Concussion Toolkit

Children's Healthcare of Atlanta

The materials in this toolkit were created to help physicians better treat concussed patients and to help parents understand their child's recovery needs, as well as when they should seek medical attention. This toolkit is in no way intended to specifically seek referrals to Children's facilities.

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Children's Healthcare of Atlanta
Community Physician's

MILD TRAUMATIC BRAIN INJURY/CONCUSSION ASSESSMENT CRITERIA TOOL

• Name_____

• Date of Birth-DOB_____

• MRN#_____

• Account/HAR#_____

PATIENT IDENTIFICATION

Date of Exam: ☐ Initial ☐ Second ☐ Third ☐ Fourth ☐ Additional

Injury Assessment

1. Complete Neuro Exam including Glasgow Coma Score:

2. **Abnormal** Physical findings?
   a. Is there evidence of a forcible blow to the head (direct or indirect)? ☐ Direct ☐ Indirect ☐ Unknown
   b. Is there evidence of intracranial injury or skull fracture? ☐ Yes ☐ No
   c. Location of Impact:
   ☐ Frontal ☐ Left Temporal ☐ Right Temporal ☐ Left Parietal ☐ Right Parietal ☐ Occipital ☐ Neck

3. **Cause:** ☐ MVC ☐ Pedestrian-MVC ☐ Fall ☐ Assault ☐ Sports (specify) Other

4. Was the injury witnessed or un-witnessed? ☐ Witnessed ☐ Un-witnessed

5. **Amnesia:**
   BEFORE (Retrograde) Are there any events just BEFORE the injury that you/ your child have no memory of (even brief)?

   AFTER (Anterograde) Are there any events just AFTER the injury that you/ your child have no memory of (even brief)?

6. **Loss of Consciousness:** Did you/ your child lose consciousness? ☐ Yes, how long? ☐ No

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

8. **Seizures:** Were seizures observed? ☐ Yes ☐ No

Check all that apply

Physical	☑ if present	Cognitive	☑ if present	Sleep	☑ if present
Headache		Feeling Mentally Foggy		Drowsiness	
Nausea		Feeling Slowed Down		Trouble Falling Asleep	
Vomiting		Difficulty Concentrating		Sleeping More Than Usual	
Balance Problems		Difficulty Remembering		Sleeping Less Than Normal	
Dizziness		**Emotional**	☑:	**Other**	
Visual Problems		Irritability		**Do these symptoms worsen with Physical Activity** ☐ **Yes** ☐ **No**	
Fatigue		Sadness		**Cognitive Activity** ☐ **Yes** ☐ **No**	
Sensitivity to Light		More Emotional			
Sensitivity to Noise					
Numbness or Tingling		Nervousness		How different is the person acting compared to his/her usual self? Normal 0 1 2 3 4 5 Very different **Caregiver providing assessment:** _____	

1. Gerard Gioia, Ph.D. & Micky Collin, Ph.D. Centers for Disease Control and Prevention (CDC) "Heads Up: Brain Injury in Your Practice," Acute Concussion Evaluation (ACE) tool kit.
2. Prashant V. Mahajan, M.D., M.P.H., M.B.A. "Head Injuries" AAP Textbook of Pediatric Care, chapter 348, Aug. 26, 2008.
3. Sport Alliance of Ontario SCAT2 (Sport Concussion Assessment Tool – Full Version).
4. TraumaticBrainInjury.com, LLC, Symptoms of Traumatic Brain Injury "Glasgow Coma Scale."

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• Name_____

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PATIENT IDENTIFICATION

Risk Factors for Protracted Recovery (Check All That Apply)

☐ **Concussion History**	☐ **Headache/Vomiting History**	☐ **Developmental History**	☐ **Psychiatric History**
Previous # 1 2 3 4 5 6+	☐ Prior Treatment for headache	☐ Learning disabilities	☐ Anxiety
Longest symptom duration Days ___ Weeks ___ Months ___ Years ___	☐ History of migraine headache _____ Personal _____ Family _____	☐ Attention-Deficit/ Hyperactivity Disorder	☐ Depression ☐ Sleep Disorder
If multiple concussion, less force caused re-injury?	☐ History of Vomiting _____ Personal _____ Family _____	☐ Other Developmental disorder? _____	☐ Other psychiatric disorder?_____

List Other co-morbid medical disorders or medication usage (e.g., hypothyroid, seizures)_____

_____

Diagnosis

☐ 850.0 Concussion, without loss of consciousness

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

☐ 850.9 Concussion, unspecified

☐ 854.0x Closed Intracranial injury, mild TBI

☐ Other _____

Follow-Up Action Plan

☐ Primary Medical Doctor (PMD)
☐ Emergency Department
☐ CT Scan
PMD name_____

☐ Contact Children's Concussion Nurse at 404-785-1111
☐ Educational Material Provided
☐ Referred to Website www.choa.org/concussion

☐ No Follow-up Needed

Timeline for re-assessment:

Revisit

☐ Return Visit Within 3 days
Date:_____

☐ Call physician in _____ days

☐ Return Visit in 1 Week
Date:_____

☐ Return Visit in 2 Weeks
Date:_____

Notes:

Signature:_____ Date:_____ Time:_____

1. Gerard Gioia, Ph.D. & Micky Collin, Ph.D. Centers for Disease Control and Prevention (CDC) "Heads Up: Brain Injury in Your Practice," Acute Concussion Evaluation (ACE) tool kit.
2. Prashant V. Mahajan, M.D., M.P.H., M.B.A. "Head Injuries" AAP Textbook of Pediatric Care, chapter 348, Aug. 26, 2008.
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4. TraumaticBrainInjury.com, LLC, Symptoms of Traumatic Brain Injury "Glasgow Coma Scale."

Glasgow Coma Scale

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The **Glasgow Coma Scale** or **GCS** is a score of a patient's state of consciousness or coma. It is a universally used, reliable scale that is obtained by evaluating the patient clinically. The components measured are the motor (M), verbal (V) and eye opening (E) scores. The sum of the resulting points give a patient score between 3 (indicating deep unconsciousness) and 15 (fully alert).

Grade of TBI	GCS
Severe TBI	≤ 8
Moderate TBI	9 to 12
Mild TBI (MTBI)	≥ 13

Individual elements as well as the sum of the score are important.
For example, the score is expressed in the form "GCS 9 = E2 V4 M3"

The Glasgow Coma Scale

	1	2	3	4	5	6
Motor	Makes no movements	Extension to painful stimuli (decerebrate response)	Abnormal flexion to painful stimuli (decorticate response)	Flexion / Withdrawal to painful stimuli	Localizes painful stimuli	Obeys commands
Verbal	Makes no sounds	Incomprehensible sounds	Utters inappropriate words	Confused, disoriented	Oriented, converses normally	N/A
Eyes	Does not open eyes	Opens eyes in response to painful stimuli	Opens eyes in response to voice	Opens eyes spontaneously	N/A	N/A

Best motor response (M)

There are six grades starting with the most severe:

6. **Obeys commands**—Patient does simple things as asked.
5. **Localizes to pain**—Purposeful movements toward painful stimuli e.g., hand crosses midline and gets above clavicle when supra-orbital pressure is applied.
4. **Flexion/withdrawal to pain**—Flexion of elbow, supination of forearm, flexion of wrist when supra-orbital pressure is applied. Patient pulls part of body away when nail bed is pinched.
3. **Abnormal flexion to pain**—Adduction of arm, internal rotation of shoulder, pronation of forearm and flexion of wrist, and the patient has a decorticate response.
2. **Extension to pain**—abduction of arm, internal rotation of shoulder, pronation of forearm and extension of wrist, and the patient has a decerebrate response.
1. **Patient has no motor response.**

Best verbal response (V)

There are five grades starting with the most severe:

5. **Oriented**—Patient responds coherently and appropriately to questions, such as the patient's name and age, where they are and why, the year and month.
4. **Confused**—Patient coherently responds to questions, but there is some disorientation and confusion.
3. **Inappropriate words**—Patient makes random or exclamatory articulated speech but no conversational exchange.
2. **Incomprehensible sounds**—Patient moans but no words.
1. Patient has no verbal response.

Best eye response (E)

There are four grades starting with the most severe:

4. Patient's eyes open spontaneously.
3. Eye-opening to speech—Not to be confused with a waking a sleeping person, these patients receive a score of 4, not 3.
2. Eye-opening in response to pain—Patient responds to pressure on the patient's fingernail bed. If this does not elicit a response, supraorbital and sternal pressure or rub may be used.
1. Patient does not open his eyes.

ED and CT Scan Referral Criteria

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Patients with a concussion can be safely observed without being seen in an emergency department or having a CT scan of their head if they meet the following requirements:

- They have a normal neurologic exam by their primary care provider and a normal mental status
- They can take liquids by mouth without vomiting
- They have no signs of a skull fracture such as bruising under the eyes, behind the ears or swelling on the head
- There is no suspicion for abuse
- Their headache can be controlled with oral medication
- They have no medical conditions that increase their risk for more serious traumatic brain injuries such as bleeding disorders

Immediate referral to ED for evaluation and emergent head CT scan:

- Altered mental status (GCS<15)
- Concern for intracranial process
- Concern that symptoms may not be related to the recent minor head injury
- Abnormal neurological exam
- Evidence or strong suspicion of skull fracture

Consider obtaining CT scan for the following:

- Non-frontal hematoma
- Multiple and/or worsening symptoms esp. in a younger child
- Severe headache and/or recurrent emesis
- Severe mechanism

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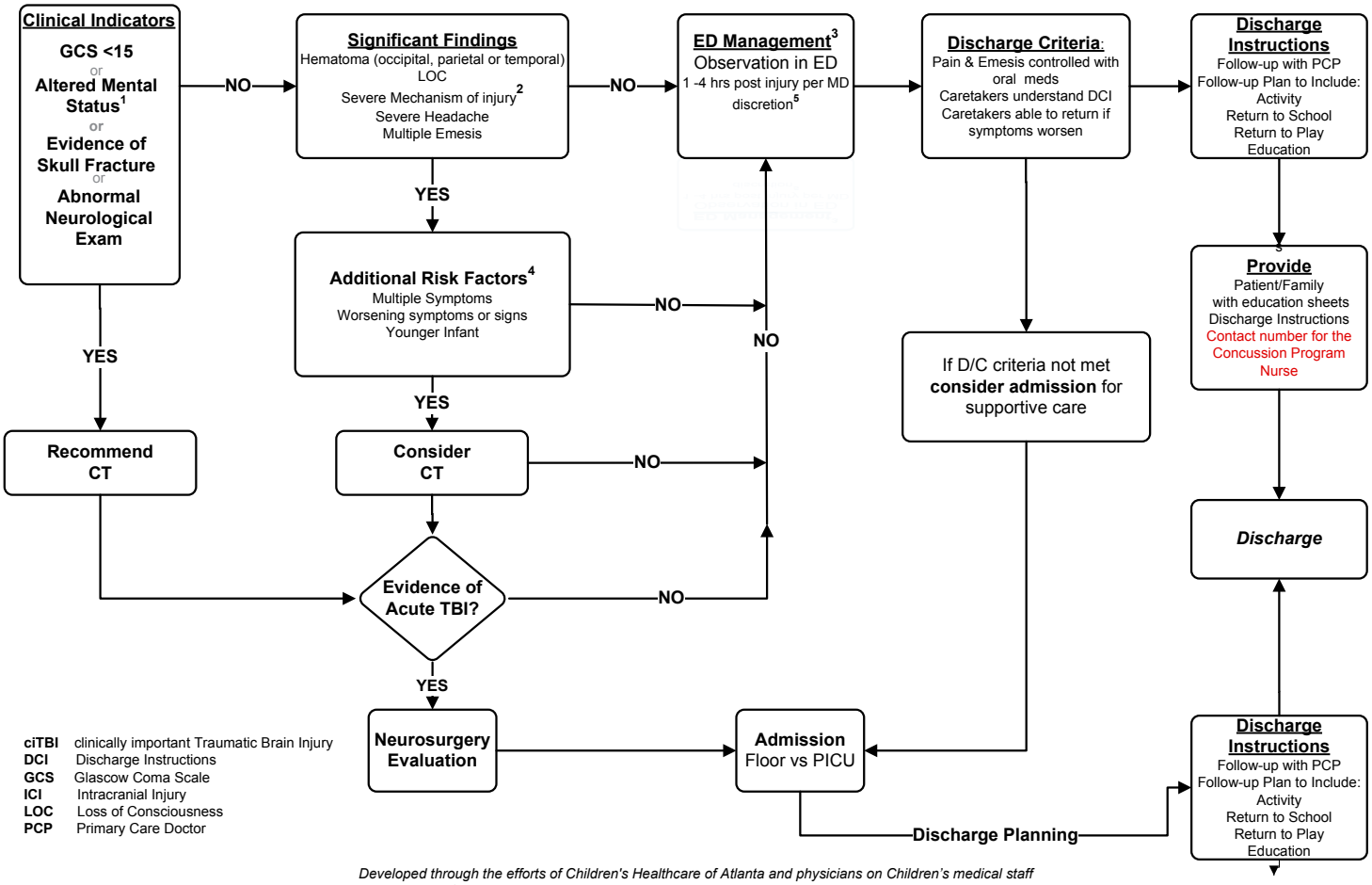
Emergency Department

Guideline for Children with Acute Mild Traumatic Head Injury (GCS 14-15)*



ciTBI clinically important Traumatic Brain Injury
DCI Discharge Instructions
GCS Glascow Coma Scale
ICI Intracranial Injury
LOC Loss of Consciousness
PCP Primary Care Doctor

* modified from Lancet 2009, 374: 1160-70

Developed through the efforts of Children's Healthcare of Atlanta and physicians on Children's medical staff in the interest of advancing pediatric healthcare. This guideline is a general guideline and does not represent a professional care standard governing providers' obligation to patients. Ultimately the patient's physician must determine the most appropriate care

Children's SM
Healthcare of Atlanta

Emergency Department

Guideline for Children with Mild Traumatic Head Injury (GCS 14-15)*

Explanation of Criteria

Exclusion Criteria

Patient's with one or more existing *co-morbidities* that would impair an accurate neurological assessment are *excluded* from this guideline.

[1]Altered Mental Status

Agitation
Somnolence
Repetitive Questioning
Slow Response to
Verbal Communication

[2] Severe Mechanism of Injury

Motor Vehicle Crash with Ejection
Death of another passenger
Rollover
Pedestrian or bicyclist w/o helmet struck by motor vehicle
Fall > 5 feet if > 2 years; > 3 feet if < 2 years.
Head struck by high-impact object

[3]Risk of ciTBI

Exceedingly low, generally lower than risk of CT-induced malignancies.
Therefore, CT scans are not indicated for most patients in this group

[4]Additional Risk Factors

- Physicians should use clinical judgment based on their understanding of the literature, clinical experience and the parents perspective of changes from baseline/typical behavior.
- In general, risk of ciTBI increases with multiple symptoms and in younger infants.
- Patients with **isolated findings** (i.e. with no other findings suggestive of TBI) such as isolated: LOC, headache, vomiting, & scalp hematomas in infants >3mo have a risk of ciTBI substantially lower than 1%

[5] Observation in the ED

[5]***Observation*** in the ED for signs of **increasing intracranial pressure** (e.g. increased ***pain***, ***vomiting***, ***decreased alertness or altered mental status*** for at least ***1 hr up to 4 hrs post injury*** depending on physician's assessment of risk for ciTBI.

At present there is not enough published data to judge whether ondansetron's antiemetic effect may mask signs of ciTBI. Therefore, ***neuro-imaging or hospitalization should be considered for any patient who requires an antiemetic for persistent emesis***.

- Phenothiazines are generally discouraged except in cases of migraine headaches and vomiting refractory to ondansetron.
- Out-patient use of ondansetron following Closed Head Injury should be cautious.
- Any patient with an ***increase in symptoms*** following a head injury should have a ***re-evaluation***.
- Patients who have not received neuro-imaging may receive acetaminophen for pain.
- Patients who require IV medications (e.g. opioids) likely require admission for supportive care.
- Patients who have had a normal head CT or have met discharge criteria may receive NSAIDs such as ibuprofen.

Developed through the efforts of Children's Healthcare of Atlanta and its physicians in the interest of advancing pediatric healthcare. This pathway is a general guideline and does not represent a professional care standard governing providers' obligation to patients. Care is revised to meet the individual patient's needs.

DEVELOPED 12/2010 WITH COLLABORATION OF EMERGENCY DEPARTMENT PHYSICIANS

* modified from Lancet 2009, 374: 1160-70

Cognitive Rest for Concussion

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Concussion is a brain injury. Limit brain activity to keep concussion signs from coming back or getting worse. Keep screen time to no more than two hours a day. This includes TV, video games, computers and cell phones. Stop activity and rest if signs get worse.

Do not have your child:	Your child may:
– Read difficult books or word puzzles.	– Read easy books.
– Do things that need focus.	– Rest in a quiet room without bright lights.
– Play loud music.	– Listen to music at a low volume.
– Send or read text messages.	– Do simple arts and crafts.
– Have too many visitors.	– Have short visits with one or two friends.
– Play handheld video games.	– Play card games or easy board games, such as UNO or Go Fish, that do not need much focus.
– Play loud video games with action and flashing lights.	– Play video games that are easy and do not need physical activity.
– Use a computer for more than 30 minutes at a time.	– Use the computer for a short time to check social media sites, such as Facebook.
– Watch TV with action, loud noise or that needs your child to focus.	– Watch TV shows that do not need much focus, such as cartoons or comedy. Watching sports on TV is OK as long as it is not too noisy or with a large crowd.

Concussion guidelines for your child's return to school, book work and studies

Stage of healing	Home activity	School activity	Physical activity
Stage 1— your child still has many symptoms and problems	– Complete rest in a quiet room – Allow as much sleep as possible – Limit things that require your child to think, focus, reason or remember – Remove any electronics and computers from your child's room – Remove any activity planners and "to-do" lists from your child's room – Give your child plenty of fluids to drink – Give your child plenty of carbohydrates to eat, such as whole grain breads and cereals, pasta and rice	– No school	See Stage 1 in next chart
Stage 2— your child still has some symptoms and problems	– Quiet room – Allow as much sleep as possible – Allow your child to use TV, video games, texting, tweeting and email for a short time—less than 2 hours a day – Help your child to not stress over missed school work – Continue with fluids and carbohydrates as in Stage 1	– May return to school for one-half day – Attend core classes only – Attend shortened class time – Rest in nurse's office between classes and as needed – No tests or quizzes – Use preprinted class notes – Short homework assignments—work 20 minutes at a time with rest breaks in between – Talk with school nurse or teacher about a 504 plan to help to make sure special needs are met during his school day	See Stage 2 in next chart
Stage 3— your child's symptoms and problems have gone away	– Slowly return to watching TV, playing video games and texting – Allow more active family interactions	– Full day of classes – **Gradual** return to class work, including make-up work, tests, quizzes – May take one test or quiz a day with extra time as needed to complete – Tell the teacher or school nurse if any symptoms or problems return	See Stages 2-4 in next chart
Stage 4— your child seems back to normal	– Normal home and social interactions	– Normal school work and studies	See Stages 5-7 in next chart

choa.org/concussion

This is general information and is not specific medical advice. Always consult with a doctor or healthcare provider if you have any questions or concerns about the health of a child.

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Dedicated to All Better

Concussion guidelines for your child's return to sports, play and activities

Stage of healing	Activity allowed	Examples of sports	Examples of other activities	Goal
1	– No activity – Complete cognitive and physical rest	– Complete physical rest	– Quiet time with rest – Avoid groups, videos, reading, computers, video games, cell phones, noisy places	– Brain rest and healing – Become free of symptoms
2	– Light aerobic activity	– 10-15 minutes of walking or stationary bike – Light sweat on the brow – Slight increase in breathing rate	– Walk in park or neighborhood – Avoid group activities	– Increase heart rate to 30-40 percent max
3	– Moderate aerobic activity – Light resistance training	– 20-30 minutes of jogging or stationary bike – Arm curls, shoulder raises, leg lifts with weights that can be comfortably lifted – One set of 10 repetitions for each activity	– Supervised play – Low risk activities such as dribbling a ball, playing catch, changing directions, jumping, side-to-side slides, chasing a ball or catching a ball on the run	– Increase heart rate to 40-60 percent max – Add resistance – Use eyes to track objects
4	– Intense aerobic activity – Moderate resistance training – Sport-specific exercise	– 40-60 minutes of running or stationary bike – Same resistance exercises with weight for three sets of 10 reps – Pre-competition warm-up such as passing a soccer ball, throwing a football or doing ladder drills	– Supervised play – Moderate-risk activities—no head contact activities, such as balance and agility drills – Can sweat and breathe heavy	– Increase heart rate to 60-80 percent max – Increase resistance – Mimic the sport
5	– Controlled-contact training drills	– 60-90 minutes of time on the field, court or mat for specific drills – Take part in normal practice session – Contact that is normally part of the sport—only use items that "do not hit back" such as a sled in football – Recheck for symptoms or problems often	– Free play – Run and jump as able – Full return to physical education (PE) – Recheck for symptoms or problems often	– Mimic the sport or free play without the risk of head injury
6	– Full-contact practice	– After OK from the doctor, may take part in normal training activities	– With parent or adult supervision, may take part in normal activities	– Build confidence – Assess skills
7	– Return to play	– Normal game play	– Normal playtime and activities	– No restrictions

Maximum heart rate is determined by subtracting the athlete's age from 220 and multiplying by the percentage. For example:

- Your target or ideal heart rate for exercise during Stage 2 is usually 30 to 40 percent of your maximum heart rate.
- To find your maximum heart rate, subtract your age from 220.
- If you are 15 years old, subtract 15 from 220 = 205. Next, multiply that number by 30 and 40 percent. This will give you a target heart rate for exercise in Stage 2.
- 205 times 30 percent = 62 beats a minute. 205 times 40 percent = 82 beats a minute.
- This means that your target heart range for exercise in Stage 2 is between 62 and 82 beats a minute.
- Allow 24 hours between each activity stage in the chart. **This means that it will take at least seven days to return to full activity.**
- For your child to move from one stage to the next, he must be able to do an activity at 100 percent without symptoms or problems for 24 hours.
- If any symptoms return, it means his brain is not ready for the next stage.
- Once your child has no symptoms again for 24 hours, he can try the activities in that stage again.

Concussion Program adapted from the Zurich Concussion Conference November 2008, Br J Sports Med 2009; 43:i76-i84.

This is general information and is not specific medical advice. Always consult with a doctor or healthcare provider if you have any questions or concerns about the health of a child.

Mild Head Injury and Concussion

Children's Healthcare of Atlanta

Patient and Family Education

This teaching sheet contains general information only.
Talk with your child's doctor or a member of your child's health care team about specific care for your child.

What is a mild head injury?

Head injuries may vary from mild (temporary confusion or passing out) to severe (coma for a longer period of time).
They are caused by trauma such as:

- A hard bump or blow on the head.
- A sudden harsh movement or jarring of the head.

All head injuries, including "mild" head injuries, should be taken seriously so that your child's brain can heal completely.

What is a concussion?

A concussion is a type of head injury. Sometimes, it just causes a child to be dazed or confused for a short time. It can also occur with or without passing out (loss of consciousness). If loss of consciousness does occur, it lasts less than 30 minutes.
Concussions usually involve:

- Losing brain function (the ability to think and reason) for awhile
- Healing that occurs over time, not right away

What symptoms could my child have?

Your child may not have symptoms until a few days after the injury. Symptoms may include one or more of these:

- Headache
- Nausea or vomiting
- Being really tired or drowsy
- Sensitivity to noise and light
- Numbness or tingling anywhere on the body
- Dizziness
- Loss of balance or trouble walking
- Being irritable or more fussy than usual
- Feel more emotional, like very sad or nervous
- Change in sleeping patterns
- Trouble seeing such as double vision, seeing spots or not being able to see at all
- Trouble thinking clearly or having a hard time concentrating and remembering

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

What is the treatment for mild head injury or concussion?

Rest, both cognitive (for the brain) and physical (for the body), is the best treatment. This type of rest can be frustrating and seem long, but is needed to help your child heal.

Most children with a concussion can rest and get better at home. Some general guidelines for rest and treatment for your child include:

- Limit physical activities like active play, PE classes and sports. As your child gets better, he will slowly be able to do more.
- Keep surroundings calm and quiet.
- Be sure to keep your child's doctor appointments, even if he is feeling better. Your doctor can track your child's recovery and safe return to normal activities.
- Limit thinking activities like reading, school work, electronic games, talking on the phone and watching TV. Limit screen time to no more than 2 hours a day. This includes TV, video games, computers and cell phones. Stop and rest any time that symptoms get worse.

Use the chart below to make sure your child's brain has time to rest and heal after a concussion. Doctors call this a "**cognitive rest**".

Your child may do these things	Do NOT let your child to do these things
• Read easy books	• Read difficult books or do word puzzles
• Rest in a quiet room without bright lights	• Do things that need focus or a lot of thinking
• Listen to music at a low volume	• Play loud music
• Do simple arts and crafts	• Send or read text messages
• Have short visits with 1 or 2 friends	• Have too many visitors
• Play easy card games and board games that do not need much focus, such as UNO or Go Fish	• Play violent video games
• Play non violent video games that do not need physical activity	• Play loud video games with action and flashing lights
• Use the computer for a short time to check social medial sites, such as Facebook	• Use a computer for more than 30 minutes at a time
• Watch TV shows that do not need much focus, such as cartoons or comedies. Watching sports on TV with a small group is OK as long as it is not too noisy or too exciting.	• Watch TV shows with action, loud noise or that need your child to focus

Can I give my child pain medicine?

Do not give your child any medicines that can make him sleepy, such as cold or strong pain medicines or medicine for itching, unless advised by your child's doctor.

- Give acetaminophen (Tylenol or less costly store brands) for pain if advised by your child's doctor. Follow the directions on the box carefully or ask your child's doctor how much medicine to give.
  - Do not give your child more than 5 doses of acetaminophen in a 24-hour period.
  - Do not give acetaminophen to babies less than 3 months of age without a doctor's order.
- **OR**, you may give ibuprofen (Motrin, Advil or other less costly store brand) if advised by your child's doctor. Follow the directions on the box carefully or ask his doctor how much medicine to give.
  - Do not give ibuprofen to babies less than 6 months of age without a doctor's order.
  - If your child has chickenpox, kidney problems or bleeding problems, talk with his doctor before giving ibuprofen.
  - Give this medicine with food or milk to decrease stomach upset.

When should I call the doctor?

Call your child's doctor if your child has any new symptoms that your doctor does not already know about, or if symptoms get worse, such as:

- Headaches that get worse
- Clear drainage from the nose or ear
- Scalp swelling that gets bigger
- A seizure
- Neck pain
- Is hard to wake up
- Vomits more than once
- Acts differently than usual such as if he does not play, acts fussy or seems confused
- Cannot think clearly or remember things
- Has weakness in the arms or legs or does not move them as usual
- Cannot recognize people or places
- Slurred speech
- Passes out

Also call if you have any questions or concerns about how your child looks or feels.

How can I help prevent my child from having another head injury?

Follow the guidelines below to help protect your child. Avoid activities that put your child or teen at risk for another head injury soon after the first one. Examples include things like climbing toys, riding a bike or driving a car.

Babies

- Always make sure that your baby or child rides in an approved child safety seat or booster seat each time he travels in a vehicle.
- Never place your baby on a chair, table or other high place while they are in a car seat or baby carrier.
- Use the safety straps on changing tables, grocery carts and high chairs.

- Don't allow children to carry your baby.
- Do not use baby walkers that have wheels. These can tip over and cause harm. Use a baby activity center without wheels instead.

Toddlers

- Childproof your home to protect him from falls.
- Secure large pieces of furniture, TVs and appliances to the floor to prevent them from tipping over on your child. Use anti-tip brackets if needed.
- Lock windows and screens. On upper floors, install safety bars that can keep your child from falling out of windows, but can be removed in case of fire.
- Use safety gates at the top and bottom of stairs until your child can go up and down safely on his own. Keep stairs free of clutter.
- Make sure your toddler wears an approved bike helmet and sits in an approved seat when riding on a bike with you.

Children

- Watch your child closely on the playground. Make sure play equipment is in good working order. The playground surface should be made of at least 12 inch deep shredded rubber, mulch or fine sand. Avoid harder surfaces like asphalt, concrete, grass and soil.

Older children and teens

- Make sure your child wears a seatbelt every time he rides in a vehicle. Children under 13 years of age are safer in the back seat.
- Make sure he wears the correct helmet when he rides a bike, skateboards or takes part in other active sports.
- All terrain vehicles (ATVs) should only be used by teens age 16 years and over. They need to wear a motorcycle style helmet and should never have passengers on the ATV with them.

When can my child return to school or daycare after a concussion?

Your child needs to stay home from school or daycare until the doctor tells you that he can return. Most children will need to miss 1-2 days of school. If your child is school age, talk with your School Nurse or Health Services Coordinator.

- They can help support your child's slow return back into school work.
- Your child may need a 504 plan in school. The plan helps to make sure that any special needs are met during his school day.

See the chart on page 6 for more details about your child's return to school.

When can my child return to sports after a concussion?

Your child **MUST** stop all sports and rest until he has no symptoms. It is important to protect the brain right after a head injury.

- Wait for your doctor to say that it is ok for your child to return to sports.
- Do **NOT** allow him to go to practice just to watch.
- When he does return to sports, if any symptoms return, he must **STOP** and rest until the doctor tells him that he can do things again.

- A slow return to sports may take several days to several months.
- Your child must return to normal school work and studies before returning to game play. You must also have a doctor's OK for your child to resume sports and PE activities. **See the chart on page 7 and 8 for more details about your child's return to sports and play.**

What is the Concussion Program?

Children's has a Concussion Program made up of an entire team of specialists to help care for children with concussions. The team works with your child's doctor to create a treatment plan for your child.

Talk with your child's regular doctor about your child's need for this program. Before calling the Concussion Program, it is best to get a referral for the program from your child's doctor.

The Concussion Program nurse can help you get an appointment and provide you with advice until your child is seen by the Concussion Team.

- The phone number for the nurse is 404-785-1111.
- The office is open during normal business hours from Monday - Friday.
- If you call after 3 pm or on weekends or holidays, leave a message and the nurse will call you back the next business day.
- The website for the Concussion Program is www.choa.org/concussion.

If you ever think your child needs help right away, call 911 or take your child to the emergency department.

Before caring for your child at home, make sure you know:

- What to do for your child at home
- What symptoms or problems to look for
- When to call your child's doctor
- What to tell your child's teachers and coaches about bookwork, studies, PE classes and sports
- What follow-up care your child needs
- How to protect your child from another head injury

Use this space to write down questions you have for your child's doctor:

Guidelines for your child's return to school, book work and studies

Stage of healing	Home activity	School activity	Physical activity
Stage 1 – your child still has <u>many</u> symptoms and problems	• Complete rest in a quiet room • Allow as much sleep as possible • Limit things that require your child to think, focus, reason or remember • Remove any electronics and computers from your child's room • Remove any activity planners and "to-do" lists from your child's room • Give your child plenty of fluids to drink • Give your child plenty of carbohydrates to eat, such as whole grain breads and cereals, pasta and rice	No school	See Stage 1 in next chart
Stage 2 – your child still has <u>some</u> symptoms and problems	• Quiet room • Allow as much sleep as possible • Allow your child to use TV, video games, texting, tweeting and email for a short time - less than 2 hour a day • Help your child not to stress over missed school work • Continue with fluids and carbohydrates as in Stage 1	• May return to school for ½ day • Attend core classes only • Attend shortened class time • Rest in nurse's office between classes and as needed • No tests or quizzes • Use pre-printed class notes • Short homework assignments – work 20 minutes at a time with rest breaks in between • Talk with school nurse or teacher about a 504 plan	See Stage 2 in next chart
Stage 3 – your child's symptoms and problems have gone away	• Slowly return to watching TV and playing video games and texting • Allow family interaction again	• Full day of classes • **<u>Gradual</u>** return of class work, including make-up work, tests, quizzes • May take 1 test or quiz a day with extra time as needed to complete • Tell the teacher or school nurse of any symptoms or problems return	See Stages 2-4 in next chart
Stage 4 – your child seems back to normal	Normal home and social interactions	Normal school work and studies	See Stages 5-7 in next chart

In case of an urgent concern or emergency, call 911

Guidelines for your child's return to sports, play and activities

Stage of healing	Activity allowed	Examples of sports	Examples of other activities	Goal
1	• No activity • Complete cognitive and physical rest	• Complete physical rest	• Quiet time with rest • Avoid groups, videos, reading, computers, video games, cell phones, noisy places	• Brain rest and healing • Be free of symptoms
2	• Light aerobic activity	• 10-15 minutes of walking or stationary bike • Light sweat on the brow • Slight increase in breathing rate	• Walk in park or neighborhood • Avoid group activities	• Increase heart rate to 30-40% at most
3	• Moderate aerobic activity • Light resistance training	• 20-30 minutes of jogging or stationary bike • Arm curls, shoulder raises, leg lifts with weights that can be comfortably lifted • 1 set of 10 repetitions for each activity	• Supervised play • Low risk activities such as dribbling a ball, playing catch, changing directions, jumping, side-to-side slides, chasing a ball or catching a ball on the run	• Increase heart rate to 40-60% at most • Add resistance • Use eyes to track objects
4	• Intense aerobic activity • Moderate resistance training • Sport-specific exercise	• 40-60 minutes of running or stationary bike • Same resistance exercises with weight for 3 sets of 10 reps • Pre-competition warm-up such as passing a soccer ball, throwing a football or doing ladder drills	• Supervised play • Moderate risk activities such as balance and agility drills. • No head contact activities. • Can sweat and breathe heavy	• Increase heart rate to 60-80% at most • Increase resistance • Mimic the sport
5	• Controlled-contact training drills	• 60-90 minutes of time on the field, court or mat for specific drills • Take part in normal practice session • Contact that is normally part of the sport - only use items that "do not hit back" such as a sled in football • Recheck for symptoms or problems often	• Free play • Run and jump as able • Full return to physical education (PE) • Recheck for symptoms or problems often	• Mimic the sport or free play without the risk of head injury
6	• Full-contact practice	• After OK from the doctor, may take part in normal training activities	• With parent or adult supervision, may take part in normal activities	• Build confidence • Assess skills
7	• Return to play	• Normal game play	• Normal playtime and activities	• No restrictions

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What other guidelines do I need for my child's activities?

- Allow 24 hours between each activity stage in the chart. This means that it will take at least 7 days to return to full activity.
- For your child to move from one stage to the next, he must be able to do an activity at 100% without symptoms or problems for 24 hours.
- If any symptoms return, it means his brain is not ready for the next stage.
- Once your child has no symptoms again for 24 hours, he can try the activities in that stage again.

Where can I get more information?

You can get more information on concussion and mild head injury at any of these websites:

- American Academy of Neurology
- American Academy of Pediatrics
- American College of Sports Medicine
- Centers for Disease Control and Prevention

Children's Healthcare of Atlanta has not reviewed all of the sites listed as resources and does not make any representations regarding their content or accuracy. Children's Healthcare of Atlanta does not recommend or endorse any particular products, services or the content or use of any third party websites, or make any determination that such products, services or websites are necessary or appropriate for you or for the use in rendering care to patients. Children's Healthcare of Atlanta is not responsible for the content of any of the above-referenced sites or any sites linked to these Sites. Use of the links provided on this or other sites is at your sole risk.