



DEFENSE CENTERS
OF EXCELLENCE

For Psychological Health
& Traumatic Brain Injury

Prevention and Management of Concussion/ Mild Traumatic Brain Injury in Youth Sports

April 9, 2015, 1-2:30 p.m. (ET)

Presenter:

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Chief, Office of Education Outreach, Defense and Veterans Brain Injury Center, Silver Spring, Maryland

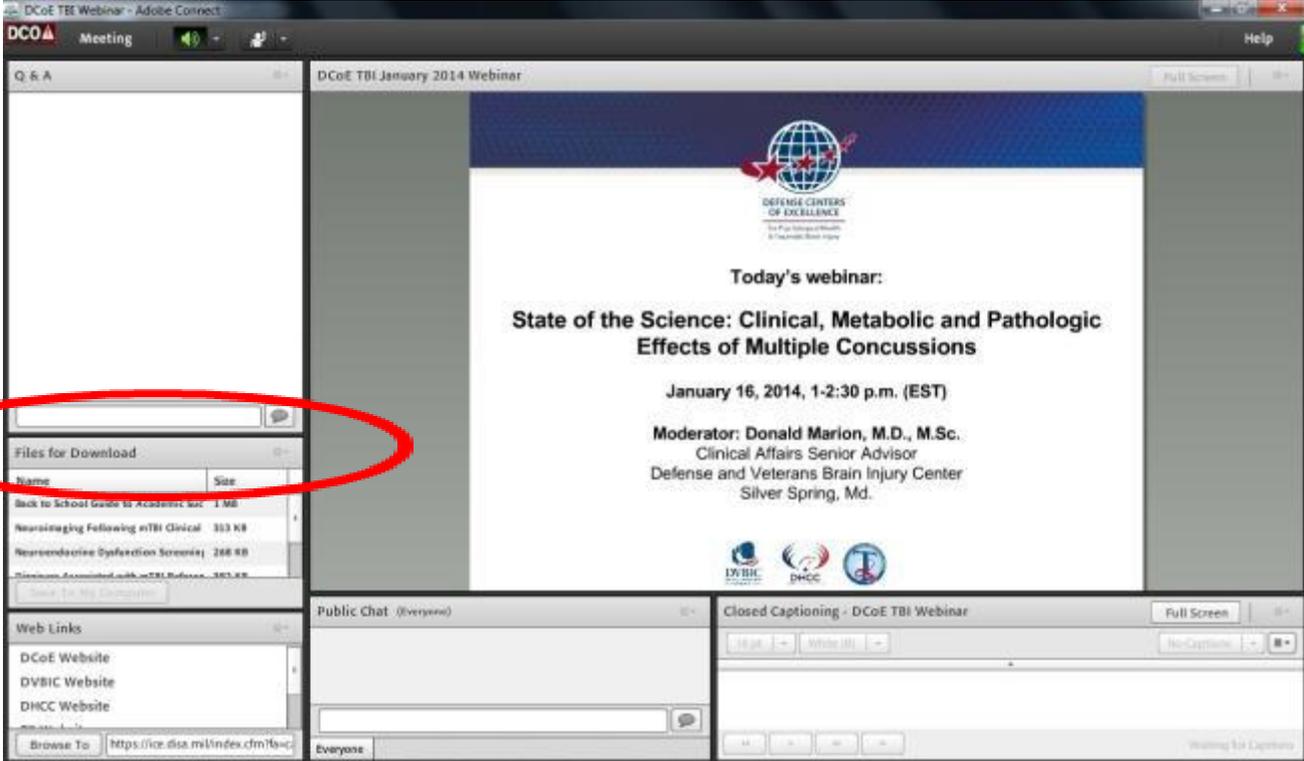


Webinar Details

- Live closed captioning is available through Federal Relay Conference Captioning (see the “Closed Captioning” box)
- Webinar audio is **not** provided through Adobe Connect or Defense Connect Online
 - Dial: CONUS **800-369-2075**; International **312-470-7430**
 - Use participant pass code: **9942561**
- Question-and-answer (Q&A) session
 - Submit questions via the Q&A box

Resources Available for Download

Today's presentation and resources are available for download in the "Files" box on the screen, or visit dvbic.dcoe.mil/online-education



The screenshot displays a webinar interface with several panels. The main content area shows the webinar title: "State of the Science: Clinical, Metabolic and Pathologic Effects of Multiple Concussions" by Donald Marion, M.D., M.Sc. A red circle highlights the "Files for Download" panel on the left, which contains a table of resources:

Name	Size
Back to School Guide for Academics	1 MB
Neuroimaging Following mTBI Clinical	353 KB
Neuroendocrine Dysfunction Screens	266 KB
Diagnosis Associated with mTBI Referral	303 KB

Below the table is a "Web Links" section with links to DCoE, DVBIC, and DHCC websites. At the bottom, there is a "Public Chat" area and a "Closed Captioning" panel.

Continuing Education Details

- DCoE's awarding of continuing education (CE) credit is limited in scope to health care providers who actively provide psychological health and traumatic brain injury care to active-duty U.S. service members, reservists, National Guardsmen, military veterans and/or their families.
- The authority for training of contractors is at the discretion of the chief contracting official.
 - Currently, only those contractors with scope of work or with commensurate contract language are permitted in this training.

Continuing Education Accreditation

- This continuing education activity is provided through collaboration between DCoE and Professional Education Services Group (PESG).
- Credit Designations include:
 - 1.5 AMA PRA Category 1 credits
 - 1.5 ACCME Non Physician CME credits
 - 1.5 ANCC nursing contact hours
 - 1.5 APA Division 22 contact hours
 - 1.5 NASW* contact hours

* Social Workers may claim credit and receive a NASW CE certificate **after 20 April 2015**

Continuing Education Accreditation

Physicians

This activity has been planned and implemented in accordance with the essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME). Professional Education Services Group is accredited by the ACCME as a provider of continuing medical education for physicians. This activity has been approved for a maximum of 1.5 hours of *AMA PRA Category 1 Credits*™. Physicians should only claim credit to the extent of their participation.

Physician Assistants

This activity has been planned and implemented in accordance with the essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME). Physician Assistants who attend can earn ACCME Category 1 PRA Credit.

Nurses

Nurse CE is provided for this program through collaboration between DCOE and Professional Education Services Group (PESG). Professional Education Services Group is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. This activity provides a maximum of 1.5 contact hours of nurse CE credit.

Occupational Therapists

(ACCME Non Physician CME Credit) For the purpose of recertification, The National Board for Certification in Occupational Therapy (NBCOT) accepts certificates of participation for educational activities certified for AMA PRA Category 1 Credit™ from organizations accredited by ACCME. Occupational Therapists may receive a maximum of 1.5 hours for completing this live program.

Continuing Education Accreditation

Physical Therapists

Physical Therapists will be provided a certificate of participation for educational activities certified for AMA PRA Category 1 Credit™. Physical Therapists may receive a maximum of 1.5 hours for completing this live program.

Psychologists

This Conference is approved for up to 1.5 hours of continuing education. APA Division 22 (Rehabilitation Psychology) is approved by the American Psychological Association to sponsor continuing education for psychologists. APA Division 22 maintains responsibility for this program and its content.

Social Workers

Application has been made to the National Association of Social Workers for Social Worker continuing education credit. This activity will provide a maximum of 1.5 contact hours. Social Workers may claim credit and receive a NASW CE certificate after 20 April 2015.

Other Professionals

Other professionals participating in this activity may obtain a General Participation Certificate indicating participation and the number of hours of continuing education credit.

Continuing Education Details

- If you wish to obtain a CE certificate or a certificate of attendance, please visit <http://dcoe.cds.pesgce.com> after the webinar to complete the online CE evaluation.
- The online CE evaluation will be open through **Thursday, April 23, 2015.**

Questions and Chat

- Throughout the webinar, you are welcome to submit technical or content-related questions via the Q&A pod located on the screen. **Please do not submit technical or content-related questions via the chat pod.**
- The Q&A pod is monitored during the webinar; questions will be forwarded to presenters for response during the Q&A session.
- Participants may chat with one another during the webinar using the chat pod.
- The chat function will remain open 10 minutes after the conclusion of the webinar.

Summary and Learning Objectives

Closed head trauma is one of the most commonly reported injury complaints in pediatric emergency departments and is a significant cause of pediatric death and disability worldwide. The Centers for Disease Control and Prevention (CDC) reports that among the 38 million youths who participate in organized sports in the U.S. concussion is the most common injury and has risen 57% among children (age 19 or younger). The events that lead to a TBI are usually predictable and preventable. The CDC wants to ensure the health and safety of our young athletes through their HEADS UP campaign initiative by informing athletes, parents and coaches about prevention, recognition and response to concussion.

Providers can take an active stance to reduce and prevent brain injuries through educational efforts. Injury prevention education is one of the most effective approaches to decreasing the number of pediatric concussions. This webinar will address concussion truths and myths; tools for concussion identification, diagnosis and management; and concussion rehabilitation.

At the conclusion of this webinar, participants will be able to:

- Discuss public health and clinical approaches to concussion management
- Explain the elements of a four corners approach to pediatric concussion care
- Incorporate injury prevention and educational resources for health care providers, coaches, athletic trainers, parents, school nurses, teachers, counselors and other stakeholders into current practice

Gerard A. Gioia, Ph.D.



Gerard A. Gioia, Ph.D.

- Chief of the Division of Pediatric Neuropsychology at the Children's National Health System, where he directs the Safe Concussion Outcome, Recovery & Education (SCORE) Program
- Professor of Pediatrics and Psychiatry and Behavioral Sciences at George Washington University School of Medicine
- Contributed to the development of pediatric post-concussion resources, including the Center for Disease Control and Prevention's (CDC) HEADS UP toolkits and the Defense and Veterans Brain Injury Center's (DVBIC) "A Parent's Guide to Returning Your Child to School After a Concussion"
- Participated in the International Concussion in Sport Group Consensus meetings, American Academy of Neurology Sports Concussion Guideline panel, and the CDC mild traumatic brain injury guideline development group
- Works with the Washington Capitals, Baltimore Ravens and numerous youth sports organizations
- Education:
 - Ph.D., School Psychology, University of North Carolina at Chapel Hill

Disclosures

- The views and opinions expressed in this presentation are those of the presenter and do not represent official policy of the Department of Defense (DoD), the United States Army or DVBIC.
 - The presenter does not intend to discuss the off-label/investigative (unapproved) use of commercial products or devices.
 - Psychological Assessment Resources, Inc.
 - Test Author
 - Behavior Rating Inventory of Executive Function® (BRIEF®)
 - Tasks of Executive Control™ (TEC™)
-
- Acute Concussion Evaluation© (ACE©)
 - Post-Concussion Symptom Inventory (PCSI)
 - Exertion Effects Rating Scale
 - Multimodal Assessment of Cognition & Symptoms (MACS) for Children
 - Concussion Recognition & Response App™
 - Concussion Assessment & Response App™

Polling Question

My discipline is:

- Primary care provider
- Rehabilitation provider
- Psychologist
- Nurse
- Social worker/case manager
- Other



Concussion/Mild Traumatic Brain (mTBI) Injury 10-15 Years Ago

- Little understanding of mTBI
- Few treating healthcare providers
- Few medical tests or tools
- Minimal research/funding
- Little public awareness of risks
- No rules to protect kids



Where Are We Today?

- Increased public awareness
- Significant increase in recognition of sport-related mTBI
- Expanding our research knowledge
- Improving our understanding of the injury
- Training more healthcare providers, clinics
- Developing more clinical tests and tools
- Implementing rules to protect kids



Polling Question

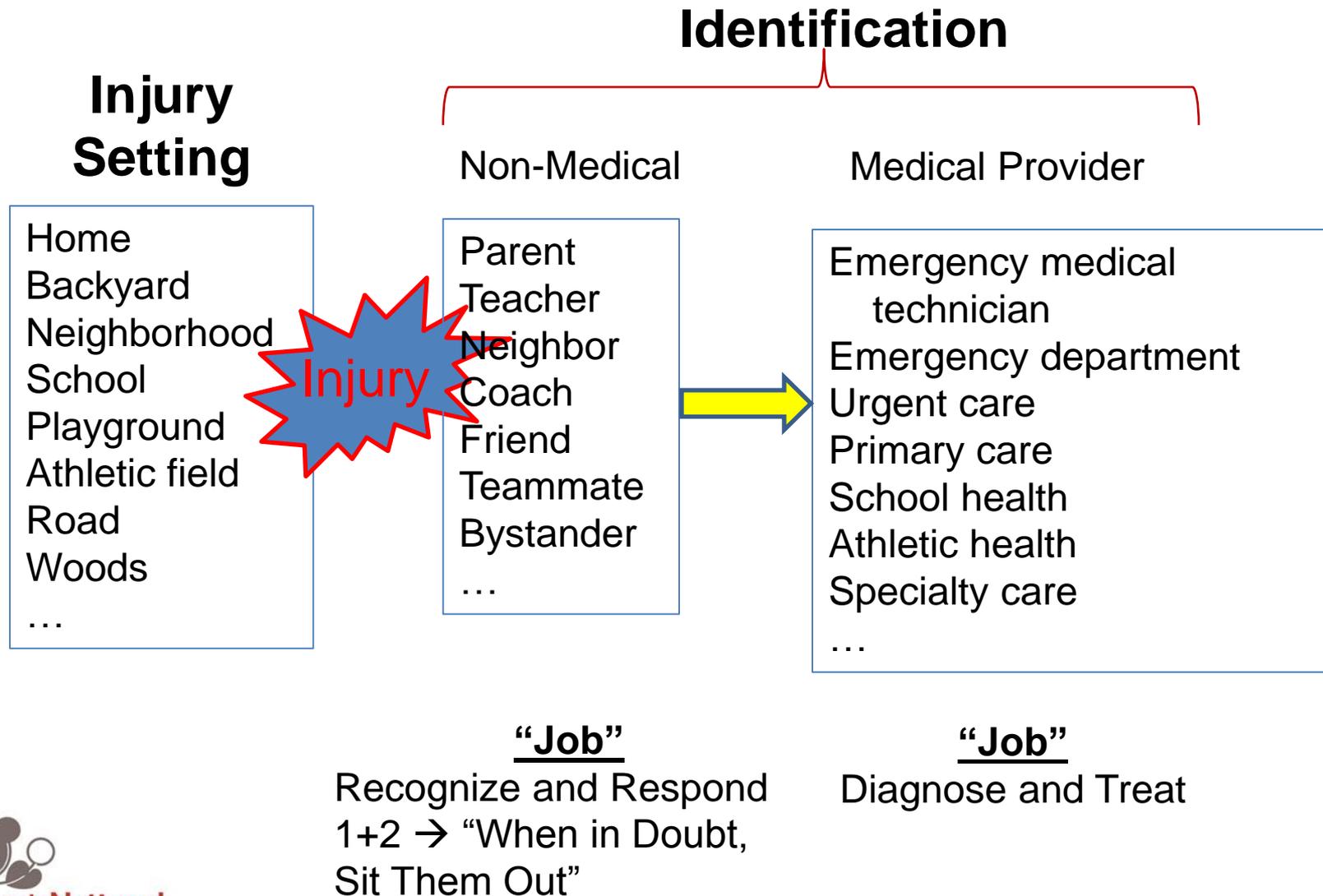
Parents and coaches must play a critical role in identifying youth sport concussion.

True

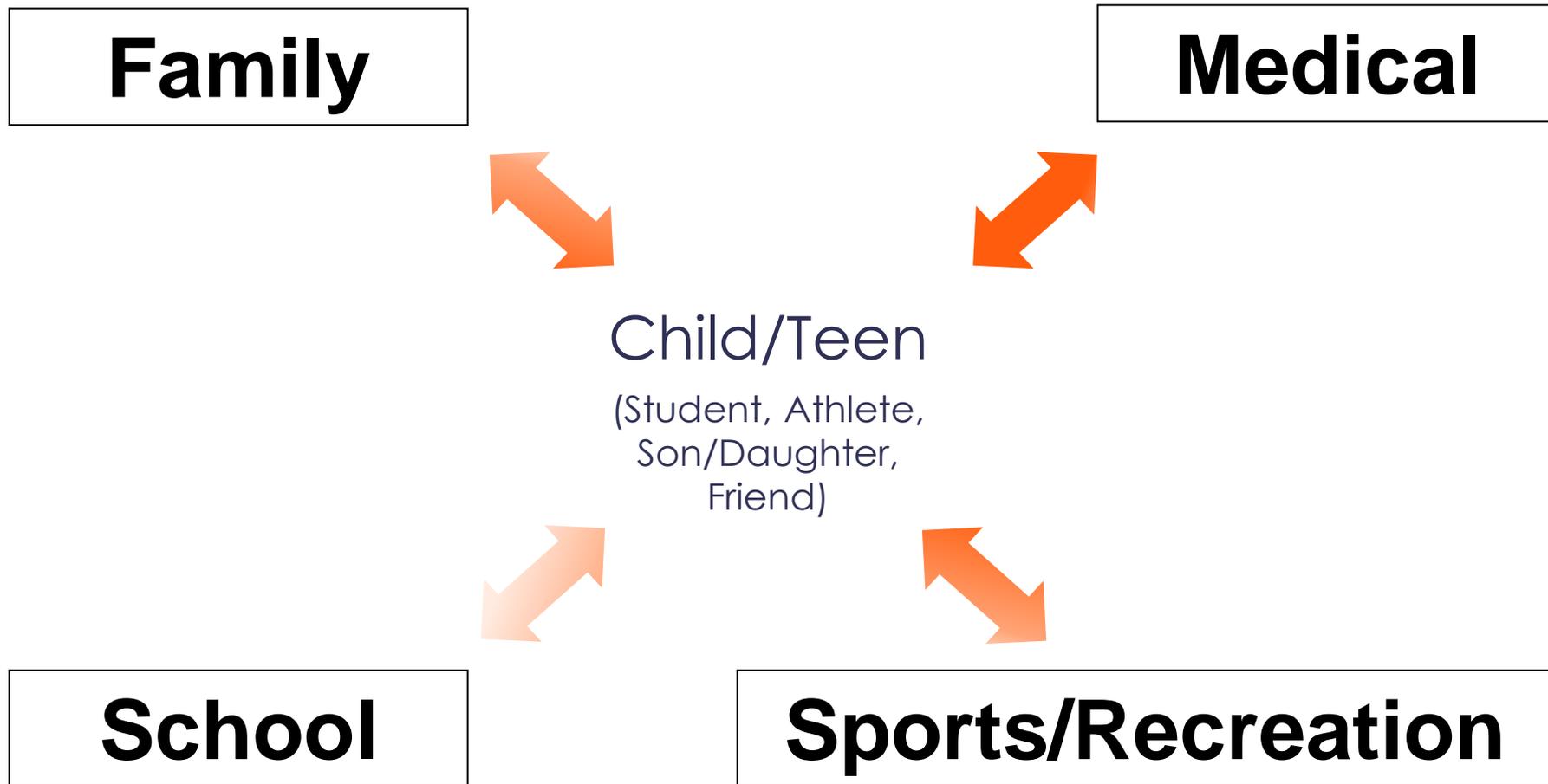
False



Partnering to Identify



Four Corners Approach to Concussion – Partners in Care



Three Action Steps Everyone Should Know and Do

1. Learn how to recognize a concussion.
 - Learn the 12 danger signs → 911.
 - Use tools to guide you.
 - CDC HEADS UP materials (CDC, 2015)
 - Concussion Recognition & Response™ App (Gioia & Mihalik, 2011)
 - Acute Concussion Evaluation© (Gioia & Collins, 2007)
2. Remove child from risk if you suspect a concussion, obtain a medical evaluation.
3. Support proper treatment: Physical, cognitive, emotional support.
 - Monitor and record child's symptoms at home.



Polling Question

A concussion is not the same as a TBI.

True

False



What is a Concussion?

- A bump, blow or jolt to the head or body that causes the brain to move rapidly back and forth
- Causes stretching of brain, causing chemical changes and cell damage
- Causes change in how brain works (signs and symptoms)
- Once these changes occur, brain is more vulnerable to further injury and sensitive to increased stress.

Concussion = Traumatic Brain Injury

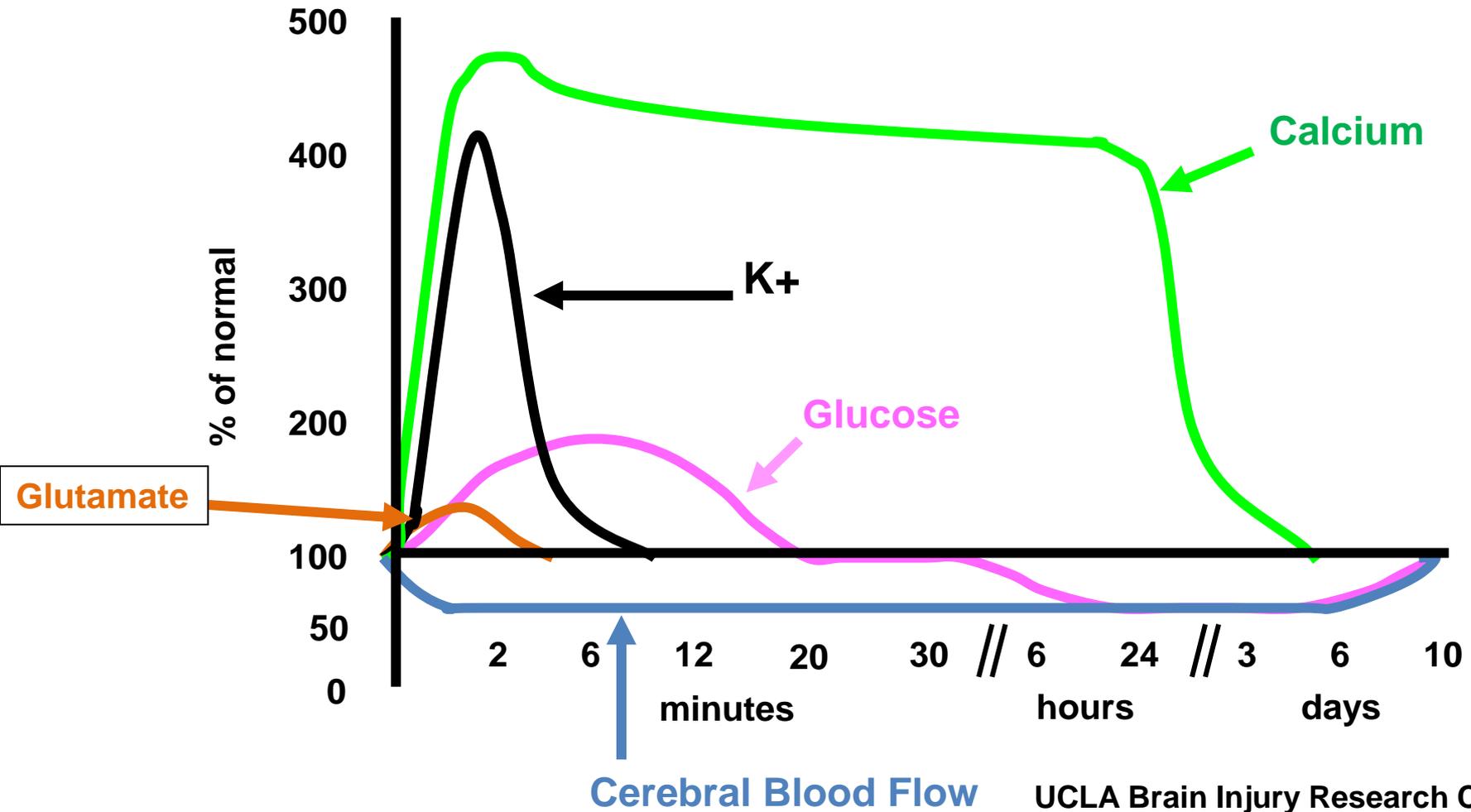
A Concussion is a Brain Injury

This video demonstrates the stretching and straining and twisting of the brain when a force is applied.

Brain Motion...

This video shows a biomechanical representation of the stretch and strain of brain tissue

Neurometabolic Cascade Following TBI



UCLA Brain Injury Research Center

Effects of Concussive Forces on the Brain

- Typically, the software of the brain is affected
 - Neurometabolic/neurochemical processes
 - Physiological
- Not the hardware
 - Structure



Courtesy photo by Gerard Gioia, Ph.D.

Anatomical Timeline of a Concussion

Defining the Key Factors

C. Risk Factors

A. Injury Characteristics

B. Symptom Assessment

CONCUSSION



Pre-Injury Risks

Retro-
grade
Amnesia
20-35%

LOC
<10%

Antero-
grade
Amnesia
25-40%

Neurocognitive dysfunction
and post-
concussion symptoms

Seconds-Hours

Seconds-Minutes

Seconds-Hours

Hours - Days - Weeks+

Courtesy photo by Gerard Gioia, Ph.D.



Polling Question

What percent of children and teens lose consciousness with a concussion?

- a. 5-10%
- b. 25%
- c. 50%
- d. 80%



Signs of a Concussion (What You Observe)

Cognitive

- Appears dazed/stunned
- Confused about events (assignment or position)
- Answers questions more slowly
- Repeats questions/forgets instruction or play
- Cannot recall events prior to or after the hit/fall

Physical

- Vomiting
- Loses consciousness
- Balance problems
- Moves clumsily
- Drowsy

Behavior/Emotion

- Behavior or personality changes

Signs of a Concussion (What They Feel and Report)

Physical

- Headache
- Fatigue
- Visual problems
(blurry/“double”)
- Nausea/vomiting
- Balance problems/dizziness
- Sensitivity to light/noise
- Numbness/tingling

Sleep

- Sleeping more/less
- Trouble falling asleep
- Drowsiness

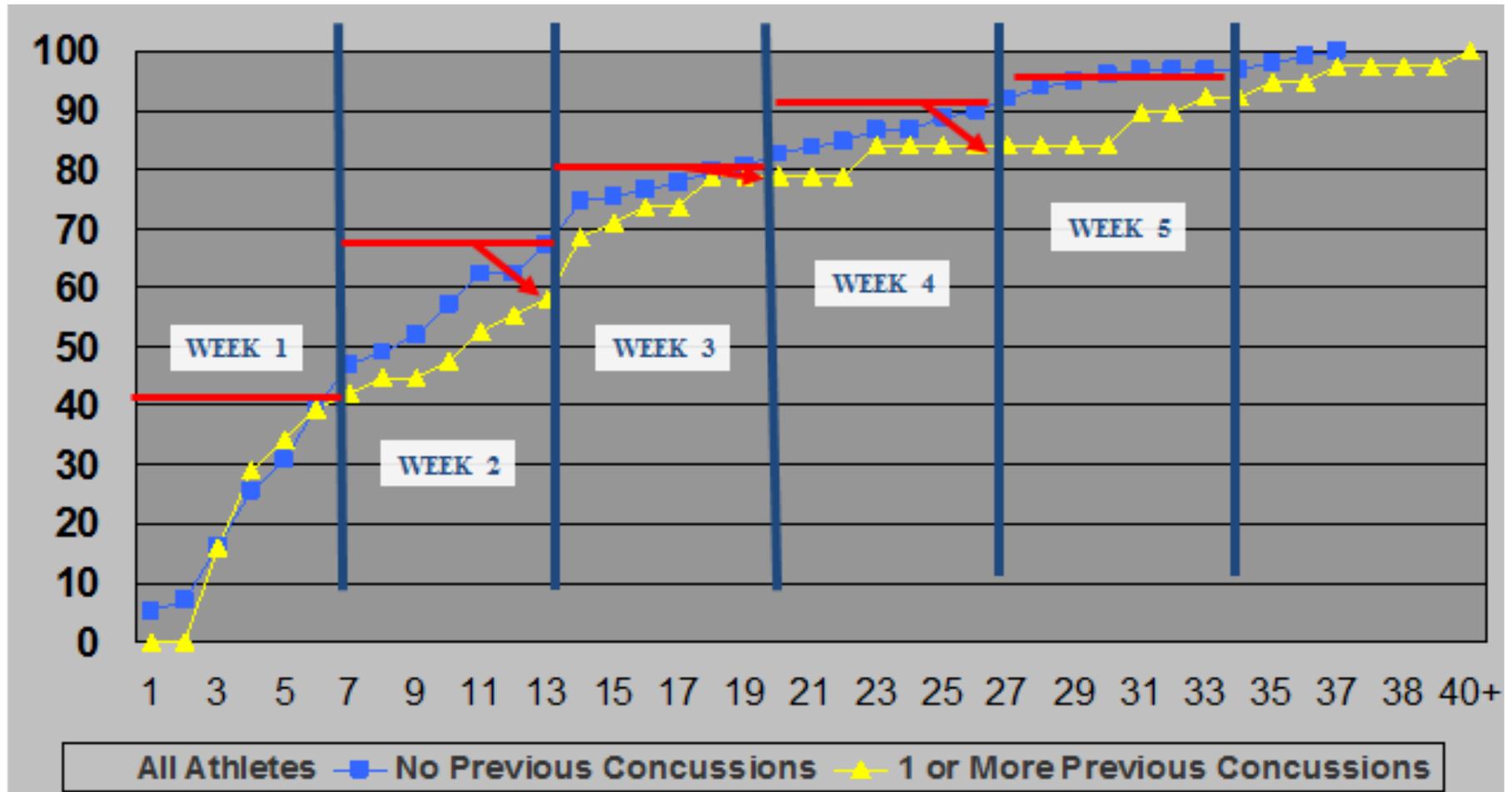
Cognitive

- Mental fogginess
- Difficulty concentrating
- Difficulty remembering
- Feeling slowed down

Emotional

- More emotional
- Irritable
- Sad
- Nervous

Recovery from Concussion: How Long Does It Take?



N=134 high school athletes

If We Do Not Properly Recognize and Manage Concussions....

- RISKS INCREASE!!!
- Player is more likely to be re-injured.
- Second/third... injuries
 - Are more likely to be more severe
 - Could cause permanent brain damage
 - Can take longer to recover from
 - Increase risk of retirement from sport



Assistive Tools

- Identify tools to guide one's recognition of a suspected concussion.



Concussion Recognition & Response™ App

Apple and Droid smartphones

Courtesy photo by Gerard Gioia,

How To Recognize a Possible Concussion: Look for 1 + 2 Using Your Tools

1

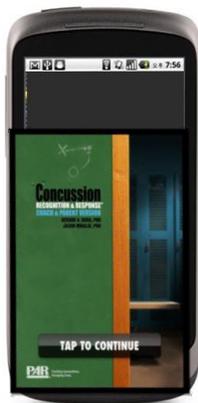
“I SUSPECT!”

2

**Blow/Force to
Head/Body**

+

**Change in Function/
Behavior/Performance**



Post-Concussion Signs and Symptoms

Physical	Cognitive	Emotional	Sleep
Headache	Concentrate	Irritability	More
Fatigue	Memory	Emotional	Less
Balance/ Dizziness	Speed of thinking	control	Cannot
		Sadness	

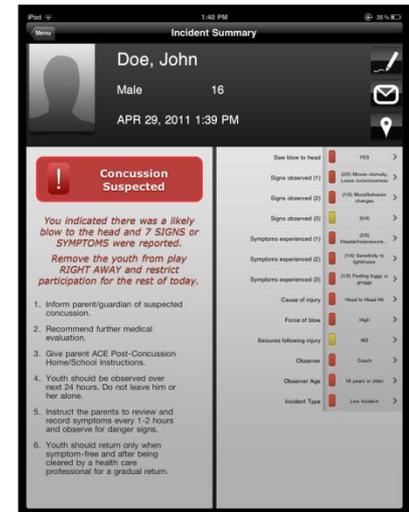
How to Respond to a Suspected Concussion

① + ② = “I Suspect”

“When in Doubt, Sit Them Out”

Remove from sport
Protect from further injury
Notify parent

Medical evaluation
Support recovery



Courtesy photo Concussion Recognition & Response™ App

Clinical Methods of Concussion Assessment

- Clinical exam: Protocol to assess injury characteristics, history/risk factors, thorough symptom assessment, cognitive functioning, balance assessment
 - Acute Concussion Evaluation© (ACE©) (CDC, 2015)
 - Sport Concussion Assessment Tool (SCAT-3™) (McCrory et al., 2013)



Essential Elements of Clinical Concussion Assessment and Management

- A. Early recognition of functional difference
- B. Detecting reliable change from “usual” functioning
- C. Assessing all four symptom categories
- D. Monitor symptomatic functioning over time for change, e.g., recovery, persistent symptoms
- E. Guiding recovery via care plan
- F. Detecting reliable change/return to “usual” (recovery)
- G. Referral when symptoms persist beyond 7-14 days



Polling Question

I have received explicit training in assessing and diagnosing concussion in youth.

Yes

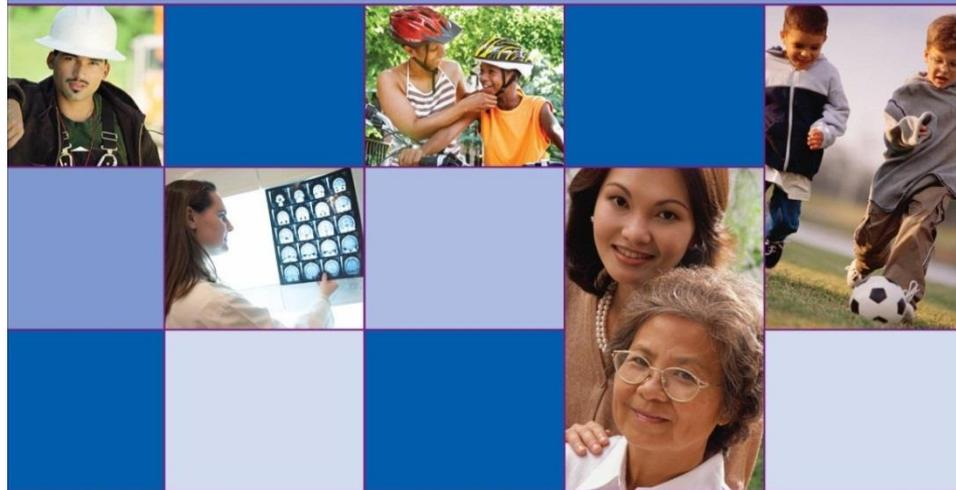
No





Heads Up

Brain Injury in Your Practice



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

HEADS UP

- HEADS UP
- Brain Injury Basics +
- Helmet Safety
- HEADS UP to Parents
- HEADS UP to Youth Sports +
- HEADS UP to High School Sports +
- HEADS UP to Schools +
- HEADS UP to Health Care Providers -**
- Online Concussion Training
- Tools for Providers
- Materials for Your Patients
- Managing Return to Activities
- Sports Concussion Policies and Laws
- HEADS UP Resource Center +
- Get Involved
- HEADS UP Partners +

[CDC](#) > [HEADS UP](#)

HEADS UP to Health Care Providers

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Timely recognition and appropriate response is important in treating a mild traumatic brain injury (MTBI) or concussion. Health care providers can play a key role in helping to prevent a concussion and to improve a patient's health outcomes through early diagnosis, management, and appropriate referral.

CDC has created practical, easy-to-use clinical information and tools for health care providers and their patients, including free online training that offers free continuing education credits.

Online Concussion Training



Free online concussion training for health care providers.

[More >](#)

Tools for Providers



Concussion diagnostic and assessment tools for health care providers.

[More >](#)

Discharge Instructions



Discharge instructions and patient handouts.

[More >](#)

Return to Play Management



Return to play progression guidelines and management information.

[More >](#)

HEADS UP

- HEADS UP
- Brain Injury Basics +
- Helmet Safety
- HEADS UP to Parents
- HEADS UP to Youth Sports +
- HEADS UP to High School Sports +
- HEADS UP to Schools +
- HEADS UP to Health Care Providers -
- Online Concussion Training
- Tools for Providers**
- Materials for Your Patients
- Managing Return to Activities
- Sports Concussion Policies and Laws
- HEADS UP Resource Center +
- Get Involved
- HEADS UP Partners +
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CDC > HEADS UP > HEADS UP to Health Care Providers

HEADS UP to Health Care Providers: Tools for Providers

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Facts for Physicians Booklet



The *Facts for Physicians about Mild TBI (MTBI)* booklet contains information on diagnosis and management of MTBI.

Download

[Facts for Physicians about Mild TBI \(MTBI\) Booklet](#) 

Concussion in Sports Palm Card



This palm card provides information and tools to help medical staff with the on-field recognition and management of concussion.

Download

[Concussion in Sports Palm Card](#) 

Acute Concussion Evaluation (ACE) Forms



The *ACE (Acute Concussion Evaluation)* forms are patient assessment tools.

Download

[Emergency Department ACE form](#) 

[Physician/Clinician office ACE form](#) 

CDC Workgroup to Improve Clinical Care of Youth with Mild TBI



Comprised of leading experts in the field of TBI, the *CDC Workgroup to Improve Clinical Care of Youth with Mild TBI* will create a clinical guideline for use in doctor's offices and emergency departments. The Workgroup was established by the CDC Injury Center's

Acute Concussion Evaluation© (ACE©)

Goals

- Clinical
 - Improve physician's early diagnosis of mTBI
 - Guide appropriate management
- Public Health
 - Improved epidemiology of mTBI

Emergency Department and Primary Care

Acute Concussion Evaluation (ACE) Emergency Department Version

Gerard Gioia, PhD¹ & Micky Collins, PhD²
¹ Children's National Medical Center
² University of Pittsburgh Medical Center

Patient Name _____
DOB: _____ Age: _____
Date: _____ ID/MR# _____

Affix Patient Label Here

Date/Time of Injury:

1. Injury Description:

2. Blunt trauma to head: Yes _____ No _____

3. Key Injury Characteristics (check all that apply)

_____ Loss of Consciousness _____ Retrograde Amnesia (No memory of pre-injury events)
_____ Seizures _____ Post-Traumatic Amnesia (No memory of post-injury events)

4. Signs & Symptoms (check all that apply)

Observed Signs	Physical Symptoms	Cognitive Symptoms
_____ Appears dazed or stunned	_____ Headache	_____ Difficulty concentrating
_____ Confused about events	_____ Nausea or vomiting	_____ Difficulty remembering
_____ Repeats question	_____ Balance problems or dizziness	_____ Feeling foggy
_____ Answers questions slowly	_____ Blurry or double vision	
	_____ Fatigue	Emotional Symptoms
	_____ Drowsiness	_____ Irritable
	_____ Sensitivity to light or sound	_____ More emotional
	_____ Numbness or Tingling	_____ Just don't feel "right"

5. Risk Factors for Prolonged Post-Concussion Symptoms

Prior concussions: No _____ Yes _____ # _____
Prior diagnosis of migraine/ chronic headaches: No _____ Yes _____

6. Concussion Diagnosed (check if applicable)

(ICD-9: 850)

Concussion diagnosis requires:

- a) Positive blunt trauma to head (#2)
b) Key injury characteristic (#3) and/or presence of any associated signs/symptoms (#4).

7. Follow Up

If concussion is diagnosed, provide *Emergency Department Concussion Discharge Instructions*.

8. ACE-ED Completed by (circle one):

MD RN EMT PA NP Medical Student

Signature: _____

ACUTE CONCUSSION EVALUATION (ACE)

Physician/Clinician Office Version
Gerard Gioia, PhD¹ & Micky Collins, PhD²
¹ Children's National Medical Center
² University of Pittsburgh Medical Center

Patient Name _____
DOB: _____ Age: _____
Date: _____ ID/MR# _____

A. Injury Characteristics

Date/Time of Injury: _____ Reporter: ___ Patient ___ Parent ___ Spouse ___ Other _____

1. Injury Description _____

1a. Is there evidence of a forcible blow to the head (direct or indirect)? ___ Yes ___ No ___ Unknown
1b. Is there evidence of intracranial injury or skull fracture? ___ Yes ___ No ___ Unknown

1c. Location of Impact: ___ Frontal ___ Lt Temporal ___ Rt Temporal ___ Lt Parietal ___ Rt Parietal ___ Occipital ___ Neck ___ Indirect Force

2. Cause: ___ MVC ___ Pedestrian-MVC ___ Fall ___ Assault ___ Sports (specify) _____ Other _____

3. Amnesia Before (Retrograde) Are there any events just BEFORE the injury that you/ person has no memory of (even brief)? ___ Yes ___ No Duration _____

4. Amnesia After (Anterograde) Are there any events just AFTER the injury that you/ person has no memory of (even brief)? ___ Yes ___ No Duration _____

5. Loss of Consciousness: Did you/ person lose consciousness? ___ Yes ___ No Duration _____

6. EARLY SIGNS: ___ Appears dazed or stunned ___ Is confused about events ___ Answers questions slowly ___ Repeats Questions ___ Forgetful (recent info)

7. Seizures: Were seizures observed? No ___ Yes ___ Detail _____

B. Symptom Check List*

Since the injury, has the person experienced any of these symptoms any more than usual today or in the past day?
Indicate presence of each symptom (0=No, 1=Yes). *Lovell & Collins, 1998 JHTR

PHYSICAL (10)	COGNITIVE (4)	SLEEP (4)
Headache 0 1	Feeling mentally foggy 0 1	Drowsiness 0 1
Nausea 0 1	Feeling slowed down 0 1	Sleeping less than usual 0 1 N/A
Vomiting 0 1	Difficulty concentrating 0 1	Sleeping more than usual 0 1 N/A
Balance problems 0 1	Difficulty remembering 0 1	Trouble falling asleep 0 1 N/A
Dizziness 0 1	COGNITIVE Total (0-4)	SLEEP Total (0-4)
Visual problems 0 1	EMOTIONAL (4)	
Fatigue 0 1	Irritability 0 1	
Sensitivity to light 0 1	Sadness 0 1	
Sensitivity to noise 0 1	More emotional 0 1	
Numbness/Tingling 0 1	Nervousness 0 1	
PHYSICAL Total (0-10)	EMOTIONAL Total (0-4)	
(Add Physical, Cognitive, Emotion, Sleep totals)		
Total Symptom Score (0-22)		

Exaggeration: Do these symptoms worsen with:
Physical Activity ___ Yes ___ No ___ N/A
Cognitive Activity ___ Yes ___ No ___ N/A

Overall Rating: How different is the person acting compared to his/her usual self? (circle)
Normal 0 1 2 3 4 5 6 Very Different

C. Risk Factors for Prolonged Recovery (check all that apply)

Concussion History? Y N	Headache History? Y N	Developmental History	Psychiatric History
Previous # _____	History of headache _____	Learning disabilities _____	Anxiety _____
Longest symptom duration _____	History of migraine headache _____	Attention-Deficit/Hyperactivity Disorder _____	Depression _____
Days _____ Weeks _____ Months _____ Years _____	Personal _____	Sleep disorder _____	Sleep disorder _____
	Family _____	Other developmental disorder _____	Other psychiatric disorder _____

List other comorbid medical disorders or medication usage (e.g., hypothyroid, seizures) _____

D. RED FLAGS for acute emergency management: Refer to the emergency department with sudden onset of any of the following:

- * Headaches that worsen
- * Looks very drowsy/ can't be awakened
- * Can't recognize people or places
- * Neck pain
- * Seizures
- * Repeated vomiting
- * Increasing confusion or irritability
- * Unusual behavioral change
- * Focal neurologic signs
- * Slurred speech
- * Weakness or numbness in arm/leg
- * Change in state of consciousness

E. Diagnosis (ICD):

___ Concussion w/o LOC 850.0 ___ Concussion w/ LOC 850.1 ___ Concussion (Unspecified) 850.9 ___ Other (854) _____
___ No diagnosis

F. Follow-Up Action Plan

Complete ACE Care Plan and provide copy to patient/family.
___ No Follow-Up Needed
___ Physician/Clinician Office Monitoring: Date of next follow-up _____
___ Referral:
___ Neuropsychological Testing
___ Physician: Neurosurgery ___ Neurology ___ Sports Medicine ___ Physiatrist ___ Psychiatrist ___ Other _____
___ Emergency Department

ACE Completed by: _____ MD RN NP PhD ATC © Copyright G. Gioia & M. Collins, 2005

ACE© Description

- ACE is a clinical protocol to assist diagnosis of mTBI/concussion in medical settings
 - Emergency Departments
 - Pediatric office settings
- Ages 4-adult
- Elements of clinical assessment protocol are evidence-based
- Link to follow-up care via ACE© Care Plan

ACE© Description

- Patient or parent as reporter of signs and symptoms
- Assess for presence/absence of 22 symptoms
 - Somatic
 - Cognitive
 - Emotional
 - Sleep
- Length of time approximately five minutes
(N=354) (Gioia, Collins & Isquith, 2008)

ACE© Key Elements

- A. Define Injury Characteristics
- B. Assess for Symptoms (22) (Lovell & Collins, 1998)
- C. Identify Risk Factors for Prolonged Recovery
- D. Red Flags for Neurological Deterioration
- E. Establish the Diagnosis
- F. Plan Follow-Up Action/Referral

A. Injury Characteristics

Injury Description

Cause

Amnesias (retrograde, anterograde)

Loss of Consciousness (LOC), Early Signs

Seizures

A. Injury Characteristics	Date/Time of Injury <u>May 30, 2007</u>	Reporter: <input checked="" type="checkbox"/> Patient <input type="checkbox"/> Parent <input type="checkbox"/> Spouse <input type="checkbox"/> Other
1. Injury Description <u>Fell to ground, hit head on ground and then kned in right temporal region; dazed initially but continued to play with bad headache. Felt sluggish and confused.</u>		
1a. Is there evidence of a forcible blow to the head (direct or indirect)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		
1b. Is there evidence of intracranial injury or skull fracture? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown		
1c. Location of Impact: <input type="checkbox"/> Frontal <input type="checkbox"/> Lft Temporal <input checked="" type="checkbox"/> Rt Temporal <input type="checkbox"/> Lft Parietal <input type="checkbox"/> Rt Parietal <input checked="" type="checkbox"/> Occipital <input type="checkbox"/> Neck <input type="checkbox"/> Indirect Force		
2. Cause: <input type="checkbox"/> MVC <input type="checkbox"/> Pedestrian-MVC <input type="checkbox"/> Fall <input checked="" type="checkbox"/> Assault <input checked="" type="checkbox"/> Sports (specify) <u>basketball</u> <input type="checkbox"/> Other		
3. Amnesia Before (Retrograde) Are there any events just BEFORE the injury that you/ person has no memory of (even brief)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Duration		
4. Amnesia After (Anterograde) Are there any events just AFTER the injury that you/ person has no memory of (even brief)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Duration		
5. Loss of Consciousness: Did you/ person lose consciousness? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Duration		
6. EARLY SIGNS: <input checked="" type="checkbox"/> Appears dazed or stunned <input type="checkbox"/> Is confused about events <input checked="" type="checkbox"/> Answers questions slowly <input type="checkbox"/> Repeats Questions <input type="checkbox"/> Forgetful (recent info)		
7. Seizures: Were seizures observed? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Detail		

B. Symptom Checklist

B. Symptom Check List* Since the injury, has the person experienced any of these symptoms any more than usual today or in the past day?

Indicate presence of each symptom (0=No, 1=Yes).

**Lovell & Collins, 1998 JHTR*

PHYSICAL (10)		COGNITIVE (4)		SLEEP (4)	
Headache	0 <input checked="" type="radio"/> 1	Feeling mentally foggy	0 <input checked="" type="radio"/> 1	Drowsiness	0 <input checked="" type="radio"/> 1
Nausea	0 <input checked="" type="radio"/> 1	Feeling slowed down	0 <input checked="" type="radio"/> 1	Sleeping less than usual	0 <input type="radio"/> 1 N/A
Vomiting	0 <input type="radio"/> 1	Difficulty concentrating	0 <input checked="" type="radio"/> 1	Sleeping more than usual	0 <input checked="" type="radio"/> 1 N/A
Balance problems	0 <input checked="" type="radio"/> 1	Difficulty remembering	0 <input checked="" type="radio"/> 1	Trouble falling asleep	0 <input type="radio"/> 1 N/A
Dizziness	0 <input type="radio"/> 1	COGNITIVE Total (0-4)	<u>4</u>	SLEEP Total (0-4)	<u>2</u>
Visual problems	0 <input type="radio"/> 1	EMOTIONAL (4)			
Fatigue	0 <input checked="" type="radio"/> 1	Irritability	0 <input checked="" type="radio"/> 1	Exertion: Do these symptoms <u>worsen</u> with: Physical Activity __Yes __No <input checked="" type="checkbox"/> N/A Cognitive Activity <input checked="" type="checkbox"/> Yes __No __N/A Overall Rating: How <u>different</u> is the person acting compared to his/her usual self? (circle) Normal 0 1 2 <input checked="" type="radio"/> 3 4 5 6 Very Different	
Sensitivity to light	0 <input checked="" type="radio"/> 1	Sadness	0 <input type="radio"/> 1		
Sensitivity to noise	0 <input type="radio"/> 1	More emotional	0 <input type="radio"/> 1		
Numbness/Tingling	0 <input type="radio"/> 1	Nervousness	0 <input type="radio"/> 1		
PHYSICAL Total (0-10)	<u>5</u>	EMOTIONAL Total (0-4)	<u>1</u>		
(Add Physical, Cognitive, Emotion, Sleep totals)			Total Symptom Score (0-22)		<u>12</u>

C. Risk Factors for Protracted Recovery

C. Risk Factors for Protracted Recovery (check all that apply)										
Concussion History? Y ___ N <input checked="" type="checkbox"/>		√	Headache History? Y <input checked="" type="checkbox"/> N ___		√	Developmental History		√	Psychiatric History	
Previous #	1 2 3 4 5		Prior treatment for headache			Learning disabilities			Anxiety	
Longest symptom duration	Days__ Weeks__ Months__ Years__	<input checked="" type="checkbox"/>	History of migraine headache		<input checked="" type="checkbox"/>	Attention-Deficit/ Hyperactivity Disorder			Depression	
			<input checked="" type="checkbox"/> Personal						Sleep disorder	
			<input checked="" type="checkbox"/> Family _____			Other developmental disorder _____			Other psychiatric disorder _____	
If multiple concussions, less force caused reinjury?	Yes__ No__									
List other comorbid medical disorders or medication usage (e.g., hypothyroid, seizures) _____										

Research findings have linked these risk factors to longer periods of recovery.

D. Red Flags for Neurological Deterioration

D. RED FLAGS for acute emergency management: Refer to the emergency department with sudden onset of any of the following:

* Headaches that worsen	* Looks very drowsy/ can't be awakened	* Can't recognize people or places	* Neck pain
* Seizures	* Repeated vomiting	* Increasing confusion or irritability	* Unusual behavioral change
* Focal neurologic signs	* Slurred speech	* Weakness or numbness in arms/legs	* Change in state of consciousness

Physicians and parents/patients need to be aware of danger signs that signal the need for emergency care.

ACE©

E. Diagnosis

E. Diagnosis (ICD): Concussion w/o LOC 850.0 Concussion w/ LOC 850.1 Concussion (Unspecified) 850.9 Other (854) _____
 No diagnosis

850.0 (Concussion, with no loss of consciousness)

- Positive injury description, evidence of forcible direct/ indirect blow to the head (A1a)
- Evidence of active symptoms (B) related to the trauma (Total Symptom Score >0)
- No evidence of LOC (A5)
- No skull fracture or intracranial injury (A1b)

850.1 (Concussion, with brief loss of consciousness < 1 hour)

- Positive injury description, evidence of forcible direct/ indirect blow to the head (A1a)
- Evidence of active symptoms (B) related to the trauma (Total Symptom Score >0)
- Positive evidence of LOC (A5)
- No skull fracture or intracranial injury (A1b)

850.9 (Concussion, unspecified)

- Positive injury description, evidence of forcible direct/indirect blow to the head (A1a)
- Evidence of active symptoms (B) related to the trauma (Total Symptom Score >0)
- Unclear/unknown injury details; unclear evidence of LOC (A5)
- No skull fracture or intracranial injury

854 (Other Diagnoses)

- Patient presents with a positive injury description and associated symptoms, BUT
- Additional evidence of intracranial injury (A 1b) such as from neuroimaging, or
- LOC > 1 hour
- Moderate TBI – diagnostic code 854 (intracranial injury) should be considered

F. Follow-Up Action Plan/Referral

F. Follow-Up Action Plan Complete *ACE Care Plan* and provide copy to patient/family.

No Follow-Up Needed

Physician/Clinician Office Monitoring: Date of next follow-up _____

Referral:

Neuropsychological Testing

Physician: Neurosurgery _____ Neurology _____ Sports Medicine _____ Physiatrist _____ Psychiatrist _____ Other _____

Emergency Department

ACE Completed by: _____ MD RN NP PhD ATC

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This form is part of the "Heads Up: Brain Injury in Your Practice" tool kit developed by the Centers for Disease Control and Prevention (CDC).

None

Office Monitor (Re-assess in 1-2 days)

Referral: Testing, Physician, Emergency
Department

ACE© Care Plan

Linking Diagnosis with Treatment

ACUTE CONCUSSION EVALUATION (ACE)
Physician/Clinician Office Version
Gerard Gioia, PhD¹ & Micky Collins, PhD²
¹ Children's National Medical Center
² University of Pittsburgh Medical Center

Patient Name _____
DOB: _____ Age: _____
Date: _____ ID/IR# _____

A. Injury Characteristics Date/Time of Injury _____ Reporter: ___ Patient ___ Parent ___ Spouse ___ Other ___

1. Injury Description _____

1a. Is there evidence of a forcible blow to the head (direct or indirect)? ___ Yes ___ No ___ Unknown
1b. Is there evidence of intracranial injury or skull fracture? ___ Yes ___ No ___ Unknown

1c. Location of Impact: ___ Frontal ___ Lt Temporal ___ Rt Temporal ___ Lt Parietal ___ Rt Parietal ___ Occipital ___ Neck ___ Indirect Force

2. Cause: ___ MVC ___ Pedestrian-MVC ___ Fall ___ Assault ___ Sports (specify: _____) Other _____

3. **Annesia Before (Retrograde)** Are there any events just BEFORE the injury that you/ person has no memory of (even brief)? ___ Yes ___ No Duration _____

4. **Annesia After (Anterograde)** Are there any events just AFTER the injury that you/ person has no memory of (even brief)? ___ Yes ___ No Duration _____

5. **Loss of Consciousness:** Did you/ person lose consciousness? ___ Yes ___ No Duration _____

6. **EARLY SIGNS:** ___ Appears dazed or stunned ___ Is confused about events ___ Answers questions slowly ___ Repeats Questions ___ Forgetful (recent info)

7. **Seizures:** Were seizures observed? No ___ Yes ___ Detail _____

B. Symptom Check List: Since the injury, has the person experienced any of these symptoms any more than usual today or in the past day?
Indicate presence of each symptom (0=No, 1=Yes). *Lovell & Collins, 1998; JATF

PHYSICAL (10)		COGNITIVE (4)		SLEEP (4)	
Headache	0 1	Feeling mentally foggy	0 1	Drowsiness	0 1
Nausea	0 1	Feeling slowed down	0 1	Sleeping less than usual	0 1 N/A
Vomiting	0 1	Difficulty concentrating	0 1	Sleeping more than usual	0 1 N/A
Balance problems	0 1	Difficulty remembering	0 1	Trouble falling asleep	0 1 N/A
Balance problems	0 1	COGNITIVE Total (0-4)		SLEEP Total (0-4)	
Visual problems	0 1	EMOTIONAL (4)		Exertion: Do these symptoms worsen with: Physical Activity ___ Yes ___ No ___ N/A Cognitive Activity ___ Yes ___ No ___ N/A	
Fatigue	0 1	Irritability	0 1	Overall Rating: How different is the person acting compared to his/her usual self? (circle) Normal: 0 1 2 3 4 5 6 Very Different	
Sensitivity to light	0 1	Sadness	0 1		
Sensitivity to noise	0 1	More emotional	0 1		
Numbness/tingling	0 1	Nervousness	0 1		
PHYSICAL Total (0-10)		EMOTIONAL Total (0-4)			
(Add Physical, Cognitive, Emotion, Sleep totals)		Total Symptom Score (0-22)			

C. Risk Factors for Protracted Recovery (check all that apply)

Concussion History? <input type="checkbox"/> N <input type="checkbox"/> Y	Headache History? <input type="checkbox"/> N <input type="checkbox"/> Y	Developmental History? <input type="checkbox"/> N <input type="checkbox"/> Y
Previous # 1 2 3 4 5	Prior treatment for headache	Learning disabilities
Longest symptom duration Days ___ Weeks ___ Months ___ Years ___	History of migraine headache ___ Personal ___ Family	Attention-Deficit/Hyperactivity Disorder
If multiple concussions, less force caused injury? Yes ___ No ___		Other developmental disorder

List other comorbid medical disorders or medication usage (e.g., hypothyroid, seizures) _____

D. RED FLAGS for acute emergency management: Refer to the emergency department with sudden onset of any of the following:

- * Headaches that worsen
- * Seizures
- * Focal neurologic signs
- * Looks very drowsy/can't be awakened
- * Repeated vomiting
- * Sturred speech
- * Can't recognize people or places
- * Increasing confusion or irritability
- * Weakness or numbness in arms or legs
- * Neck pain
- * Unusual behavioral change
- * Change in state of consciousness

E. Diagnosis (ICD): ___ Concussion w/o LOC 850.0 ___ Concussion w/ LOC 850.1 ___ Concussion (Unspecified) 850.9 ___ Other (854) _____
___ No diagnosis

F. Follow-Up Action Plan Complete ACE Care Plan and provide copy to patient/family.
___ No Follow-Up Needed
___ Physician/ Clinician Office Monitoring: Date of next follow-up _____
Refer to:
___ Neuropsychological Testing
___ Physician: Neurology ___ Sports Medicine ___ Physiatrist ___ Psychiatrist ___ Other _____
___ Emergency Department

ACUTE CONCUSSION EVALUATION (ACE)
CARE PLAN
Gerard Gioia, PhD¹ & Micky Collins, PhD²
¹ Children's National Medical Center
² University of Pittsburgh Medical Center

Patient Name _____
DOB: _____ Age: _____
Date: _____ ID/IR# _____
Date of Injury: _____

You have been diagnosed with a concussion (also known as a mild traumatic brain injury). This personal plan is based on your symptoms and is designed to help speed your recovery. Your careful attention to it can also prevent further injury.

Rest is the key. You should not participate in any high risk activities (e.g., sports, physical education (PE), riding a bike, etc.) if you still have any of the symptoms below. It is important to limit activities that require a lot of thinking or concentration (homework, job-related activities), as this can also make your symptoms worse. If you no longer have any symptoms and believe that your concentration and thinking are back to normal, you can slowly and carefully return to your daily activities. Children and teenagers will need help from their parents, teachers, coaches, or athletic trainers to help monitor their recovery and return to activities.

Today the following symptoms are present (circle or check). ___ No reported symptoms

Physical	Thinking	Emotional	Sleep	
Headaches	Sensitivity to light	Feeling mentally foggy	Irritability	Drowsiness
Nausea	Sensitivity to noise	Problems concentrating	Sadness	Sleeping more than usual
Fatigue	Numbness/Tingling	Problems remembering	Feeling more emotional	Sleeping less than usual
Visual problems	Vomiting	Feeling more slowed down	Nervousness	Trouble falling asleep
Balance Problems	Dizziness			

RED FLAGS: Call your doctor or go to your emergency department if you suddenly experience any of the following

Headaches that worsen	Look very drowsy, can't be awakened	Can't recognize people or places	Unusual behavior change
Seizures	Repeated vomiting	Increasing confusion	Increasing irritability
Neck pain	Sturred speech	Weakness or numbness in arms or legs	Loss of consciousness

Returning to Daily Activities

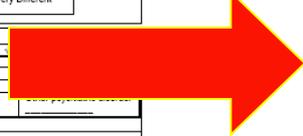
- Get lots of rest. Be sure to get enough sleep at night- no late nights. Keep the same bedtime weekdays and weekends.
- Take daytime naps or rest breaks when you feel tired or fatigued.
- Limit physical activity as well as activities that require a lot of thinking or concentration. These activities can make symptoms worse.
 - Physical activity includes PE, sports practice, weight-training, running, exercising, heavy lifting, etc.
 - Thinking and concentration activities (e.g., homework, classroom load, job-related activity)
- Drink lots of fluids and eat carbohydrates or protein every 3-4 hours to maintain appropriate blood sugar levels.
- As symptoms decrease, you may begin to gradually return to your daily activities. If symptoms worsen or return, lessen your activities, then try again to increase your activities gradually.
- During recovery, it is normal to feel frustrated and sad when you do not feel right and you can't be as active as usual.
- Repeated evaluation of your symptoms is recommended to help guide recovery.

Returning to School

- If you (or your child) are still having symptoms of concussion you may need extra help to perform school-related activities. As your (or your child's) symptoms decrease during recovery, the extra help or supports can be removed gradually.
- Inform the teacher(s), school nurse, school psychologist or counselor, and administrator(s) about your (or your child's) injury and symptoms. School personnel should be instructed to watch for:
 - Increased problems paying attention or concentrating
 - Increased problems remembering or learning new information
 - Longer time needed to complete tasks or assignments
 - Greater irritability, less able to cope with stress
 - Symptoms worsen (e.g., headache, tiredness) when doing schoolwork

-Continued on back page-

SCHOOL VERSION



ACE Completed by: _____ MD RN NP PhD ATC © Copyright G. Gioia & M. Collins, 2006

This form is part of the "Head Up: Brain Injury in Your Practice" Tool developed by the Centers for Disease Control and Prevention (CDC).

ACUTE CONCUSSION EVALUATION (ACE)

CARE PLAN

Gerard Giola, PhD¹ & Micky Collins, PhD²
 Children's National Medical Center
 University of Pittsburgh Medical Center

Patient Name	_____
DOB:	_____ Age: _____
Date:	_____ ID/MR# _____
Date of Injury:	_____

You have been diagnosed with a concussion (also known as a mild traumatic brain injury). This personal plan is based on your symptoms and is designed to help speed your recovery. Your careful attention to it can also prevent further injury.

Rest is the key. You should not participate in any high risk activities (e.g., sports, physical education (PE), riding a bike, etc.) if you still have any of the symptoms below. It is important to limit activities that require a lot of thinking or concentration (homework, job-related activities), as this can also make your symptoms worse. If you no longer have any symptoms and believe that your concentration and thinking are back to normal, you can slowly and carefully return to your daily activities. Children and teenagers will need help from their parents, teachers, coaches, or athletic trainers to help monitor their recovery and return to activities.

Today the following symptoms are present (circle or check).				_____ No reported symptoms
Physical		Thinking	Emotional	Sleep
Headaches	Sensitivity to light	Feeling mentally foggy	Irritability	Drowsiness
Nausea	Sensitivity to noise	Problems concentrating	Sadness	Sleeping more than usual
Fatigue	Numbness/Tingling	Problems remembering	Feeling more emotional	Sleeping less than usual
Visual problems	Vomiting	Feeling more slowed down	Nervousness	Trouble falling asleep
Balance Problems	Dizziness			

RED FLAGS: Call your doctor or go to your emergency department if you suddenly experience any of the following			
Headaches that <u>worsen</u>	Look <u>very</u> drowsy, can't be awakened	Can't <u>recognize</u> people or places	Unusual behavior change
Seizures	<u>Repeated</u> vomiting	Increasing confusion	Increasing irritability
Neck pain	Slurred speech	Weakness or numbness in arms or legs	Loss of consciousness

Returning to Daily Activities

1. Get lots of rest. Be sure to get enough sleep at night- no late nights. Keep the same bedtime weekdays and weekends.
2. Take daytime naps or rest breaks when you feel tired or fatigued.
3. **Limit physical activity as well as activities that require a lot of thinking or concentration. These activities can make symptoms worse.**
 - Physical activity includes PE, sports practices, weight-training, running, exercising, heavy lifting, etc.
 - Thinking and concentration activities (e.g., homework, classwork load, job-related activity).
4. Drink lots of fluids and eat carbohydrates or protein every 3-4 hours to main appropriate blood sugar levels.
5. **As symptoms decrease, you may begin to gradually return to your daily activities. If symptoms worsen or return, lessen your activities, then try again to increase your activities gradually.**
6. During recovery, it is normal to feel frustrated and sad when you do not feel right and you can't be as active as usual.
7. Repeated evaluation of your symptoms is recommended to help guide recovery.

Returning to School

1. If you (or your child) are still having symptoms of concussion you may need extra help to perform school-related activities. As your (or your child's) symptoms decrease during recovery, the extra help or supports can be removed gradually.
2. Inform the teacher(s), school nurse, school psychologist or counselor, and administrator(s) about your (or your child's) injury and symptoms. School personnel should be instructed to watch for:
 - Increased problems paying attention or concentrating
 - Increased problems remembering or learning new information
 - Longer time needed to complete tasks or assignments
 - Greater irritability, less able to cope with stress
 - Symptoms worsen (e.g., headache, tiredness) when doing schoolwork

-Continued on back page-

SCHOOL VERSION

Purpose of Care Plan

ACUTE CONCUSSION EVALUATION (ACE) CARE PLAN

Gerard Gioia, PhD¹ & Micky Collins, PhD²
¹Children's National Medical Center
²University of Pittsburgh Medical Center

Patient Name _____	
DOB: _____	Age: _____
Date: _____	ID/MR# _____
Date of Injury: _____	

You have been diagnosed with a concussion (also known as a mild traumatic brain injury). This personal plan is based on your symptoms and is designed to help speed your recovery. Your careful attention to it can also prevent further injury.

Rest is the key. You should not participate in any high risk activities (e.g., sports, physical education (PE), riding a bike, etc.) if you still have any of the symptoms below. It is important to limit activities that require a lot of thinking or concentration (homework, job-related activities), as this can also make your symptoms worse. If you no longer have any symptoms and believe that your concentration and thinking are back to normal, you can slowly and carefully return to your daily activities. Children and teenagers will need help from their parents, teachers, coaches, or athletic trainers to help monitor their recovery and return to activities.

Guide recovery

Educate

Manage exertional activity, safety

Daily Activities

Returning to Daily Activities

1. Get lots of rest. Be sure to get enough sleep at night- no late nights. Keep the same bedtime weekdays and weekends.
2. Take daytime naps or rest breaks when you feel tired or fatigued.
3. **Limit physical activity as well as activities that require a lot of thinking or concentration. These activities can make symptoms worse.**
 - Physical activity includes PE, sports practices, weight-training, running, exercising, heavy lifting, etc.
 - Thinking and concentration activities (e.g., homework, classwork load, job-related activity).
4. Drink lots of fluids and eat carbohydrates or protein every 3-4 hours to main appropriate blood sugar levels.
5. **As symptoms decrease, you may begin to gradually return to your daily activities. If symptoms worsen or return, lessen your activities, then try again to increase your activities gradually.**
6. During recovery, it is normal to feel frustrated and sad when you do not feel right and you can't be as active as usual.
7. Repeated evaluation of your symptoms is recommended to help guide recovery.

Return to School

Returning to School (Continued)

Until you (or your child) have fully recovered, the following supports are recommended: (check all that apply)

- No return to school. Return on (date) _____
- Return to school with following supports. Review on (date) _____
- Shortened day. Recommend ___ hours per day until (date) _____
- Shortened classes (i.e., rest breaks during classes). Maximum class length: _____ minutes.
- Allow extra time to complete coursework/assignments and tests.
- Lessen homework load by _____%. Maximum length of nightly homework: _____ minutes.
- No significant classroom or standardized testing at this time. 50 60
- Check for the return of symptoms (use symptom table on front page of this form) when doing activities that require a lot of attention or concentration.
- Take rest breaks during the day as needed.
- Request meeting of 504 or School Management Team to discuss this plan and needed supports.

Return to Work

Returning to Work

1. Planning to return to work should be based upon careful attention to symptoms and under the supervision of an appropriate health care professional.
2. Limiting the amount of work you do soon after your injury, may help speed your recovery. It is very important to get a lot of rest. You should also reduce your physical activity as well as activities that require a lot of thinking or concentration.

- Do not return to work. Return on (date)_____.
- Return to work with the following supports. Review on (date)_____.

Schedule Considerations

- Shortened work day _____ hours
- Allow for breaks when symptoms worsen
- Reduced task assignments and responsibilities

Safety Considerations

- No driving
- No heavy lifting or working with machinery
- No heights due to possible dizziness, balance problems

This form is part of the "Heads Up: Brain Injury in Your Practice" tool kit developed by the Centers for Disease Control and Prevention (CDC).

Neuropsychological Testing

- Concussion produces impairment of neuropsychological function in children and adults.
 - Attention, memory, speed, executive function, emotional response
- Assessment of neuropsychological function provides measurable outcome of injury.
- Other factors can influence performance and reporting; findings do not stand alone.



Neuropsychological Testing

- Test findings are best understood as one element within a multidimensional, multidisciplinary model.
- Training in the proper administration, especially with children, is critical to obtain valid results.
- Interpretation of findings requires an even higher level of training and expertise.



Polling Question

Rest is the best medicine to treat concussion.

True

False

“New” Management Strategies

“Active” Rehabilitation

- No additional forces to head/brain
- INITIALLY, resting the brain (days) and good night sleep
- Individualized moderated, monitored symptom management
 - Managing/facilitating physiological recovery; teaching symptom monitoring, exertion concepts
 - Find the activity “sweet spot” – Optimized activity without overexertion
 - Not too much BUT not too little
 - Plan of graduated physical and cognitive activation

Ways to overexert

- Physical
- Cognitive (concentration)
- Emotional (stress)



Progressive Activities of Controlled Exertion (PACE)

- Set the Positive Foundation for Recovery
- Define the Parameters of the Activity-Exertion Schedule
- Skill Teaching: Activity-Exertion Monitoring/Management
- Reinforcing the Progressive Path to Recovery

Activity-Rest Management

Concussion in Sports: Postconcussive Activity Levels, Symptoms, and Neurocognitive Performance

Journal of Athletic Training, 2008

Not Too Little, Not Too Much

Exertional Effects – Why Do We Care?

- Exertional effects = symptom exacerbation following physical or cognitive activity
- Signal that the brain's dysfunctional neurometabolism being pushed beyond its tolerable limits
- Child's sensitivity to symptom exacerbation/ exertional effects is hypothesized to be one more indicator of its injury status.
- Possible treatment implications

Exertional Effects

Name: _____ Date: ____/____/____

Pre / Post

1. Headache

1 / 5

2. Fatigue

3 / 6

3. Concentration

1 / 5

4. Irritability

0 / 1

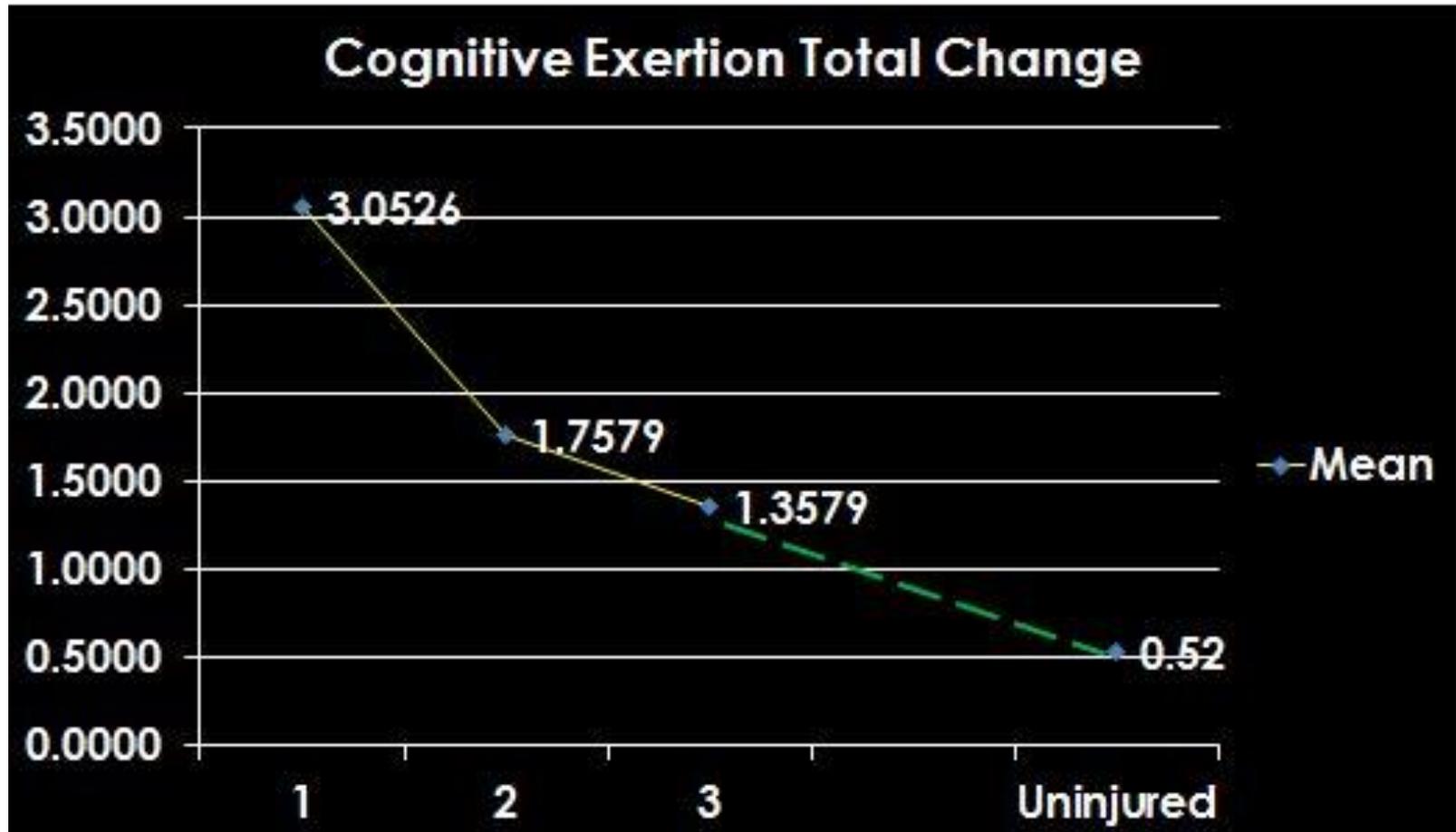
5. _____

0 / 10

Exertion Effects Index
Difference Score = 17 - 5 = 12

Indicate symptom rating at the beginning of the testing session (Pre) **AND** at the end of it (Post). (e.g., sensitivity to light and/or sound, etc.) as appropriate, but ask about headache, fatigue, con-

Cognitive Exertion Recovery



Is Rest After Concussion “The Best Medicine?”

- “Practice guidelines recommend an initial period of rest for concussion/mTBI...
- BUT, compelling evidence that other health conditions can be worsened by inactivity, improved by early mobilization/exercise...
- Best available evidence suggests that rest exceeding three days is probably more harmful than helpful...
- Gradual resumption of pre-injury activities should begin as soon as tolerated...
- Supervised exercise may benefit patients who are slow to recover...”

“Benefits” of Strict Rest

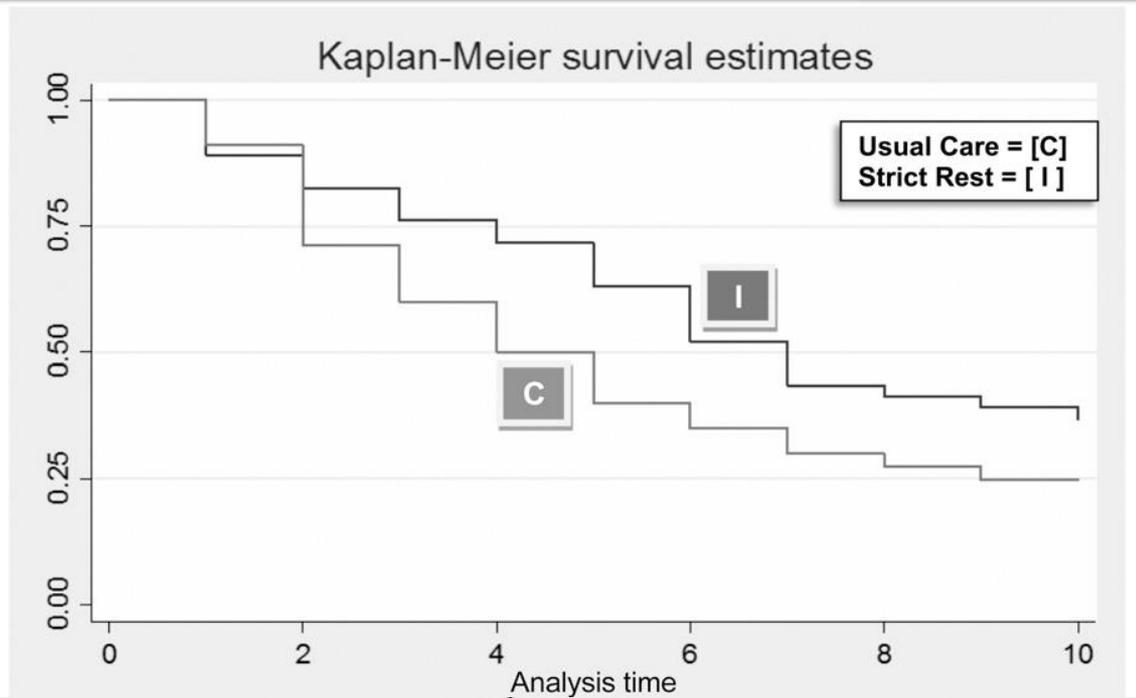


FIGURE 4

Proportion of patients reporting symptom resolution ($PCSS \leq 7$) over time. It took longer for 50% the intervention group to report symptom resolution. However, the difference in overall proportion of patient reporting symptom resolution did not meet statistical significance ($P = .08$).

Conclusions: Recommending strict rest for adolescents immediately after concussion offered no added benefit over the usual care.

Adolescents' symptom reporting was influenced by recommending strict rest.

“Active” Aerobic Rehabilitation

- **Aerobic Activation** (Gagnon, Galli, Friedman, Grilli, & Iverson, 2009; Leddy et al., 2010)
- Structured and monitored subsymptom threshold exercise to facilitate healing in slow to recovery (>3-4 weeks)
- Progressive “controlled” exercise below level that produces symptom occurrence or worsening (Gagnon et al., 2009)



Return to School

Polling Question

Students should not be sent back to school when they are symptomatic.

True

False

A Parent's Guide to Returning Your Child to School After a Concussion



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Section 1	Signs and Symptoms	Page 3
Section 2	Support Recovery	Page 8
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Section 4	For Children With Longer Recovery Times	Page 19
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Section 1

Signs and Symptoms: Recognizing and Responding to a Concussion

Section 2

What Can You Do to Support Your Child's Recovery?

Section 3

Returning to School

Section 4

For Children With Longer Recovery Times

For children who take longer to recover, you may need to talk to your child's school about setting up 504 accommodations for continued — and possibly increased — school support.

Return to School Stages^{8,13,14}

Every child's injury and recovery time is unique; but with guidance from your doctor, help from other health care team members and school support, your child can safely return to school after a concussion.

Here is an example of a return to school plan to use with your child:

Stage 1: Rest

Minimum 24 hours and up to several days

Stage 2: Get Ready

Continued recovery; length varies based on your child's response

Move on to Stage 3 when your child can attend a full day of school and complete his or her assignments without symptoms.

Stage 3: Go

Return to normal learning activity when symptoms go away

What should I ask my medical provider before sending my child back to school?

- How many days should my child stay home from school? (Discuss the symptoms from the symptom log.)
- Should my child go back for a half day or a full day at first?
- What types of adjustments might help at school at the beginning (light adjustment, avoid eating in cafeteria because of noise, extra time for routine tests etc.)?
- Should my child take the bus (for example, because of dizziness, noise and overstimulation)?

Talking to Your Child's Teacher

- Explain your child's diagnosis and specific challenges that he or she may be experiencing.
- If he or she is out of school, keep the teacher informed of your child's recovery progress on a regular basis.
- Ask the teacher to keep you informed if your child is experiencing difficulties at school.
- Notify the teacher of any specific strategies that may help your child (such as taking breaks).

School Supports

Your child may need accommodations from the school to help reach his or her educational goals. Some examples are below.

Symptom/ Problem	Elementary School	Middle School	High School
Physical abilities (dizziness, balance, headache, sensitiv- ity to noise or light)	<ul style="list-style-type: none">■ Give student preferential seating in a classroom■ Allow the student to wear sunglasses	<ul style="list-style-type: none">■ Give student preferential seating in a classroom■ Allow the student to wear sunglasses	<ul style="list-style-type: none">■ Give student preferential seating in a classroom■ Allow the student to wear sunglasses
Thinking (cognitive) skills (forgetfulness, concentration, comprehension, word finding)	<ul style="list-style-type: none">■ Allow extra time for homework/tests■ Refocus student with verbal, nonverbal cues■ Allow student extra time to speak	<ul style="list-style-type: none">■ Allow extra time for homework/tests■ Refocus student with verbal, nonverbal cues■ Allow student extra time to speak	<ul style="list-style-type: none">■ Allow extra time for homework/tests■ Refocus student with verbal, nonverbal cues■ Allow student extra time to speak
Emotional/ behavioral issues (anxiety, depression, irritability, feeling overwhelmed)	<ul style="list-style-type: none">■ Allow frequent breaks■ Remind child to take a deep breath when he or she gets overwhelmed	<ul style="list-style-type: none">■ Allow frequent breaks■ Teach self-talk to relieve stress and anxiety	<ul style="list-style-type: none">■ Allow frequent breaks■ Teach self-talk to relieve stress and anxiety

Tip

The best indicator of how much is too much is whether your child starts to have symptoms. If your child does not experience symptoms during an activity, then it is OK to continue that activity. If your child starts to feel symptoms, then he or she must stop that activity right away and rest. Symptoms are a sign that the brain is being overtaxed.^{2, 8, 9}

Heads Up to Schools: Know Your Concussion ABCs



**Heads Up to Schools:
KNOW YOUR
CONCUSSION
ABCs**

Assess the situation | Be alert for signs and symptoms | Contact a health care professional

Returning to School After a Concussion: A Fact Sheet for School Professionals

What is a concussion?

A concussion is a type of traumatic brain injury (TBI) that results from a bump, blow, or jolt to the head (or by a hit to the body) that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, stretching and damaging the brain cells and creating chemical changes in the brain.

While some research shows that the young brain can be resilient, it may also be more susceptible to the chemical changes that occur in the brain after a concussion. These

What role do I play in helping a student return to school after a concussion?

Each year hundreds of thousands of K-12 students sustain a concussion as a result of a fall, motor-vehicle crash, collision on the playground or sports field, or other activity. Most will recover quickly and fully. However, school professionals, like you, will often be challenged with helping return a student to school who may still be experiencing concussion symptoms—symptoms that can result in learning problems and poor academic performance.

Knowledge of a concussion's potential effects on a student, and appropriate management of the return-to-school process, is critical for helping students recover from a concussion.

That's where you come in. This fact sheet provides steps that school professionals can take to help facilitate a student's return to school and recovery after a concussion. It emphasizes the importance of a collaborative approach by a

1. What role do I play in helping a student return to school?
2. How can a concussion affect learning?
3. When is a student ready to return to school after a concussion?
4. Who should be included as part of the support team?
5. How can understanding concussion symptoms help with identifying a student's individual needs?
6. What roles to cognitive exertion and rest play in a student's recovery?
7. How can I help identify problems and needs?
8. Some strategies for Addressing Concussion Symptoms at school.
9. When symptoms persist: What types of formal supports are available?

Concussion's Effects on School Learning and Performance

- 216 students (Grades 4-12) with concussions
- Which specific types of problems are you experiencing in school?
- Students reported an average of 3.4 problems below.

Headaches interfering	66%	(High School (HS)-68%)
Too tired	54%	(HS-58%)

Cannot pay attention in class	58%	(HS-62%)
Homework taking much longer	49%	(HS-54%)
Difficulty studying for test/quiz	42%	(HS-47%)
Difficultly understanding material	44%	(HS-46%)
Difficulty taking notes	27%	(HS-32%)

Literature

- **Academic Effects of Concussion in Children and Adolescents** (Ransom et al., in press)
- **School and the Concussed Youth: Recommendations for Concussion Education and Management** (Sady, Vaughan, & Gioia, 2011)
- **Clinical Report Sport-Related Concussion in Children and Adolescents** (Halstead, Walter, & Council on Sports Medicine and Fitness, 2010)



Gradual Return to School

Post-Concussion Gradual Return to Academics

Stage	Description	Activity Level	Criteria to Move to Next Stage
0	No return, at home	Day 1 - Maintain low level cognitive and physical activity. No prolonged concentration. Cognitive Readiness Challenge: As symptoms improve, try reading or math challenge task for 10-30 minutes; assess for symptom increase.	To Move To Stage 1: (1) Student can sustain concentration for 30 minutes before significant symptom exacerbation, AND (2) Symptoms reduce or disappear with cognitive rest breaks* allowing return to activity.
1	Return to School, Partial Day (1-3 hours)	Attend 1-3 classes, with interspersed rest breaks. Minimal expectations for productivity. No tests or homework.	To Move To Stage 2: Student symptom status improving, able to tolerate 4-5 hours of activity with 2-3 cognitive rest breaks built into school day.
2	Full Day, Maximal Supports (required throughout day)	Attend most classes, with 2-3 rest breaks (20-30'), no tests. Minimal HW ($\leq 60'$). Minimal-moderate expectations for productivity.	To Move To Stage 3: Number & severity of symptoms improving, needs only 1-2 cognitive rest breaks built into school day.
3	Return to Full Day, Moderate Supports (provided in response to symptoms during day)	Attend all classes with 1-2 rest breaks (20-30'); begin quizzes. Moderate HW (60-90') Moderate expectations for productivity. Design schedule for make-up work.	To Move To Stage 4: Continued symptom improvement, needs no more than 1 cognitive rest break per day
4	Return to Full Day, Minimal Supports (Monitoring final recovery)	Attend all classes with 0-1 rest breaks (20-30'); begin modified tests (breaks, extra time). HW (90+') Moderate- maximum expectations for productivity.	To Move To Stage 5: No active symptoms, no exertional effects across the full school day.
5	Full Return, No Supports Needed	Full class schedule, no rest breaks. Max. expectations for productivity. Begin to address make-up work.	N/A

*Cognitive rest break: a period during which the student refrains from academic or other cognitively demanding activities, including schoolwork, reading, TV/games, conversation. May involve a short nap or relaxation with eyes closed in a quiet setting.

Return to Sports Participation



Criteria for Return to Play (RTP)

- No longer have any **symptoms**
 - No longer need medicine to control symptoms
- **Neurocognitive function** and **balance** back to normal
 - After rest and gradual activity (exertion)
- Cleared by medical professional to begin gradual RTP program
- RTP ideally conducted by certified athletic trainer



**When I leave today,
how can I remember all
this information?
Where can I go?**



Concussion/mTBI

CDC Educational Materials

www.cdc.gov/concussion

HEADS UP: Concussion in High School Sports

HEADS UP: Concussion in Youth Sports

HEADS UP: Concussion Training for Medical
Providers

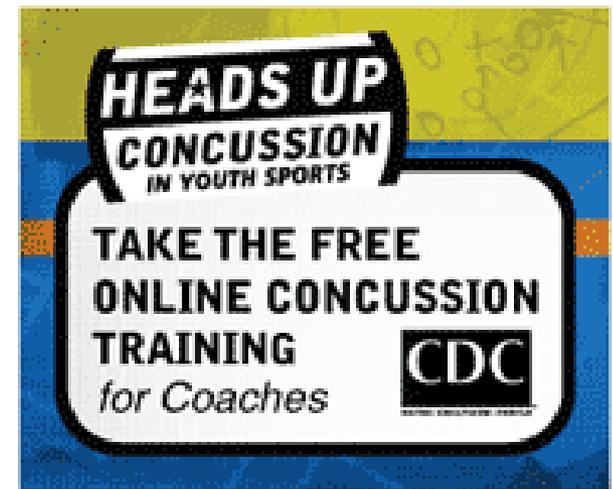
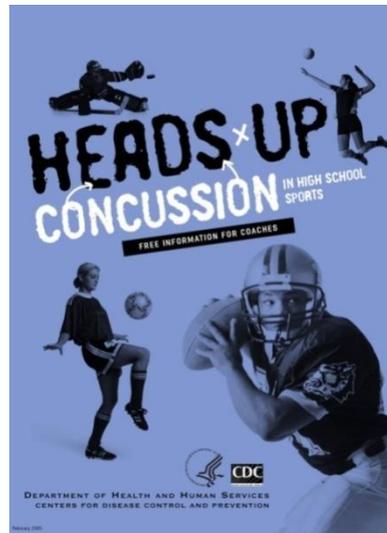
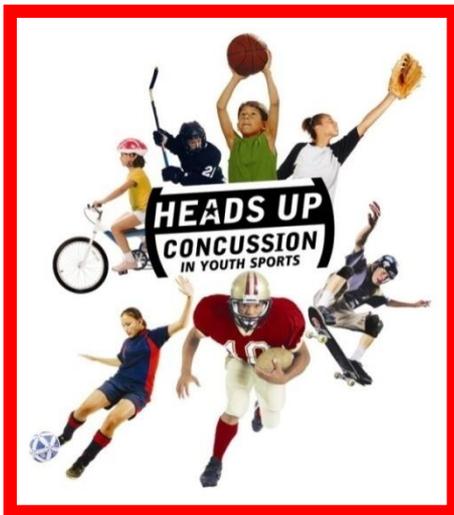
HEADS UP to Schools: Know Your Concussion
ABCs



Concussion Education Tools

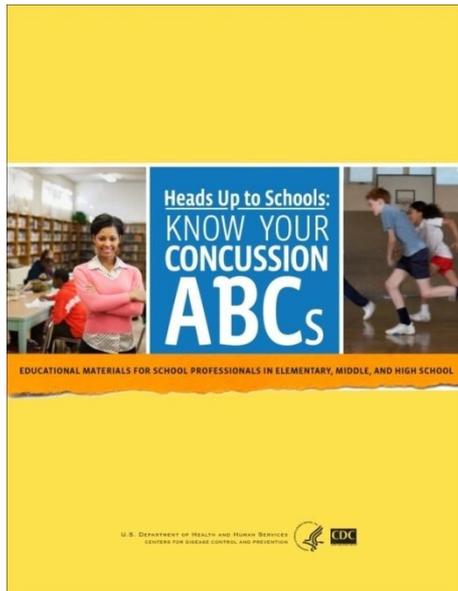
Parents & Coaches & Athletes

Coaches

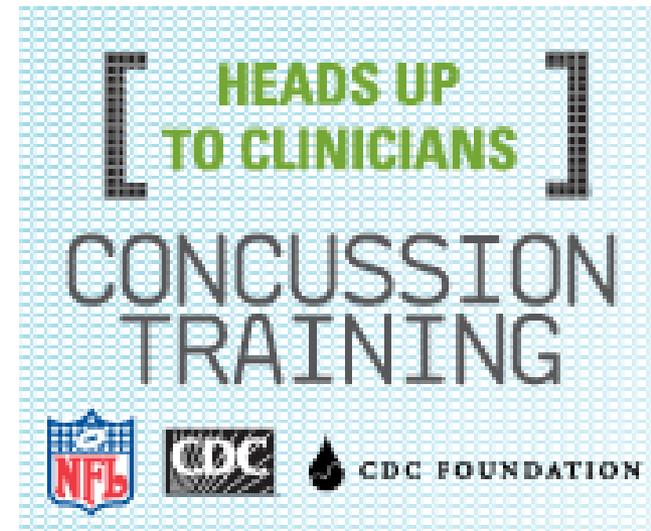
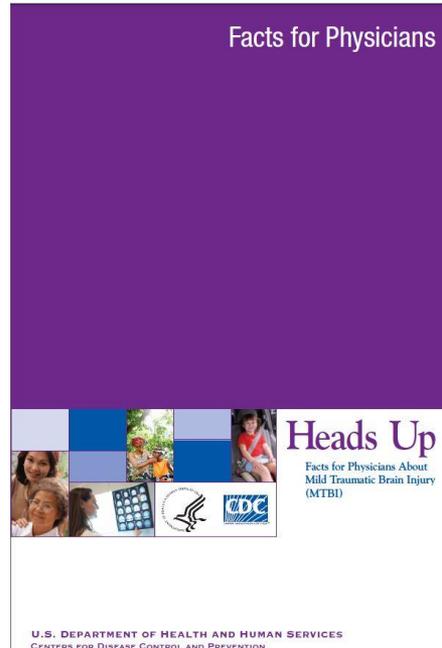


Concussion Education Tools

Schools



Healthcare Providers



Clipboard/Pocket Card

HEADS UP

CONCUSSION IN FOOTBALL



DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION



SIGNS AND SYMPTOMS

Athletes who experience any of the signs and symptoms listed below after a bump, blow, or jolt to the head or body may have a concussion.

Signs Observed by Coaching Staff	Symptoms Reported by Athlete
Appears dazed or stunned	Headache or "pressure" in head
Is confused about assignment or position	Nausea or vomiting
Forgets an instruction	Balance problems or dizziness
Is unsure of game, score, or opponent	Double or blurry vision
Moves clumsily	Sensitivity to light
Answers questions slowly	Sensitivity to noise
Loses consciousness (even briefly)	Feeling sluggish, hazy, foggy, or groggy
Shows mood, behavior, or personality changes	Concentration or memory problems
Can't recall events prior to hit or fall	Confusion
Can't recall events after hit or fall	Does not "feel right" or is "feeling down"

For more information and safety resources, visit www.cdc.gov/Concussion or www.usafootball.com.

ACTION PLAN

If you suspect that an athlete has a concussion, you should take the following four steps:

1. Remove athlete from play.
2. Ensure that the athlete is evaluated by an appropriate health care professional. Do not try to judge the seriousness of the injury yourself.
3. Inform the athlete's parents or guardians about the possible concussion and give them the fact sheet on concussion.
4. Keep the athlete out of play the day of the injury and until an appropriate health care professional says they are symptom-free and it's OK to return to play.

IMPORTANT PHONE NUMBERS

Emergency Medical Services
Name: _____
Phone: _____

Health Care Professional
Name: _____
Phone: _____

School Staff Available During Practice
Name: _____
Phone: _____

School Staff Available During Games
Name: _____
Phone: _____

WHEN IN DOUBT, SIT THEM OUT

SIGNS AND SYMPTOMS

Athletes who experience **one or more** of the signs and symptoms listed below after a bump, blow, or jolt to the head or body may have a concussion.

Signs Observed by Coaching Staff	Symptoms Reported by Athlete
Appears dazed or stunned	Headache or "pressure" in head
Is confused about assignment or position	Nausea or vomiting
Forgets an instruction	Balance problems or dizziness
Is unsure of game, score, or opponent	Double or blurry vision
Moves clumsily	Sensitivity to light
Answers questions slowly	Sensitivity to noise
Loses consciousness (even briefly)	Feeling sluggish, hazy, foggy, or groggy
Shows mood, behavior, or personality changes	Concentration or memory problems
Can't recall events prior to hit or fall	Confusion
Can't recall events after hit or fall	Just not "feeling right" or is "feeling down"

ACTION PLAN

If you suspect that an athlete has a concussion, you should take the following four steps:

1. Remove the athlete from play.
2. Ensure that the athlete is evaluated by a health care professional experienced in evaluating for concussion. Do not try to judge the seriousness of the injury yourself.
3. Inform the athlete's parents or guardians about the possible concussion and give them the fact sheet on concussion.
4. Keep the athlete out of play the day of the injury and until a health care professional, experienced in evaluating for concussion, says the athlete is symptom-free and it's OK to return to play.

www.cdc.gov/concussion

Polling Question

I am very familiar with my state's youth concussion law.

Yes

No

50 States and D.C. Now Have Concussion Laws



Know Your State Youth Concussion Law

Three Core Principles

1. Concussion Education for Coaches to Recognize and Respond
2. Remove and Protect – When in Doubt, Sit it Out
3. Medical Clearance required for Returning Youth to Play

Understand the myths and truths surrounding concussions

Truth or Myth?

1. Concussion requires loss of consciousness. Truth/Myth
2. My state has a law promoting concussion recognition and response in sports. Truth/Myth
3. A student should not return to school until fully asymptomatic. Truth/Myth
4. The only way to recover from a concussion is to eliminate “screens” and rest. Truth/Myth
5. Students with concussions frequently report multiple areas of difficulty with learning. Truth/Myth
6. Only medical professionals can identify a suspected concussion. Truth/Myth



Truth or Myth?

- | | |
|---|-------------|
| 7. Football is responsible for the majority of concussions in sports. | Truth/ Myth |
| 8. A CT scan or MRI is important in the diagnosis of concussion. | Truth/ Myth |
| 9. In the state of Maryland, only a physician can “clear” an athlete to return to play. | Truth/ Myth |
| 10. Recovery from a concussion is best accomplished by a balance of moderated activity and rest breaks. | Truth/ Myth |
| 11. Baseline testing is necessary for the treatment and management of a concussion. | Truth/ Myth |



What We Still Need to Know

- The brain's individual response to forces (concussive, subconcussive)
- Reasons for variability in risk for injury
- Reasons for variability in recovery outcomes
- Long-term effects of single, multiple, complex injuries
- Individualized treatment predictors, protocols
- **PREVENTION**

SCORE

Safe Concussion Outcome,
Recovery & Education

PLAY HARD.
PLAY SAFE.
PLAY SMART!



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- The Q&A box is monitored and questions will be forwarded to our presenters for response.
- We will respond to as many questions as time permits.



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4. Verify, correct, or add your information AND Select your profession(s).
5. Proceed and complete the activity evaluation
6. Upon completing the evaluation you can print your CE Certificate. You may also e-mail your CE Certificate. Your CE record will also be stored here for later retrieval.
7. The website is open for completing your evaluation for 14 days.
8. After the website has closed, you can come back to the site at any time to print your certificate, but you will not be able to add any evaluations.

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Impact of Caregiver Stress

May 14, 2015
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