

## Let's Talk About...

# Brain Injury Severity and Measurements

This handout will help you understand how healthcare providers classify a brain injury. It will also review the tools that help estimate your child's recovery.

Healthcare providers use terms like "mild," "mild-complicated," "moderate," and "severe" to decide how badly the brain was injured. Generally, the milder the injury the quicker the child recovers and the fewer lasting effects from the injury.

Parents often ask how badly their child was injured, if they will make a full recovery, and when they will be back to "normal." Unfortunately, these questions are very difficult to answer. It is not possible to predict exactly how much recovery your child will have. Each child's injury and recovery is different.

### What is a mild brain injury?

A mild brain injury is sometimes called a concussion (con-CUSH-on). With this type of injury, symptoms are often temporary and go away over a couple of days to a few months.

### What is a moderate brain injury?

A moderate brain injury is more serious than a mild brain injury. Children with moderate brain injury often have physical change, and changes in their thinking and behavior. Hopefully these changes will go away, but they may continue for a longer time. Some children with a moderate brain injury need to stay in the hospital for rehabilitation. Other children may receive rehabilitation outside the hospital at an outpatient clinic. It is important to have an education specialist and a physician/healthcare provider that understands and has experience with brain injuries. They help to set up a plan for your child to return to school. Your child may need this support to have a successful recovery.

### What is a severe brain injury?

A severe brain injury is a very serious brain injury. Children with severe brain injury are usually admitted to an intensive care unit in the hospital. Recovery is longer and could take months to years. Most of these children are helped with intensive inpatient rehabilitation. However, it may take some time for the brain to heal before your child is ready for this program. Your child may go home or go to a long-term care facility before intensive rehabilitation. The rehabilitation team will watch your child closely. They will monitor your child's responses, level of awareness, and ability to be in an intensive inpatient rehabilitation program.

### What does the doctor use to grade or measure my child's brain injury?

The "scales" and tests below help determine how severe your child's brain injury is. They also help understand how likely your child will get their physical and cognitive (thinking and memory) ability back. These scales help plan support for your child during their recovery. These scales are limited in their ability to predict the future. No one knows your child's exact outcome.

#### Glasgow Coma Scale (GCS)

The Glasgow Coma Scale measures how well your child responds to instruction, touch, and sound. It helps determine the severity of the brain injury. It is most helpful soon after the injury. The scale has three areas: eye opening, best verbal response, and best motor response. The higher the score, the better the child is doing.

Brain Injury Severity	Glasgow Coma Score	Loss of Consciousness	Post Traumatic Amnesia	Radiology and Physical Examination
Mild	13–15	Less than 30 minutes	< 24 hours	Head CT scan: Normal Alertness: Normal
Complicated Mild	13–15	Less than 30 minutes	< 24 hours	Head CT scan: Abnormal Alertness: Normal or abnormal
Moderate	9–12	30 minutes to 6 hours	1–7 days	Head CT scan: Abnormal Alertness: Normal, agitated or lethargic
Severe	3–8	More than 6 hours	> 7 days	Head CT scan: Abnormal Alertness: Coma

### Loss of Consciousness (LOC)

Loss of consciousness is a measure of the time that a child lost consciousness right after the injury.

Loss of consciousness ranges:

- “Blacking out” for a few minutes
- A coma for several days or weeks

### Post-Traumatic Amnesia (PTA)

Post-traumatic amnesia measures the time from:

- The injury to the return of continuous memory
- The time from injury to making and storing new memories

Several studies show the longer it takes to recover from post-traumatic amnesia, the more serious the brain injury.

### Children’s Orientation and Amnesia Test (COAT)

This test helps determine the length of time your child has post-traumatic amnesia. It is a series of questions. It looks at orientation and memory. If your child is three-years old or older, the nurse will give this test several times after the traumatic brain injury.

The test is scored based on your child’s age.

### Time to Follow Commands

This test measures how severe the brain injury is and helps predict recovery. It measures how long it takes your child to follow simple commands like “smile” and “squeeze my finger.” The faster your child can follow simple commands after an injury, the better the likely recovery.

### Remember to never give up hope!

The measurements discussed above help your child’s healthcare team determine the best treatment and therapy plan for your child. But no one can predict exactly how much your child will recover.

The whole healthcare team wants to give you and your child excellent care. Please speak up and tell us your questions or concerns. You are an important part of your child’s recovery.

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