

What is a traumatic brain injury (TBI)?

A traumatic brain injury (TBI) is a sudden injury to the head that causes damage to the brain. The damage may include bruising, swelling, bleeding or tearing of nerve fibers within the brain. Millions of people suffer from brain injuries each year.

What causes a TBI?

Many things can cause a TBI. Some include:

- Car, motorcycle, bike, skateboard or ATV (all terrain vehicle) accidents
- Falls
- Assaults
- A wound that penetrates (goes through) the skull
- Gunshots
- Sports injuries
- Shaking a baby (shaken baby syndrome)

What are the possible symptoms?

Symptoms of a TBI may happen right away, or they may not happen until days or weeks later. Symptoms may also be missed because the child seems fine at first and then acts differently later.

Depending on how severe the brain injury is, a child may have 1 or more of the symptoms listed below.

Mild symptoms	More severe symptoms
<ul style="list-style-type: none">• May or may not pass out• Headache• Have no memory of what happened• Blurry vision• Ringing in the ears• Tiredness or trouble sleeping• Dizziness or loss of balance• Problems sleeping or eating	<p>These may happen along with mild symptoms:</p> <ul style="list-style-type: none">• Headache that keeps getting worse• Seizure• Nausea (upset stomach) or vomiting (throwing up)• Slurred speech• Trouble thinking, concentrating or remembering• Trouble finding the right words to say• Agitation• Combativeness• Weakness or numbness of the arms or legs• Loss of bowel and bladder control• Coma• Extreme sleepiness• Confusion
<p>Younger children may not be able to tell you how they feel. They may have some of these signs:</p> <ul style="list-style-type: none">• Will not eat• More fussy than normal• Change in their sleep• Loss of interest in play or favorite toys	

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

Traumatic brain injury (TBI), continued

What tests could my child have?

Your child may have any of these tests:

- X-rays
- CT scan (computed tomography)
- MRI (magnetic resonance imaging)
- Blood tests
- Neurological exam (check of the brain and nervous system). This includes a brief eye exam with a flashlight.

What is the treatment?

Treatment depends on how severe the brain injury is and often happens in stages. Some guidelines are listed below.

First-aid treatment

- The goal is to help stabilize your child right after the injury.
- This may happen even before your child gets to the hospital.

Acute treatment

- Your child may need oxygen to help them breathe easier. It also provides more oxygen for the brain.
- If your child has severe breathing problems, they may need a ventilator (vent) to help them breathe. This is a machine that breathes for someone until they can breathe on their own.
- The care team may give medicines and fluids through an intravenous (I.V.) to:
 - Support the blood pressure and heart.
 - Decrease brain swelling.
 - Prevent or stop seizures.
 - Relieve pain and discomfort.
- The care team may also place a nasogastric tube (NG tube) through your child's nose and into the stomach. This is used to give your child fluids, nutrition and medicines.

Surgery

- This may be needed to manage severe swelling or bleeding in the brain.

Rehabilitation (rehab)

The type and length of rehab is different for each child. It depends on the amount of damage to the brain and how your child recovers. Rehab helps your child:

- Regain function and strength.
- Improve moving, talking, eating, thinking and caring for themselves.

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Traumatic brain injury (TBI), continued

Your child's rehab team is made up of many specialists. Who they are and what they do are listed below.

Care team members	What they do
Doctors	<ul style="list-style-type: none">• Specialize in rehab
Nurses	<ul style="list-style-type: none">• Provide basic care for your child• Teach you how to care for your child at home
Physical therapists (PT)	<ul style="list-style-type: none">• Help your child with:<ul style="list-style-type: none">– Strengthening muscles– Improving balance– Walking
Occupational therapists (OT)	<ul style="list-style-type: none">• Help your child with activities of daily living, such as:<ul style="list-style-type: none">– Getting dressed– Brushing teeth– Bathing
Speech therapists (ST)	<ul style="list-style-type: none">• Help your child with:<ul style="list-style-type: none">– Swallowing– Eating– Talking
Neuropsychologists	<ul style="list-style-type: none">• Assess your child's thinking skills
Social worker	<ul style="list-style-type: none">• Helps your child get ready to go home
Case manager	<ul style="list-style-type: none">• Helps your child get ready to go home
Teacher	<ul style="list-style-type: none">• Helps your child get ready to go back to school
Other specialists like a child life specialist, chaplain and those who use recreation and music therapy	

How is recovery measured after a brain injury?

Right after a brain injury, doctors and nurses use the Glasgow Coma Scale (GCS). This allows them to measure changes in your child's recovery.

Rehab departments often use another scale called the Rancho Los Amigos Scale. It is used to measure progress and return of function. If your child needs rehab, the care team will talk with you about this scale.

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Traumatic brain injury (TBI), continued

When will my child be able to go home?

Your child's doctor, nurses and therapists will talk with you about when your child may go home and what you need to do to care for them at home. If your child has a mild brain injury, they may be able to go home in several days. Getting better after a moderate or severe brain injury may take weeks or months of treatment and therapy.

What should I do for my child when they get home?

Your child's doctor will talk with you about what to do for your child when they get home. Some guidelines include:

- Make sure your child gets a lot of rest.
- Be patient – healing takes time. Your child's pace of doing things may be slower than before the injury.
- Until the doctor says it is OK, have your child avoid anything that could cause another injury to the head. Some activities to avoid include trampolines, ATVs, bikes and contact sports (like football, soccer, basketball and others).
- Only give medicines that your child's doctor says are OK to give. This includes over-the-counter medicines.
- Keep a journal to share with your child's doctor and teachers. Write down things that your child has a hard time remembering or doing.
- Ask teachers for help with schoolwork if needed.
- Take your child to all of their outpatient rehab visits. Therapy will help them to keep improving.
- Call your child's doctor with any questions.

When should I call the doctor?

After going home, call the doctor **right away** if your child has any of these:

- Severe headache
- Blood or clear fluid coming from the nose or ears
- Hard to wake up
- Slurred speech
- Sudden changes in:
 - Eating or sleeping
 - Seeing or hearing
 - Interest in toys or play
 - The way they feel or look
- Loss of new skills, such as toilet training
- Weakness in the arms or legs or does not move them like normal
- Feels tired all the time
- Seizure

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Traumatic brain injury (TBI), continued

Also let the doctor know if your child:

- Becomes restless or fussier than normal.
- Has more trouble paying attention.
- Forgets things more than normal.
- Gets mixed up about time and places.
- Takes longer to get things done.
- Does not act the same during usual activities.
- Reacts strangely to new situations.
- Acts without thinking.
- Gets easily upset.
- Loses their temper a lot.
- Does not see or hear as well as normal.
- Has problems with words or sentences.
- Has a harder time learning something new.

Older children may also show different signs in school and with friends. Let the doctor know if your child has:

- Lower grades at school.
- Reports from teachers of poor behavior or learning problems.
- Arguments with classmates and friends.
- Sudden changes in moods.
- Late, incomplete or missing homework.
- Trouble understanding what they read.
- Less interest in school.
- More missed days from school.

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

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