Concussion:
Returning to Academics -
Strategies to Promote Student Recovery

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Flow:

1. Return to school progression
2. Symptom based educ. accommodations
3. Educational Frameworks available to safeguard small percentage of students who enter the subacute/persistent phases
4. The BrainSTEPS Program’s 640+ statewide Concussion Management Teams (CMTs) for **Return to Learn** that were established in school districts across the state during the past year.
What is BrainSTEPS?
The BrainSTEPS Program

Created by:
PA Department of Health in 2007

Unique partnership for funding:
PA Department of Health
PA Department of Education, Bureau of Special Education via the PaTTAN network

Implemented by:
Brain Injury Association of Pennsylvania
BrainSTEPS Encompasses Acquired Brain Injuries

- Traumatic Brain Injury
  (includes Concussions)
- Non-Traumatic Brain Injury

* Any child who has a brain injury that occurs AFTER the birth process can be referred to BrainSTEPS
Acquired Brain Injury
Occurs after birth

Traumatic Brain Injury (TBI)
External physical force

Open head injury

Non-Traumatic Brain Injury (nTBI)
Internal process

Closed head injury
What is BrainSTEPS?

• Brain injury consulting teams available to families and schools throughout Pennsylvania.

• Teams consult with & train local school staff to develop educational programs.

• Follow referred students until graduation.
• 30 BrainSTEPS Teams cover the state of Pennsylvania

• 290 brain injury consultants
  – Educational professionals
  – Medical/Rehab professionals
  – Family members
BrainSTEPS Teams

28 Intermediate Unit teams & 2 large school district teams

White = Region without BrainSTEPS teams
Who should be referred to BrainSTEPS?

A student who:

1. Has an acquired brain injury
   • At any point in the student’s life

2. Is having difficulty at school as a result of the acquired brain injury
About BrainSTEPS

BrainSTEPS Concussion Resources:

1. Concussion Webinar
2. Concussion Return to School Protocol
3. Protocol Flow Chart
4. Why every school should have a Concussion Management Team
5. How to register your Concussion Management Team
6. Teacher’s Desk Reference: Concussion

The Concussion Management Team (CMT) Formation Registration Process for Schools has been re-opened as of 1/22/13.

- Please register all of your Concussion Management Teams using the registration link on this page. You can have several CMTs per school, one per grade, etc.

NOTE for new CMTs and previous CMTs who were unable to attend the Jan. 15, 2013 training: In the coming weeks, all registered CMTs will be notified that the 3.5 hour CMT video is available online. You will first take an online Pre-Test and the link to watch the videoconference will be available to you upon the completion of the Pre-Test. Thank you!

The Brain Injury School Re-Entry Program

Pennsylvania’s BrainSTEPS (Strategies Teaching Educators, Parents, and Students) Brain Injury School Re-Entry Program is in its 6th year of assisting school districts in creating educational plans for students following an acquired brain injury. Annually in Pennsylvania, approximately 4,000 children sustain moderate to severe traumatic brain injuries which are significant enough to cause changes in their behavior, cognitive abilities, academics, and social skills. As a result, the students may require significant educational support services upon return to school. BrainSTEPS can provide guidance to the student and their school district in developing programs that will enable the student to achieve the highest level of education within their school community. The primary goals of the BrainSTEPS Program are to ensure the educational rights of children and adolescents with brain injuries and to provide guidance to school districts in creating educational plans for students following an acquired brain injury.
Concussion in Pennsylvania Children & Adolescents

Approximately 22,000 concussions in children & adolescents per year in PA

2014, BIAPA
Students Referred to BrainSTEPS

- **TBI** 89%
- **nonTBI** 11%

**TBI Severities**
- CONCUSSIONS 77%
- Moderate & Severe 23%
Students Should Not Push Through Symptoms While Recovering

- exacerbates symptoms
- prolongs recovery time

Majerske, C., et al. 2008
Return to Learn

While it is true that an athlete must be 100% symptom-free before RTP, they do NOT need to be 100% symptom-free to RTL.
Research based:

High levels of cognitive activity that cause symptoms = longer recovery from concussion.

(Brown et al., 2014)

“We recommend a period of near full mental rest after injury - approximately 3-5 days…”

(Meehan, 2014)
Impact of School and Learning on Concussion Symptoms

Cognitive Exertion (Thinking) and the added stimulation of the school environment can SIGNIFICANTLY increase symptoms, even when the student has begun to recover.
School Concussion Management

1. Return to **SCHOOL**

2. Return to **PLAY**
5. Students should be performing at their academic "baseline" before returning to sports, full physical activity, or other extracurricular activities following a concussion.

BrainSTEPS: Return to School Progression Steps
Gradual Return to School Progression

Not a Linear Progression

**Step 1:** No school initially

**Step 2:** ½ day school with accommodations

**Step 3:** Full day with accommodations

**Step 4:** Full school, extracurricular involvement, without accommodations
Step 1a: At Home – Cognitive Rest

- Typically, student will remain home for 3-5 days on cognitive & physical rest
- Symptoms may be so severe student cannot concentrate for even 10 minutes
Step 1b: At Home – Light Thinking

Once student can endure “light thinking” without symptoms for **30 minute-1 hour blocks** with **10-15 minute rests in between**, student may be ready to progress back to school for portion of day.

*Observing, not actively participating with **full accommodations in place**.
Step 2: School Partial Day w/Accommodation

☑ Symptoms are manageable with accommodations in place

- ½ Day
- 1-2 Classes
  - Light classes for socialization?
  - Academic classes for content?
Step 3: Full day w/ accommodations

- Symptoms typically have < in both # and severity
  - Continue with accommodation plan, adjusting weekly based on symptoms & academic needs
Step 4: Full school & activities, no concussion symptoms or accommodations needed

✓ Return to Play Progression Begins
Athletes should participate in graduated return to play only after clearance from approved medical professional

✓ Work on plan with teachers to complete missed work
MISSED WORK:
Develop 2 categories for class assignments/projects/tests

<table>
<thead>
<tr>
<th>Action</th>
<th>Student Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excused</td>
<td>Not to be completed</td>
</tr>
<tr>
<td>Responsible</td>
<td>Must be completed</td>
</tr>
</tbody>
</table>
Educational Accommodations
For students who linger, striking a balance between the need for rest and keeping up with academic content is the biggest struggle.
School Work After Concussion

Informal Accommodations/Adjustments

100%

Formal ACCOMMODATIONS / BrainSTEPS Brain Injury Supports Framework / 504 Plan

10-20%

MODIFY
Very, very
Few
1-5%
Cognitive fatigue and headaches

• 50% of workload is commonly recommended during recovery.

• Assignments (homework/classwork) should not be repetitious.
Cognitive fatigue and headaches

Cued Recall is better than Random Retrieval. Alleviate brain fatigue by using:

- Multiple-choice
- Word banks
- Open notes/open book tests
- Close ended vs open ended
- Index cards with some key points for essay responses
Cognitive fatigue and headaches

- Student may need to take brief in-class or out of class **Scheduled** rest breaks (nurse’s office) every hour for 10-15 minutes while symptomatic initially.

- Lunch in a separate room with friends
Cognitive fatigue & headaches

**Testing**

- **Acutely** tests and quizzes should be delayed (especially standardized tests)

- Gradually re-introduce testing, preferably 1 test/quiz per day, as tolerated

- Testing in a separate, quiet room
Sensitivity to Light & Noise

- **Sunglasses, hat**
- Face student away from windows and bright lights/ reflections/ glare
- No cafeteria/ assemblies/ shop class/ band/ chorus/ etc.
- Early dismissal to change classes
- Warn before tornado drills or fire drills
- Headphones or ear buds
Dizziness (Vestibular problems)

- Allow extra time to get to class
  avoid crowded hallways
- Walk with a peer/carry books
- Teacher notes to prevent up and down shifting of student’s eyes. Have student follow along with highlighter for key concept recognition
Cognitive fatigue and headaches

• Break down assignments into small chunks that can be completed in ½ hour or less.

• Water bottle at student’s desk

• Extra time on assignments

• Timelines to plan for projects/assignments

• Tape recorder for lectures

• Locker lock – key lock vs. combination lock
Social/Emotional

Early worries -
• School in general
• Falling behind in academics
• Not allowed to return to sports

Late impacts -
• Fears of being the only one “like this”
• Anxiety
• Depression
• Adjustment
• Social isolation
Social/Emotional

Develop an emotional support plan with the student

- Identify an **adult** to talk with if student feels overwhelmed, emotional, anxious...
- Identify a **student** who had a previous or current persistent concussion so student doesn’t feel alone. (privacy-cleared w/ parents)
Be Careful - Social Isolation
The Centers for Disease Control (CDC) & Prevention document:

S. Davies, B. Eagan Brown, G. Gioia, A. Glang, K. McAvoy,

Educational Frameworks to Safeguard Persistent/ Prolonged Concussions
If a student experiences **lasting effects** that impact school, there are options (school evaluation must first take place):

- Concussion
- 504 Plan
- IEP
School Work After Concussion

Informal Accommodations/Adjustments

100%

Formal ACCOMMODATIONS / BrainSTEPS Brain Injury Supports Framework / 504 Plan

10-20%

MODIFY

Very, Very Few

1-5%
1. Special Education-IEP
2. Not Special Education - 504 Plan/504 Service Agreement
Section 504 of the Rehabilitation Act:

- The physical or mental impairment must impact at least 1 of 13 listed major life activities (Dr. Perry Zirkel, 2010):

<table>
<thead>
<tr>
<th>1. Seeing</th>
<th>8. Concentrating</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Walking</td>
<td>10. Eating</td>
</tr>
<tr>
<td>4. Learning</td>
<td>11. Bowel functions</td>
</tr>
<tr>
<td>5. Breathing</td>
<td>12. Bladder functions</td>
</tr>
<tr>
<td>6. Reading</td>
<td>13. Digestive functions</td>
</tr>
<tr>
<td>7. Thinking</td>
<td></td>
</tr>
</tbody>
</table>

★ Denotes potential common concussion impacts
K–12 Students With Concussions: A Legal Perspective

Perry A. Zirkel, PhD, JD, LLM¹, and Brenda Eagan Brown, MEd²

Abstract
This article provides a multipart analysis of the public schools’ responsibility for students with concussions. The first part provides the prevailing diagnostic definitions of concussions and postconcussive syndrome. The second and central part provides (a) the legal framework of the two overlapping federal laws—the Individuals with Disabilities Education Act and Section 504 of the Rehabilitation Act and the varying state laws or local policies for individual health plans and (b) a summary of the developing body of hearing officer decisions, court decisions, and Office for Civil Rights rulings that have applied this framework to K–12 students with concussions. The final part offers recommendations for proactive return to school policies, with the school nurse playing a central supporting role.

Keywords
academic achievement, attendance, school nurse education, policies, procedures, legal, ethical issues, collaboration, multidisciplinary teams, middle, junior, high school, best practices, practice guidelines, high school

Diagnostic Framework

Concussion
Synonymous with the term mild TBI and necessitating diag...
BrainSTEPS Teams are not CMTs

CMTs are not BrainSTEPS Teams
Available for download at:

www.brainsteps.net

Available to order in bulk at:

www.pattan.net

Concussion
(Mild Traumatic Brain Injury)

This Teachers' Desk Reference provides information about traumatic brain injury (TBI), specifically concussion, and the potential effects of TBI on a student's behavior and academic performance. According to the Centers for Disease Control and Prevention (CDC), during the last decade, emergency department visits for sports- and recreation-related TBIs, including concussions, among children and adolescents increased by 60 percent. Children and adolescents are among those at greatest risk for concussion, and they take longer to recover from brain injury than adults. At some point during your teaching career, it is likely that you will teach at least one student who has sustained this type of mild traumatic brain injury (mTBI).

Concussions can occur during contact and non-contact activities, such as organized sports, playtime, recess, or physical education class. Concussions can also occur if there is enough external force to jolt the body, without directly hitting the head, causing the brain to move rapidly inside the skull. An example of this is the jolting caused by seatbelt restraint as a result of a car accident. Even an apparent mild hit to the head can be very serious.

Signs and symptoms of concussion can show up immediately or may not appear until hours or days after the injury. Many students report experiencing diminished mental energy, becoming cognitively fatigued more easily. This is because the concussed brain has to work harder to recover.
Return to School BrainSTEPS Concussion Management Team (CMT) Project

- CMTs consist of 2 monitors
  - Academic Monitor (School Psych, Guidance Counselor)
  - Symptom Monitor (School Nurse)

- 640 Return to School Concussion Teams across the state of PA since Jan. 2013
Concussion Management Team (CMT)

CMT Utilizes the Concussion Electronic Toolkit

- Academic Monitoring Tool
  - 1 page 1 side
  - Teachers Fill Out
  - Classwork, Homework, Tests, Assignments, Behaviors

- Symptom Monitoring Tool
  - 1 page 1 side
  - Student Fills Out
  - Symptom Severity Rating Scale
2 person CMT does NOT take the place of the “Interdisciplinary Team”

(Educational, Medical/Rehab, Parent, Student)

The CMT serves as the “Concussion Coordinators”

*CMT are the Concussion Coordinators, Data Collectors, & Information Gatherers*
Return to Learn
Concussion Management Teams (CMTs) can alleviate these issues & promote faster student recovery
At 4 weeks post concussion:
Students are referred to BrainSTEPS & Concussion (mTBI)
Brain Injury Supports Framework is created
(Earlier if student has history of concussion modifiers)
Concussion Modifiers

- History of Past Concussions
- Migraines
- History of ADHD
- History of Learning Disabilities
- History of Depression
- History of other Mental Health Disorders
- History of Sleep Disorders
PA’s Layered Statewide Infrastructure for Concussion Return to School

Student Concussion

CMT Monitoring @ School level
640+ Concussion Management Teams for Return to School

BrainSTEPS Support begins 4 weeks post @ Intermediate Unit level
30 Regional Consulting Teams

1st layer

2nd layer
How to Establish & Register a CMT

We have 640+ Concussion Management Teams established.

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

BrainSTEPS Concussion Return to Learn Educational Resources:
1. Concussion Webinar
2. Concussion Return to School Protocol
3. Protocol Flow Chart
4. Why every school should have a Concussion Management Team
5. Teacher's Desk Reference: Concussion

PA schools can set up Concussion Management Teams for Return to Learn!
The Concussion Management (CMT) Formation Registration for all PA Schools is open!
- Register your CMT Monitors using the registration link on this page
- CMTs consist of two people: an Academic Monitor and a Symptom Monitor
- You can form one or more CMTs in your district (one per grade, one per building, etc.)
- The 3.5 hour CMT Training is now available for your convenience online
- After you register your CMTs, you will receive information regarding how to access the CMT training
- Your CMT will receive the BrainSTEPS electronic CMT Toolkit during the training

LEAs: Registration is now open to form your school's Concussion Management Team(s) for the 2nd cohort training (re-opened 1/22/13). You may form one or more CMTs within your school. You will be notified via email when the CMT training is available to take online in the near future. Thank you!

The CMT training is FREE to all CMTs who register.
How CMTs Help Students:

**Academically Accommodated Students:**

a. recover faster
b. remain in school while recovering
c. not fall as far behind in classwork
d. experience lower stress because there are educational professionals who understand what the student needs
For students enrolled in a Career and Technical Center (CTC)

Keep in mind:

- A Career and Technical Education (CTE) provides some unique environmental and academic challenges for the student with TBI.
For students enrolled in a Career and Technical Center (CTC)

Keep in mind:

- For some students, “Return to School” and “Return to Tech” need to be separate decisions. Factors influencing these decisions would include symptom management and emotional health.
<table>
<thead>
<tr>
<th>Type of Student Acquired Brain Injury</th>
<th>When to Refer a Student to BrainSTEPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain injury occurring anytime after birth</td>
<td></td>
</tr>
<tr>
<td><strong>Concussion</strong></td>
<td>4 weeks post concussion unless student has a history of any of the following then refer sooner:</td>
</tr>
<tr>
<td><strong>Mild Traumatic Brain Injury (TBI)</strong></td>
<td>• Prior concussions</td>
</tr>
<tr>
<td></td>
<td>• Migraines</td>
</tr>
<tr>
<td></td>
<td>• Learning, attention or emotional disabilities, sleep disorders</td>
</tr>
<tr>
<td><strong>New Moderate TBI, Severe TBI, Non-TBI</strong></td>
<td>As soon as injury occurs, the sooner you refer the better. Don’t wait for the student to experience educational impacts/bad grades. Refer early to prevent issues.</td>
</tr>
<tr>
<td><strong>Acquired Brain Injuries (TBI or non-TBI) that occurred in the past</strong></td>
<td>If the student is experiencing educational impacts from the earlier brain injury, make a referral.</td>
</tr>
</tbody>
</table>
NEXT FALL 2014:
Concussion in Students Webinar Series

1. Medical acute/prolonged care of concussion
2. Educational impacts for teachers
3. Vestibular Rehab
4. Vision Rehab
5. Student mental health
6. Legal educational aspects

BrainSTEPS
Strategies Teaching Educators, Parents, & Students
A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM
BrainSTEPS serves the following types of acquired brain injuries:

Concussions (mild TBI), moderate and severe Traumatic Brain Injuries caused by sports/recreational activities, falls, assault, abuse, motor vehicle accidents (includes bicycle), pedestrian accidents, and shaken baby syndrome.

Non-Traumatic Brain Injuries caused by stroke, brain tumor, aneurysm, lack of oxygen to the brain, lightning strikes, chemotherapy/radiation impacts to the brain, near drowning, seizure disorder, brain infections (encephalitis, meningitis), toxic or metabolic injury, and viruses.

BrainSTEPS supports school districts in the following ways:

- Identification of students with traumatic and nontraumatic brain injuries
- School re-entry planning
- Intervention selection and implementation
- Educational plan development
- Concussion management for return to academics
- Teacher training, peer training, family training
- Ongoing, annual monitoring until graduation
- Family support and resource sharing
- Awareness training to medical, rehabilitation, and community facilities

Brain injury facts:

- Brain injury is a leading cause of death and disability in children and adolescents.
- Physical recovery is not a sign that the brain has healed. You can't gauge recovery from brain injury based on how a child looks on the outside.
- Brain injury severity does not equate with how the student will function academically or socially/emotionally in school.

A concussion is a mild traumatic brain injury and can have lifelong effects.

Students do not need to strike their heads to sustain a brain injury. A sudden jarring motion of the head may be all the force that is necessary to cause a brain injury.

It is not common to lose consciousness after a concussion. Less than 10 percent of concussions involve a loss of consciousness.

Children do not simply “bounce back” after brain injury. In fact, injury to the developing brain can impact future learning.

Effects of brain injury are not always immediately apparent and may not become evident until the child passes through important developmental stages. Over time, difficulties may emerge as the demands are increased on parts of the brain originally injured.

How to Make a BrainSTEPS Referral

The BrainSTEPS Team will accept referrals from school districts, agencies, parents, physicians, early intervention service providers, or any other service providers.

Go to www.brainsteps.net

Click on Make a Student Referral to make an electronic referral or Contact your local BrainSTEPS team directly.
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 your child exhibits any of these symptoms:
- Seizure: eyes fluttering, body going stiff, staring into space
- Forgets everything, amnesia
- Hands shake, tremors, muscles get weak, loss of muscle tone
- Nausea or vomiting

Consult your child’s doctor immediately!

When you suspect a brain injury:
Possible Causes:
- Falls
- Motor vehicle crash
- Sports injury
- Physical violence

Many children and adolescents with mild brain injury (concussion) 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 — consult your child’s doctor.

Difficulty Thinking
- Has trouble remembering things
- Has trouble paying attention
- Reacts slowly
- Thinks slowly
- Takes things too literally, doesn’t understand jokes
- Understands words but not their meaning
- 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
- Is afraid of others, blames others
- Wants to be taken care of
- Does not know how to act with people
- Takes risks without thinking first
- Depressed
- Doesn’t want to do anything, can’t “get started”
- Is tired, drowsy
- Is slow to respond, to process information, or to complete tasks

BrainSTEPS
(Stategies 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.
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