Communication with Doctors

Use the links below to jump to a specific resource.

The Guideline: Center for Disease Prevention and Control Guideline on the Diagnosis and Management of Mild Traumatic Brain Injury in Children

JAMA Pediatrics online September 2018 and CDC’s five key recommendations from the guideline. Newest guideline for physicians

CDC mTBI Pediatric Guideline Supplemental Documents

- CDC Pediatric mTBI Diagnosis Recommendations at a Glance: an overview of all the diagnostic recommendations from the pediatric guideline
- CDC Pediatric Prognostic Recommendations at a Glance: an overview of all the prognostic recommendations for physicians
- CDC Management and Treatment at a Glance: an overview of the management and treatment recommendations for physicians

Concussion Management Protocol Recommendation

2 visit minimum concussion protocol with information on management, patient education, referrals, and ongoing monitoring

CDC Return to School Letter

This letter contains useful information on the student’s symptoms and recommended accommodations. We recommend you send it home to the family to give to the doctor so he/she can fill it in and return it to the school
Offering 19 sets of clinical recommendations that cover diagnosis, prognosis, and management and treatment, the CDC Pediatric mTBI Guideline is applicable to healthcare providers in all practice settings. The CDC Pediatric mTBI Guideline outlines specific actions healthcare providers can take to help young patients and their parents/caregivers, including five key practice-changing recommendations.

1. Do not routinely image pediatric patients to diagnose mTBI.
2. Use validated, age-appropriate symptom scales to diagnose mTBI.
3. Assess for risk factors for prolonged recovery, including history of mTBI or other brain injury, severe symptom presentation immediately after the injury, and personal characteristics and family history (such as learning difficulties and family and social stressors.)
4. Provide patients and their parents/caregivers with instructions on returning to activity customized to their symptoms.
5. Counsel patients and their parents/caregivers to return gradually to non-sports activities after no more than a 2–3 days of rest.
GOAL OF THE CDC mTBI GUIDELINE

The goal of the CDC Pediatric Mild Traumatic Brain Injury (mTBI) Guideline is to help healthcare providers take action to improve the health of their pediatric patients with mTBI. To do this, the Guideline consists of 19 clinical recommendations that cover diagnosis, prognosis, and management and treatment. These recommendations are applicable to healthcare providers working in: inpatient, emergency, primary, and outpatient care settings.

The Guideline was developed through a rigorous process guided by the American Academy of Neurology methodology and 2010 National Academy of Sciences methodology for the development of evidence-based guidelines. An extensive review of scientific literature, spanning 25 years of research, formed the basis of the Guideline.

mTBI in children

Children’s developing brains are more vulnerable to mTBI because:

- Their axons are not as well-myelinated.
- They are more susceptible to chemical and metabolic changes.

RECOMMENDATIONS FOR THE DIAGNOSIS OF mTBI

Six sets of diagnostic recommendations are included in the Guideline. These recommendations focus on:

- Neuroimaging
- Neuropsychological tools
- Serum Biomarkers
NEUROIMAGING

**Computed Tomography (CT)**

Clinical evaluation of a child with possible mTBI includes balancing the likelihood of potentially devastating complications of a more severe injury against the risks associated with a head CT.

- Healthcare providers **should not** routinely obtain a head CT for diagnostic purposes in children with mTBI.
- Healthcare providers **should** use validated clinical decision rules to identify children with mTBI at low risk for intracranial injury (ICI), in whom a head CT is not indicated, as well as children who may be at higher risk for clinically important ICI, and therefore may warrant a head CT. Existing decision rules combine a variety of factors that, when assessed together, may increase the risk for more serious injury. Such risk factors include the following:
  - Age < 2 years old
  - Loss of consciousness
  - Severe mechanism of injury
  - Vomiting
  - Amnesia
  - Clinical suspicion for skull fracture
  - Severe or worsening headache
  - Nonfrontal scalp hematoma
  - Glasgow Coma Score < 15
- For children diagnosed with mTBI, healthcare providers **should** discuss the risk of a pediatric head CT in the context of risk factors for ICI with the patient and his/her family.

**Magnetic Resonance Imaging (MRI)**

There is currently insufficient evidence to recommend the use of brain MRI in the diagnosis of mTBI in children.

- Healthcare providers **should not** routinely use MRI in the acute evaluation of cases of suspected or diagnosed mTBI.

**Single Photon Emission Computed Tomography (SPECT)**

Insufficient evidence currently exists to recommend the use of SPECT in the diagnosis of mTBI in children.

- Healthcare providers **should not** use SPECT in the acute evaluation of cases of suspected or diagnosed mTBI.

**Skull X-rays**

CT is better at detecting intracranial injuries, and in the instances where CT is not available, validated clinical decision rules are better than skull X-rays when screening patients with increased risk for ICI.

- Skull X-rays **should not** be used in the diagnosis of pediatric mTBI.
- Skull X-rays **should not** be used in the screening for ICI.
NEUROPSYCHOLOGICAL TOOLS

Symptom Scales
There are several validated tools that can be applied quickly and inexpensively.
- Healthcare providers *should* use an age-appropriate, validated symptom rating scale as a component of the diagnostic evaluation in children presenting with acute mTBI.

Computerized Cognitive Testing
There is insufficient evidence to determine whether baseline testing in children better identifies mTBI as compared to post-injury scores alone.
- Healthcare providers *may* use validated, age-appropriate computerized cognitive testing in the acute period of injury as a component of the diagnosis of mTBI.

Standardized Assessment of Concussion (SAC)
There is insufficient evidence to support the use of the SAC in the diagnosis of children with mTBI.

EXAMPLES OF VALIDATED SCALES INCLUDE, BUT AREN’T LIMITED TO:
- Post-Concussion Symptom Scale
- Health and Behavior Inventory
- Post-Concussion Symptom Inventory
- Acute Concussion Evaluation

SERUM BIOMARKERS

Serum Biomarkers
There is insufficient evidence to currently recommend any of the studied biomarkers for the diagnosis of mTBI in children.
- Healthcare providers *should not* perform these tests outside of a research setting at this time for the diagnosis of children with mTBI.

- Take action to improve the health of your young patients with mTBI.

To view all 19 sets of recommendations, including those that cover prognosis and management/treatment, and to learn more about the CDC Pediatric mTBI Guideline, visit [www.cdc.gov/HEADSUP](http://www.cdc.gov/HEADSUP).
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mTBI in children

Symptoms of mTBI generally fall into four categories:
• Somatic
• Cognitive
• Mood/Affective
• Sleep

Symptom resolution:
- 30% Experience symptoms one month post-injury
- 10% Experience symptoms three months post-injury
- 5% Experience symptoms one year post-injury

RECOMMENDATIONS FOR THE PROGNOSIS OF mTBI

Five sets of prognostic recommendations are included in the Guideline. These recommendations focus on:

- Counseling patients on prognosis
- Evaluating for premorbid conditions
- Assessing for risk factors
- Use of tools for predicting prognosis
- Interventions for poor prognosis
GENERAL HEALTHCARE PROVIDER COUNSELING OF PROGNOSIS

Evidence suggests education and clear communication from healthcare providers can optimize outcomes.

- Healthcare providers should counsel patients and families that the large majority (70-80%) of children with mTBI do not show significant difficulties that last more than 1-3 months post-injury.
- Healthcare providers should counsel patients and families that although some factors predict an increased or decreased risk for prolonged symptoms, each child’s recovery from mTBI is unique and will follow its own trajectory.

PROGNOSIS RELATED TO PREMORBID CONDITIONS

There is an increased risk of delayed recovery or prolonged symptoms associated with certain premorbid conditions in children with mTBI.

- Healthcare providers should assess the premorbid history of children either prior to an injury, as a part of pre-participation athletic examinations, or as soon as possible post-injury in children with mTBI, to assist in determining prognosis.
- Healthcare providers should counsel children and families completing pre-participation athletic examinations, and children with mTBI and their families, that recovery from mTBI might be delayed in those with:
  - Premorbid histories of mTBI
  - Lower cognitive ability (for children with an intracranial lesion)
  - Neurological or psychiatric disorder
  - Learning difficulties
  - Increased pre-injury symptoms (such as headache disorders)
  - Family and social stressors

ASSESSMENT OF CUMULATIVE RISK FACTORS AND PROGNOSIS

Evidence indicates that a variety of demographic and injury-related factors predict outcomes in pediatric mTBI.

- Healthcare providers should screen for a variety of known risk factors for persistent symptoms in children with mTBI.
- Healthcare providers may use validated prediction rules, which combine information about multiple risk factors for persistent symptoms, to provide prognostic counseling to children with mTBI evaluated in emergency department settings.

FACTORS ASSOCIATED WITH POOR PROGNOSIS:

- Older children or adolescents
- Children of Hispanic ethnicity
- Children from a lower socioeconomic status
- Children with more severe presentations of mTBI (including those associated with an intracranial injury)
- Children who report a higher level of acute postconcussion symptoms
- Children with a neurological or psychiatric disorder
- Children with learning difficulties
- Children with family and social stressors
ASSESSMENT TOOLS AND PROGNOSIS

Healthcare providers can more effectively counsel patients with mTBI when they have assessed risk factors for outcomes and recovery. However, there is no single assessment tool to predict outcomes.

- Healthcare providers should use a combination of tools to assess recovery in children with mTBI.
- Healthcare providers should use validated symptom scales to assess recovery in children with mTBI.
- Healthcare providers may use validated cognitive testing (including measures of reaction time) to assess recovery in children with mTBI.
- Healthcare providers may use balance testing to assess recovery in adolescent athletes with mTBI.

INTERVENTIONS FOR mTBI WITH POOR PROGNOSIS

While most symptoms of mTBI resolve within 1-3 months, some children are at risk for persistent symptoms or delayed recovery. Children who are at higher risk for delayed recovery are more likely to need further intervention.

- Healthcare providers should monitor children with mTBI who are determined to be at high risk for persistent symptoms based on premorbid history, demographics, or injury characteristics.
- For children with mTBI whose symptoms do not resolve as expected with standard care (i.e., after 4-6 weeks), healthcare providers should provide or refer for appropriate assessments or interventions.

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mTBI in children

While most have a good recovery, some children experience both acute and long-term problems that affect them:

- Physically
- Cognitively
- Psychologically

RECOMMENDATIONS FOR TREATMENT AND MANAGEMENT OF mTBI

Eight sets of management and treatment recommendations are included in the Guideline. These recommendations focus on:

- General areas of treatment for patients and families
- Symptom and problem-specific treatments
GENERAL AREAS OF TREATMENT FOR PATIENTS AND FAMILIES

Health outcomes can generally be optimized through patient education and behavior modification. In addition, evidence suggests that rest, or reduction in cognitive and physical activity, is beneficial immediately following mTBI. This should be followed shortly after the injury with a gradual return to activity.

Patient and Family Education and Reassurance

- In providing education and reassurance to the family, the healthcare provider should include the following information:
  - Warning signs indicating a more serious injury
  - Expected course of symptoms and recovery
  - Instructions on monitoring post-concussive symptoms
  - Prevention of further injury
  - Management of cognitive and physical activity, or rest
  - Instructions regarding return to school and return to play or recreation
  - Clear healthcare provider follow-up instructions from a healthcare provider

Counsel patients to return gradually to non-sports activities after no more than 2-3 days of rest.

Cognitive and Physical Rest and Aerobic Treatment

Collaboration among healthcare providers, schools, and families should be coordinated to gradually adjust interventions and return the child to full participation without worsening symptoms.

- Healthcare providers should counsel patients to observe more restrictive physical and cognitive activity during the first several days following mTBI in children.
- Following these first several days, healthcare providers should counsel patients and families to resume a gradual schedule of activity that does not exacerbate symptoms, with close monitoring of symptom expression (number, severity).
- Following the successful resumption of a gradually increased schedule of activity, healthcare providers should offer an active rehabilitation program of progressive reintroduction of noncontact aerobic activity that does not exacerbate symptoms, with close monitoring of symptom expression (number, severity).
- Healthcare providers should counsel patients to return to full activity when they return to premorbid performance if they have remained symptom-free at rest, and with increasing levels of physical exertion.

Return to school and play plans can be found at www.cdc.gov/HEADSUP.
Evidence suggests that social support (both tangible help and emotional involvement) contributes to healthy behaviors, and improved overall quality of life.

- Healthcare providers may assess the extent and types of social support (e.g., emotional, informational, instrumental, appraisal) available for children with mTBI, and emphasize social support as a key element in the education of caregivers and educators.

Return to School

- To assist children returning to school following mTBI, medical and school-based teams should counsel the student and family regarding the process of gradually increasing the duration and intensity of academic activities as tolerated, with the goal of increasing participation without significantly exacerbating symptoms.

- Return to school protocols should be customized based on the severity of postconcussion symptoms in children with mTBI as determined jointly by medical and school-based teams.

- For any student with prolonged symptoms that interfere with academic performance, school-based teams should assess the educational needs of that student and determine the student’s need for additional educational supports, including those described under pertinent federal statutes.

- Postconcussion symptoms and academic progress in school should be monitored collaboratively by the student, family, healthcare provider, and school teams, who jointly determine which modifications or accommodations are needed to maintain an academic workload without significantly exacerbating symptoms.

- The provision of educational supports should be monitored and adjusted on an ongoing basis by the school-based team until the student’s academic performance has returned to pre-injury levels.

- For students who demonstrate prolonged symptoms and academic difficulties despite an active treatment approach, healthcare providers should refer the child for a formal evaluation by a specialist in pediatric mTBI.

70-80% of children with mTBI will demonstrate functional recovery by 1-3 months.
Dizziness is another potentially debilitating symptom of mTBI, and limited evidence suggests that early vestibular physical therapy may benefit patients experiencing dizziness.

- Healthcare providers may refer children with subjective or objective evidence of persistent vestibulo-ocular motor dysfunction following mTBI to a program of vestibular rehabilitation.
Problems with attention, memory and learning, response speed, and other cognitive impairment can occur following mTBI. These disturbances can result in significant problems with learning in school, or social interactions.

Cognitive Impairment Treatment and Management

- Healthcare providers should attempt to determine the etiology of cognitive dysfunction within the context of other mTBI symptoms.
- Healthcare providers should recommend treatment for cognitive dysfunction that reflects its presumed etiology.
- Healthcare providers may refer children with persisting complaints related to cognitive function for a formal neuropsychological evaluation to help determine etiology, and to recommend targeted treatment.

Sleep disturbances after mTBI are common and may exacerbate ongoing problems. Adequate sleep has been shown to improve overall health and should be an important part of treatment for children with mTBI.

- Healthcare providers should provide guidance on proper sleep hygiene methods to facilitate recovery from pediatric mTBI.
- If sleep problems emerge or continue, despite appropriate sleep hygiene measures, healthcare providers may refer children with mTBI to a sleep disorder specialist for further assessment.

Take action to improve the health of your young patients with mTBI.

To view all 19 sets of recommendations, including those that cover diagnosis and prognosis, and to learn more about the CDC Pediatric mTBI Guideline, visit www.cdc.gov/HEADSUP.
CONCUSSION MANAGEMENT PROTOCOL

RECOMMENDATION: 2 VISIT MINIMUM

INITIAL VISIT

SYMPTOM EVALUATION AND PATIENT EDUCATION:

- ACE – Acute Concussion Evaluation (Physician/Clinician Office version)
- A Symptom Scale (Age-appropriate version)
- A Symptom Scale (Parent/Adult Patient – fill out in office)
- A Symptom Scale (Parent/Adult Patient – take home)
- ACE Care Plan (Return to school or work version)
- CDC Return to School Letter
- When Concussion Symptoms Aren’t Going Away (Age-appropriate version)
- Any other educational materials or symptom tracker as needed

Send home an additional parent or adult version of a symptom scale to track symptoms over the next 4 weeks. This helps to understand what symptoms/behaviors to look for. Send home a letter to the school or work with recommendations. Research indicates that supports are more likely to be implemented if recommended by the healthcare professional.

With concussion diagnosis, recommend follow up visit in 4 weeks if any symptoms or any new behaviors since injury are present. Bring completed form to next visit.

4 WEEK POST INJURY VISIT

IF SYMPTOMS PERSIST OR NEW BEHAVIORS ARE PRESENT, CONSIDER THE FOLLOWING REFERRALS:

- A specialized concussion treatment center
- A neurologist
- A symptom-specific specialist (e.g. neuro-opthalmologist)
- A brain trauma rehabilitation center
- A neuropsychological evaluation
- TEIS (if child is under 3 years old)
- School district (3–5 years old)
- School (5 years and over)

Note: Schools may not provide all the treatments needed. Research indicates that supports are more likely to be implemented if recommended by the healthcare professional.

YEARLY CHECK-UPS

ASK ABOUT:

- Any residual concussion symptoms
- Any changes in school or work performance

Brain Links is supported by the Administration for Community Living (ACL) of the U.S. Department of Health and Human Services under Grant No. 90TBSG0024-01-00 and in part by the TN Department of Health, Traumatic Brain Injury Program.
DEAR SCHOOL STAFF:

This letter offers input from a healthcare provider with experience in treating concussion, a type of traumatic brain injury. This letter was created to help school professionals and parents support students returning to school after a concussion. You can use these recommendations to make decisions about support for your student based on his or her specific needs. This letter is not intended to create a 504 Plan or an IEP unless school professionals determine that one is needed. Most students will only need short-term support as they recover from a concussion. A strong relationship between the healthcare provider, the school, and the parents will help your student recover and return to school.

__________________________________________ was seen for a concussion on _____________
Student Name

in ___________________________________________ office or clinic.
Healthcare Provider’s Name

The student is currently reporting the following symptoms:

**PHYSICAL**
- ☐ Bothered by light or noise
- ☐ Dizziness or balance problems
- ☐ Feeling tired, no energy
- ☐ Headaches
- ☐ Nausea or vomiting
- ☐ Vision problems

**THINKING OR REMEMBERING**
- ☐ Attention or concentration problems
- ☐ Feeling slowed down
- ☐ Fogy or groggy
- ☐ Problems with short- or long-term memory
- ☐ Trouble thinking clearly

**SOCIAL OR EMOTIONAL**
- ☐ Anxiety or nervousness
- ☐ Irritability or easily angered
- ☐ Feeling more emotional
- ☐ Sadness

**SLEEP**
- ☐ Sleeping less than usual
- ☐ Sleeping more than usual
- ☐ Trouble falling asleep

The student also reported these symptoms:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
Based on the student's current symptoms, I recommend that the student:

☐ Be permitted to return to school and activities while school professionals closely monitor the student. School professionals should observe and check in with the student for the first two weeks, and note if symptoms worsen. If symptoms do not worsen during an activity, then this activity is OK for the student. If symptoms worsen, the student should cut back on time spent engaging in that activity, and may need some short-term support at school. Tell the student to update his or her teachers and school counselor if symptoms worsen.

☐ Is excused from school for ______________ days.

☐ Return to school with the following changes until his or her symptoms improve.

(NOTE: Making short-term changes to a student's daily school activities can help him or her return to a regular routine more quickly. As the student begins to feel better, you can slowly remove these changes.)

Based on the student's symptoms, please make the short-term changes checked below:

☐ No physical activity during recess
☐ No physical education (PE) class
☐ No after school sports
☐ Shorten school day
☐ Later school start time
☐ Reduce the amount of homework
☐ Postpone classroom tests or standardized testing
☐ Provide extended time to complete school work, homework, or take tests
☐ Provide written notes for school lessons and assignments (when possible)

☐ Allow for a quiet place to take rest breaks throughout the day
☐ Lessen the amount of screen time for the student, such as on computers, tablets, etc.
☐ Give ibuprofen or acetaminophen to help with headaches (as needed)
☐ Allow the student to wear sunglasses, earplugs, or headphones if bothered by light or noise

☐ Other: ____________________________

_______________________________
[Signature]

For additional questions, you may reach me at: ____________________________

Most children with a concussion feel better within a couple of weeks. However, for some, symptoms can last for a month or longer. If there are any symptoms that concern you, or are getting worse, notify the student’s parents that the student should be seen by a healthcare provider as soon as possible.

For information on helping students return to school safely after a concussion, visit www.cdc.gov/HEADSUP.
Thank You!

We're here to help
Our mission is to bring together professionals to recognize the far-reaching and unique nature of brain injury and to improve services for survivors. If we can help you, please feel free to reach out!

Contact us:
tbi@tndisability.org

Check out out website:
www.tndisability.org/brain

Follow us on social media:

We want to hear from you!
Complete our short survey to let us know how we're doing.