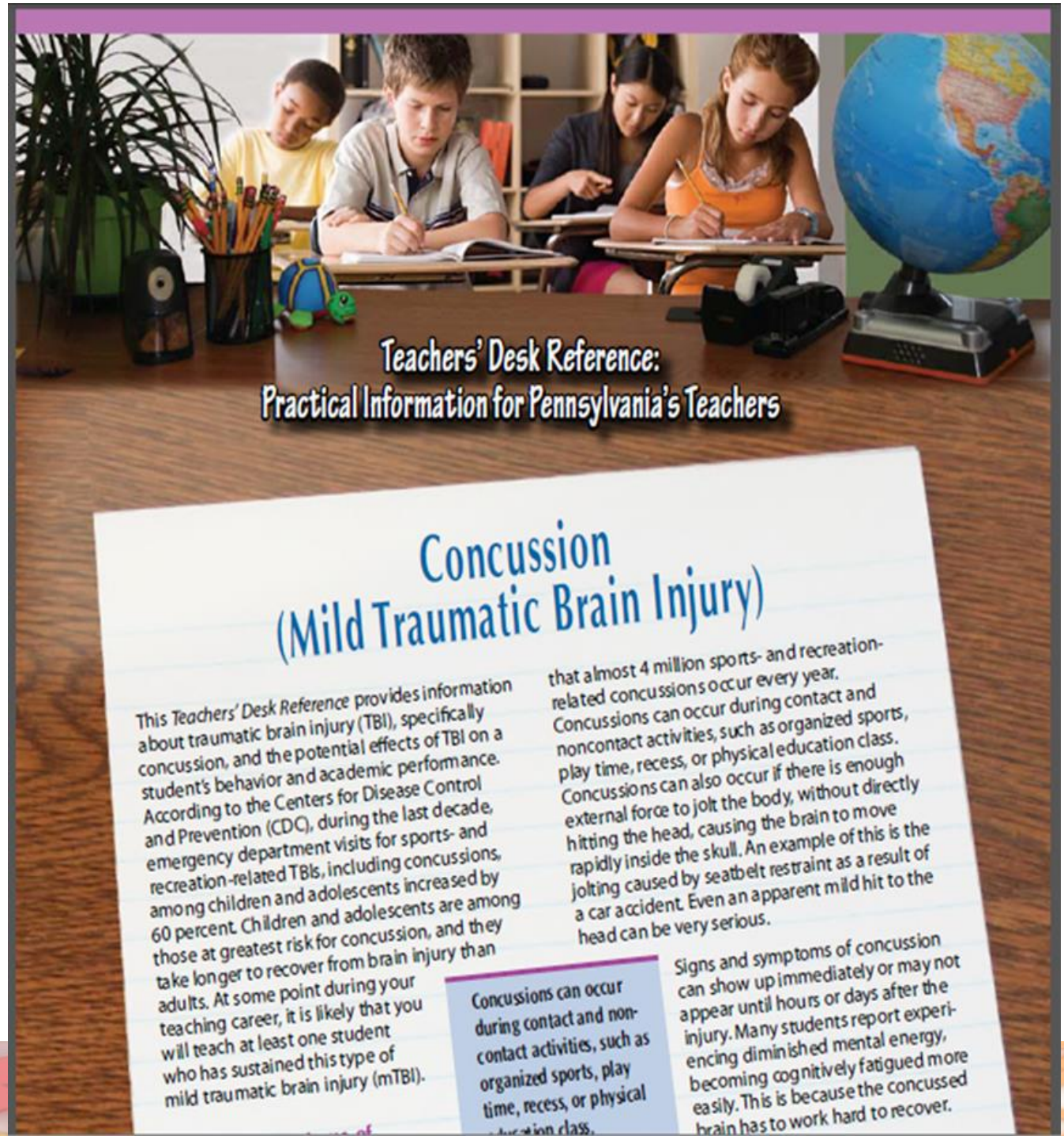
Social Emotional Wellness
School/District Info

Safety and Security Services
School/District Info


www.brainsteps.net

Available for download at:

www.brainsteps.net



Available for download at:

www.brainsteps.net

Traumatic Brain Injury

Each year, over 4,000 of Pennsylvania's children/adolescents survive severe traumatic brain injuries significant enough to require hospitalization. Many are left with life-altering difficulties in physical, cognitive, or behavioral functioning.

If you see any of these:

- Seizure: eyes fluttering, body going stiff, staring into space
- Forgets everything, amnesia
- Hands share, tremors, muscles get weak, loss of muscle tone
- Nausea or vomiting that returns

Consult a doctor immediately!

When You Suspect a Head Injury:

Possible Causes:

- Falls
- Motor vehicle crash
- Sports injury
- Physical violence

Many adolescents with mild brain injury may never see a health care professional or have any long-term difficulties. Some adolescents have problems that may not be noticed right away. You may see changes in your teenager over several months that concern you. This fact sheet lists some of the more prevalent signs of a mild brain injury. Your teen may also be exhibiting symptoms that are not included on this list. If your teen has any of the following problems – **and they persist** – see the "What to Do" box at the end of this publication.

- Thinks about the same thing over and over
- Has trouble learning new things
- Has trouble putting things in order (desk, room, papers)
- Has trouble making decisions
- Has trouble planning, starting, doing and finishing a task
- Has trouble remembering to do things on time
- Makes poor choices (loss of common sense)

Trouble Communicating

- Changes the subject, has trouble staying on topic
- Has trouble thinking of the right word
- Has trouble listening
- Has trouble paying attention, can't have long conversations
- Does not say things clearly
- Has trouble reading
- Talks too much

Changes in Personality, Mood, or Behavior

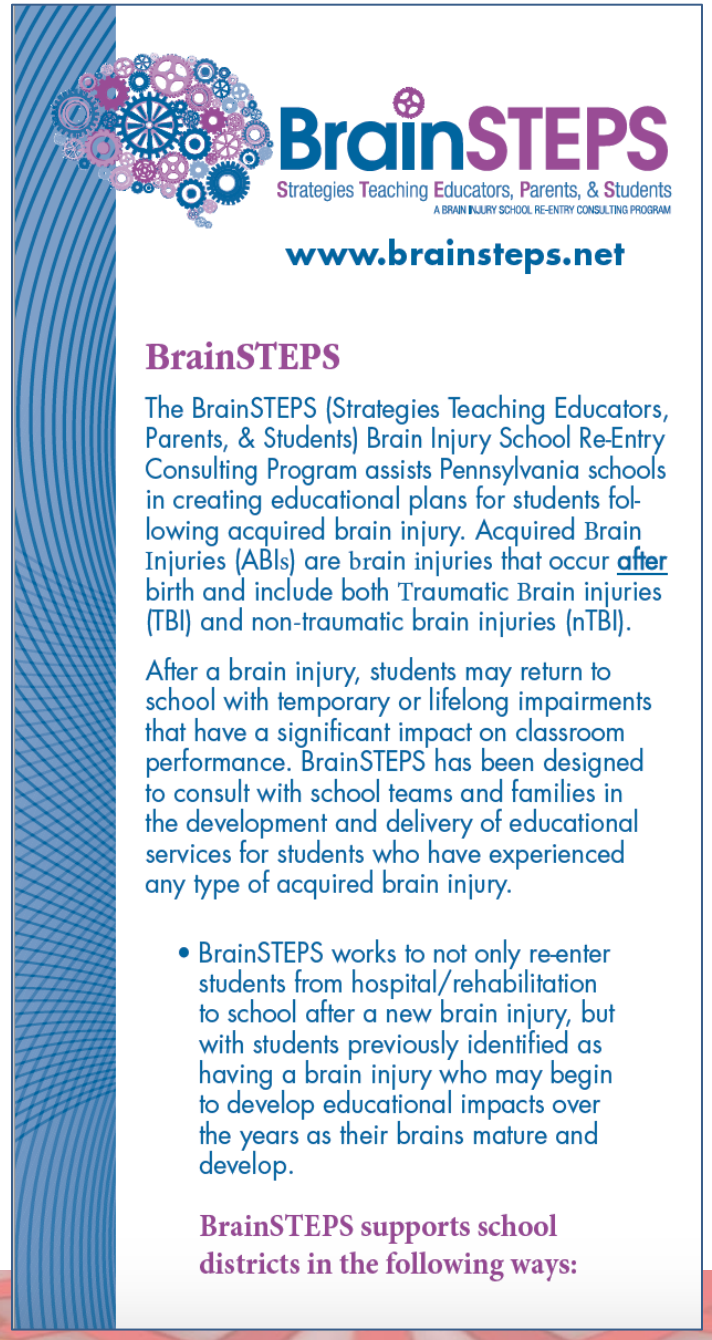
- Is irritable, anxious, restless
- Gets upset or frustrated easily
- Overreacts, cries or laughs too easily
- Has mood swings
- Wants to be alone or away from people

Both are available for download at:

www.brainsteps.net

Both are available to Order in bulk at:

www.pattan.net



BrainSTEPS

Strategies Teaching Educators, Parents, & Students

A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

www.brainsteps.net

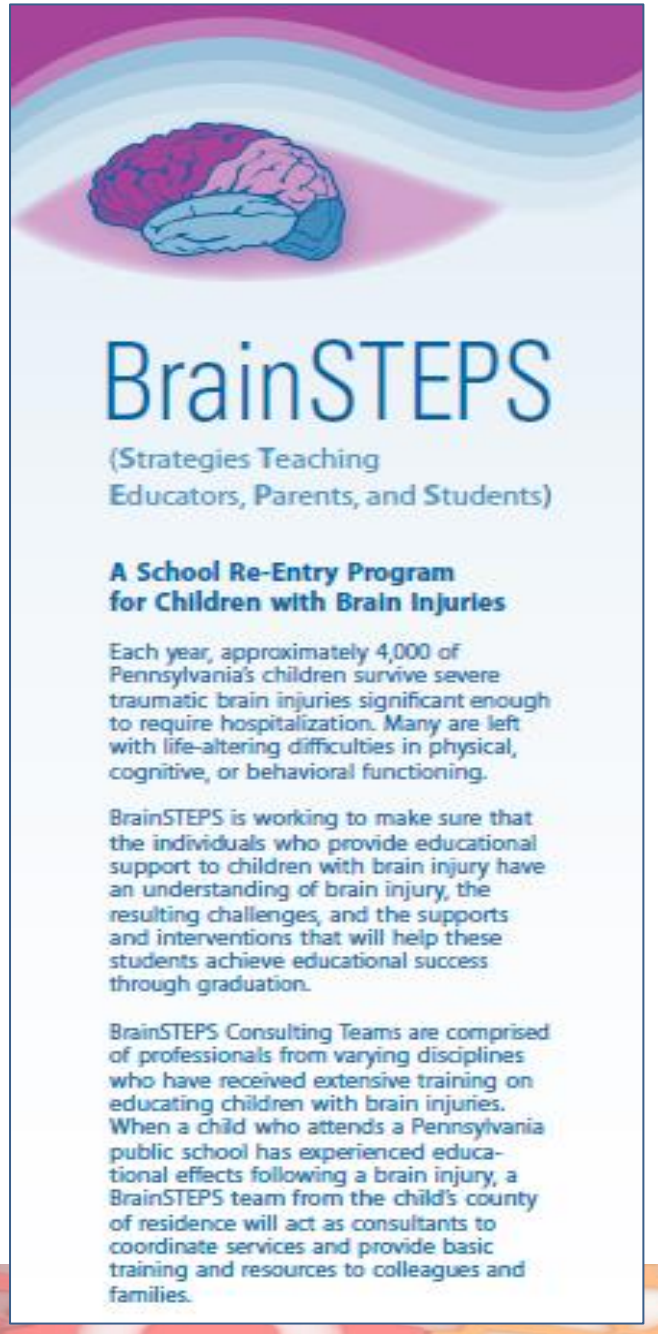
BrainSTEPS

The BrainSTEPS (Strategies Teaching Educators, Parents, & Students) Brain Injury School Re-Entry Consulting Program assists Pennsylvania schools in creating educational plans for students following acquired brain injury. Acquired Brain Injuries (ABIs) are brain injuries that occur after birth and include both Traumatic Brain injuries (TBI) and non-traumatic brain injuries (nTBI).

After a brain injury, students may return to school with temporary or lifelong impairments that have a significant impact on classroom performance. BrainSTEPS has been designed to consult with school teams and families in the development and delivery of educational services for students who have experienced any type of acquired brain injury.

- BrainSTEPS works to not only re-enter students from hospital/rehabilitation to school after a new brain injury, but with students previously identified as having a brain injury who may begin to develop educational impacts over the years as their brains mature and develop.

BrainSTEPS supports school districts in the following ways:



BrainSTEPS

(Strategies Teaching Educators, Parents, and Students)

A School Re-Entry Program for Children with Brain Injuries

Each year, approximately 4,000 of Pennsylvania's children survive severe traumatic brain injuries significant enough to require hospitalization. Many are left with life-altering difficulties in physical, cognitive, or behavioral functioning.

BrainSTEPS is working to make sure that the individuals who provide educational support to children with brain injury have an understanding of brain injury, the resulting challenges, and the supports and interventions that will help these students achieve educational success through graduation.

BrainSTEPS Consulting Teams are comprised of professionals from varying disciplines who have received extensive training on educating children with brain injuries. When a child who attends a Pennsylvania public school has experienced educational effects following a brain injury, a BrainSTEPS team from the child's county of residence will act as consultants to coordinate services and provide basic training and resources to colleagues and families.

Available for download at:

www.brainsteps.net

BrainSTEPS

Strategies Teaching Educators, Parents, & Students

A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

Chosen by the Centers for Disease Control as a National Model for Concussion and Traumatic Brain Injury School Re-Entry Programs

Return to Learn After Concussion: Recommended Protocol

Scho Based Concussion Resources:

- BrainSTEPS www.brainsteps.net
- BrainLINE https://www.brainline.org/kids-tbi/concussion-kids
- Colorado Kids with Brain Injury https://cokidswithbraininjury.com/educators-and-professionals/
- Get Schooled on Concussions https://www.getschooledonconcussions.com/

BrainSTEPS

Strategies Teaching Educators, Parents, & Students

A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

Dr. Brenda Eagan-Johnson, CBIS-AP
BrainSTEPS Director
Phone: 724-944-6542
Email: brenda@brainsteps.net

pennsylvania DEPARTMENT OF HEALTH

BRAIN INJURY ASSOCIATION OF PENNSYLVANIA

pennsylvania DEPARTMENT OF EDUCATION