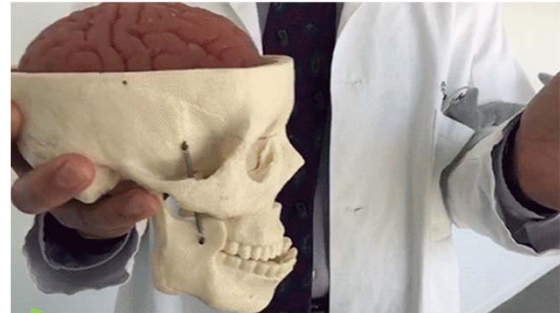


## A Concussion Can Result in...

- Bruised, torn and swollen brain tissue
- Shearing and tearing of neurons at a microscopic level
- Chemical imbalance in the brain that can result in short or long term changes in function



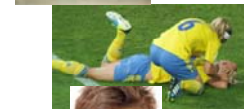
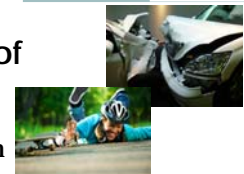
Hover here to see play bar, then click to play animation.

## A Concussion...

- Can be difficult to diagnose and detect with common neuro-imaging tools
- Can lead to additional concussions, known as second impact syndrome

## Common Causes of Concussion

- Motor vehicle crash
- Fall
- Bicycle crash
- Sports Injury
- Physical Assault
- Abusive Head Trauma



## Concussion *Signs* Observed by Others

- Appears dazed or stunned
- Is confused about events
- Answers questions slowly
- Repeats questions

## Observed *Signs*, continued

- Can't recall events prior to or after the hit, bump or fall
- Loses consciousness (even briefly)
- Shows behavior or personality changes
- Forgets class schedule or assignments

## Concussion Symptoms

- No two concussions or related symptoms are exactly alike
- Symptoms may have different recovery rates
- Impact of symptoms on day to day functioning will be different for each student

## Physical Symptoms

- Headache, pressure in head
- Nausea or vomiting
- Physical & mental fatigue
- Lethargy
- Dizziness, light-headedness, balance problems



## Physical Symptoms, continued

- Blurred or double vision, sensitivity to light
- Ringing in the ears, sensitivity to sounds
- Numbness or tingling



## Cognitive Symptoms

- Difficulty concentrating, paying attention, or thinking clearly
- Learning and memory problems
- Struggles with word-finding & putting thoughts into words
- Easily confused; feels groggy
- Loses track of time and place

## Cognitive Symptoms, continued

- Easily distracted
- Difficulty doing more than one thing at a time
- Complains of being 'overloaded'
- Lack of organization with everyday tasks

## Cognitive Symptoms, continued

- Slower processing
  - Thinking
  - Acting
  - Reading
  - Speaking

## Emotional Symptoms



- Mood changes
- Irritable
- Decreased motivation
- Easily overwhelmed
- Withdrawn, sad
- Seems more impulsive, nervous



## Concussion Outcomes

Outcomes can vary greatly, depending on location and force of injury, concussion history, gender, age, genetics, neurological status

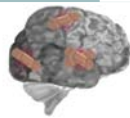
## Risk Factors

- **Gender:** Females at greater risk for receiving a concussion, experience longer recovery time than males
- **Age:** high school athletes' recovery slower than college athletes
- **Concussion history:** Individuals with 3+ prior concussions at higher risk for more severe concussion & post concussion syndrome

## Risk Factors, continued

- **Migraine history,** or sibling or parent with migraine history
- **Previous disorders or conditions**
  - Mood disorders
  - Learning disabilities
  - ADHD

## Second Impact Syndrome



- Second concussion sustained prior to complete healing of the initial concussion
- The healing brain is more vulnerable
- Outcomes are typically more severe than the initial injury
- Can result in coma or death

## Recovery Challenges

- Concussion often considered *invisible injury*  
"But they look fine..."
- Severity of impact doesn't always correlate with severity of symptoms
- Physical symptoms often recover before cognitive symptoms, giving a false sense of full recovery
- Return to full school schedule or sports too soon after injury can worsen symptoms

## Initial Concussion Care in the School Setting



## Initial Concussion Care in the School Setting

- School health office staff
- Treatment protocol
- Follow-up

## Immediate emergency care (911) requested if there is...

- Loss of consciousness (even brief)
- Slurred speech
- Extreme disorientation
- Vomiting
- Seizures
- Increasing agitation or confusion
- Excessive drowsiness
- One pupil larger than the other

## Initial Concussion Care in the School Setting

- 1) School personnel immediately remove student from physical & cognitive activity
- 2) Health office staff assess for concussion symptoms; and assess for other injuries

## Non-Urgent Concussion Care in the School Setting

### School health office staff will:

- Gather injury information and document
- Contact parent/guardian to report the injury and current medical status, and determine need for current/future medical care
- Reevaluate after a period of rest and determine next steps

## Non-Urgent Concussion Care & Follow-Up, continued

- Communication is key: school health office, health care provider, parents, student, administration, teachers
- Classroom and physical activity restrictions
- Frequent check-ins with student

### When a Concussion Occurs Outside of School

The school health specialist should:

- Gather information from family, including medical documentation and signed release
- Identify a plan for return to school
- Disseminate information to teachers and staff; provide updates

### CDC Concussion Signs & Symptoms Checklist

Evaluates:

- Observed signs
- Physical Symptoms
- Cognitive Symptoms
- Emotional Symptoms

<https://stacks.cdc.gov/view/cdc/12353/>

### Physical & Cognitive Rest

- Allows brain to heal; speeds recovery
- Avoid strenuous physical & cognitive activity for first several days
- Brief break from school or work
- Work UP to symptom threshold, but do not exceed

### Cognitive Rest means *limited*...

- Homework
- Reading
- Visually stimulating activities (computers, video games, texting, social media, TV, etc.)
- No trips, community activities, social visits in or out of the home

### Physical rest means *no*...

- School PE classes
- Recess or playground activities
- Physical activities such as biking, skateboarding, skiing, jogging or running
- Sports, strenuous workouts, weight training or physical chores

### Physical and Cognitive Rest DOES MEAN...

Increased rest and sleep



## Return to LEARN



## Returning to School: A Balancing Act

- Open communication between all parties
- Monitor post-concussion symptoms
- Identify & implement academic accommodations
- Adjust supports when symptoms change
- Have reasonable expectations

## Prior to Return to School

- Identify school liaison for family
- Identify members of a concussion team and hold phone or face-to-face meeting
- Develop concussion plan based on current medical information

## Prior to Return to School

### Identify...

- Someone who will monitor & document symptoms, accommodations & progress
- Someone the student can 'check in' with (school nurse, counselor, teacher)
- Someone who can share concussion resources

## Temporary Accommodations While Recovering

- May be needed for 6 to 8 weeks or more  
*(Most students return to full cognitive functioning within 3 months of injury)*
- Accommodations should be agreed upon by parents, school staff, and student
- Concussion Plan

## Concussion Plan

Goal: To return the student back to previous cognitive and physical activity level, supported with proper accommodations to manage symptoms

## Sample Concussion Plan

This document can be found as an attachment to this presentation.

TABLE 1.  
Return-to-Learn Plan

Stage	Activity	Objective
No activity	Complete cognitive rest — no school, no homework, no reading, no texting, no video games, no computer work.	Recovery
Gradual reintroduction of cognitive activity	Relax previous restrictions on activities and add back for short periods of time (5-15 minutes at a time).	Gradual controlled increase in subthreshold cognitive activities.
Homework at home before school work at school	Homework in longer increments (20-30 minutes at a time).	Increase cognitive stamina by repetition of short periods of self-paced cognitive activity.
School re-entry	Part day of school after tolerating 1-2 cumulative hours of homework at home.	Re-entry into school with accommodations to permit controlled subthreshold increase in cognitive load.
Gradual reintegration into school	Increase to full day of school.	Accommodations decrease as cognitive stamina improves.
Resumption of full cognitive workload	Introduce testing, catch up with essential work.	Full return to school, may commence Return-to-Play protocol (see Step 2 in Table 2).

Source: Mazer CE, Gioia GA, Ladd JJ, Grady MF

## Key Aspects of a Concussion Plan

- Accommodations may be needed for days or months
- A concussion plan should be agreed upon by the student, parents, school personnel, and medical provider

## If Concerns Arise

- Work with medical provider to share concerns
- Review accommodations plan and adjust as needed
- Check in with student and closely monitor student's status

## Possible Accommodations...



## Possible Accommodations: *Reduce Physical Demands*

- Modify school day and/or schedule
- Build breaks or study hall(s) into schedule
- Provide a quiet environment to rest
- Offer frequent breaks throughout day
- Reduce or cut out extra-curricular activities

## Possible Accommodations: *Reduce Cognitive Demands,* *continued*

- Modified school day and/or schedule
- Eliminate/reduce assignment/homework load
- Extend assignment deadlines
- Eliminate, delay or allow untimed quizzes/tests



**Possible Accommodations:**  
*Reduce Cognitive Demands,*  
*continued*

- Reduce screen time on all devices
- Help student refocus as needed
- Provide visual cues to assist in recall
- Provide supplemental note taker options

**Possible Accommodations:**  
*Reduce Cognitive Demands,*  
*continued*

- Assist with organizing materials as needed
- Drop or delay some classes
- Consider short term alternate grading system

**Possible Accommodations:**  
*Reduce Sensory Demands*

Identify alternatives for...

- Typical hallway passing times
- PE and recess activities
- Orchestra or band class
- School bus transportation

**Possible Accommodations:**  
*Reduce Sensory Demands,*  
*continued*

Consider...

- Alternate lighting
- Use of tinted glasses, sun glasses, or brimmed hats indoors
- Filters (colored transparencies) for reading materials

**Possible Accommodations:**  
*Social/Emotional Support*

- Show tolerance of emotional outbursts, irritability, anger
- Help student understand why these changes have occurred
- Identify coping strategies and accommodations with student

**Possible Accommodations:**  
*Social/Emotional Support,*  
*continued*

- Offer ongoing/daily support & encouragement to the student
- Provide discussion opportunities and resources to *all* students on concussion

## The Importance of Self-Advocacy

- Emphasize the importance of the student recognizing & self-reporting symptoms
- Encourage student to take an active part in their concussion plan and recovery
- Encourage following a healthy food plan and adequate hydration

## Keep in Mind...

- Monitoring and documenting progress is a critical part of the recovery
- As symptoms decrease, remove supports gradually
- No return to physical activity until cleared by health care provider

## Keep in Mind...

No one plan fits all students; if you have seen one concussion, you have only seen **one** concussion.

## Return to PLAY



Minnesota State High School League  
Protocol for Return to Play:

<http://www.mshsl.org/mshsl/sports/ConcussionProtocol.pdf>

## Return to PLAY

- Goal: Return to prior level of physical activity including gym, recess, recreational activities, and athletics
- A provider-directed, step-by-step increase in physical activity designed to ensure a safe, symptom-free return to sports or recreational activities

### Return to PLAY, continued

- Avoid all contact sports/activities until symptoms completely resolve
- Clearance is provided by a licensed or certified health care provider
- Wear protective head gear if there is a history of concussion

### Return to PLAY, continued

- Open communication is key
- Assure that everyone understands Return to PLAY protocol
- Identify roles and responsibilities of involved professionals, student-athlete and family

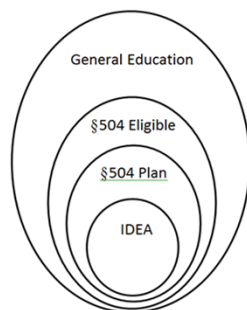
### In School and on the Playing Field

- As symptoms decrease, accommodations and supports can be removed gradually
- If symptoms persist beyond 4-6 weeks, more substantial supports may be required in the school setting

### Increased Supports in the School Setting



### Spectrum of Supports In the School Setting



### Options for Increased School Support: 504 Plan

- Federal anti-discrimination law
- Protects rights of individuals with disabilities in programs/activities that received federal financial assistance from US Dept. of Education

## 504 Plan

- Must have a documented disability
  - Substantially limits a major life activity
- Legal document which identifies accommodations
- Requires signatures of all participants

## 504 Plan: Accommodation Examples

- Accessing the physical environment
- Presentation of materials
  - Alternative materials/assistive technology, etc.
  - School or class schedule changes, organizational aids, alternative room for tests, etc.

## When to Consider Eligibility for a 504 Plan

- When symptoms don't resolve after 4-6 weeks, or worsen with increased activity
- When new symptoms occur over time
- When a concussion plan doesn't provide enough support
- When there's increased need for documentation

## Other Options for Support: IDEA (Special Education)

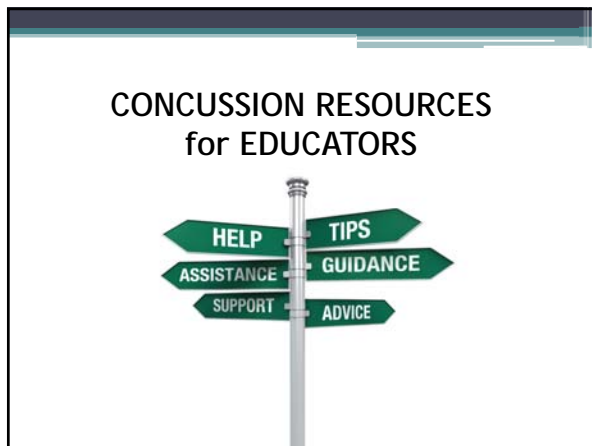
- Special Education services should be considered when educational needs are chronic, long term
- Evaluation can be requested by educator or parent
- Must have documentation of medical diagnosis, and meet state TBI criteria

## IDEA: TBI Criteria

- Caused by 'external physical force'
- Total or partial functional disability and/or psycho-social impairment
- Adversely affects educational performance
- Documentation of medical diagnosis
- Consistent with Federal definition
- Role of the TBI specialist

## IEP Services under IDEA

- Student goals & objectives
- Accommodations and Modifications
- List of team members, including TBI specialist\*
- Special education services and providers



## CONCUSSION RESOURCES for EDUCATORS

### CDC Resources

- *Heads Up to Schools: Know Your Concussion ABCs* (fact sheets for parents, school nurses, and teachers/counselors/school professionals)
- *Heads Up: Concussion in Youth Sports* (information packet for coaches)

[www.cdc.gov/concussion](http://www.cdc.gov/concussion)

### CDC Fact Sheets: School Nurses, Parents, Educators, Coaches

#### Heads Up to Schools: Know Your Concussion ABCs

**A—Assess** the situation  
**B—Be** alert for signs and symptoms  
**C—Contact** a healthcare professional

[www.cdc.gov/headsup/schools](http://www.cdc.gov/headsup/schools)

### CDC Acute Concussion Evaluation (ACE) Care Plan: School Version

#### Returning to School

- ADL's
- Academic accommodations
- Return to sports and activities

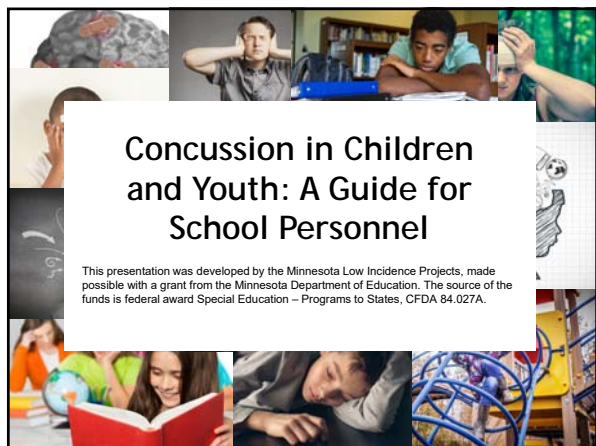
This document can be found as an attachment to this presentation.

### Concussion Resources, continued

- MN Low Incidence Projects website  
[www.mnlowincidenceprojects.org](http://www.mnlowincidenceprojects.org)
- TBI Certificate at Hamline University  
<https://www.hamline.edu/education/certificates/tbi/>

### Concussion Resources, continued

- Center on Brain Injury Research and Training (CBIRT)  
[www.cbirt.org/back-school](http://www.cbirt.org/back-school)
- Brainline [www.brainline.org](http://www.brainline.org)



## Concussion in Children and Youth: A Guide for School Personnel

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Narrated by Kelly Ascheman

Music: *Paradise* by Misael Gauna  
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