

# Traumatic Brain Injury

THIS BOOKLET IS FROM:

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Team Member	Name
Attending Doctor	
Physical Therapist	
Occupational Therapist	
Speech Therapist	
Social Worker	
Care Coordinator	
Nurses	
Other Staff	

This booklet provides basic information about traumatic brain injury. We hope you find it helpful. If you have questions after reading this, please talk with a member of your health care team.

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This information is a general resource. It is not meant to replace your provider’s advice. Ask your doctor or health care team any questions. Always follow their instructions.

## What is a Traumatic Brain Injury?

A traumatic brain injury, also called a TBI, happens when an outside force disrupts the brain's normal function. The most common causes of TBI are falls, car crashes, assaults, and a blow or strike to the head. Severe TBI always includes a period of time when someone is unconscious, meaning they cannot stay awake or interact with their surroundings in a purposeful way.

### The Recovery Process

It may take weeks or months for a doctor to figure out how, or if, a person will recover from a TBI. Many, but not all, will regain consciousness. Recovery often follows a step by step path. Each person and injury is different and the length of time it takes to recover varies. Someone may progress through these stages quickly, skip stages, or get stuck in a stage. Below are the levels or stages of impaired consciousness often seen in people with a severe TBI:

- Coma - a complete state of unconsciousness. People in this state cannot be awakened. Their eyes are closed and they may not respond to sound, touch, or pain. They can't communicate, follow commands, show emotions, or engage in purposeful behaviors.
- Vegetative state - unconscious but may be awake at times. Vegetative does not mean vegetable. It refers to the vegetative or automatic functions that are still being controlled by the brain such as breathing, heart function, and digestion. A person may start to open their eyes and/or react briefly to sound, sights, or touch. They may cry, smile or make facial expressions, but they can't show emotions or engage in purposeful behaviors. Rather, the responses we see are reflexes. This state is also known as Unresponsive Wakefulness Syndrome.
- Minimally conscious state – starting to regain consciousness. The patient may have some awareness of self and surroundings. They may engage in purposeful behaviors such as following simple commands, focusing on people, moving or reaching for objects, trying to use a hairbrush, showing appropriate emotional responses, or trying to communicate through gestures or talking.
- Emerged from minimally conscious state - communicates consistently (such as correctly answering simple questions by saying or gesturing yes or no) or uses at least 2 objects in an appropriate manner. They may also be able to follow instructions.

- Post-traumatic confusional state – regains consciousness but is confused and/or has a hard time forming new memories. Someone in a post-traumatic confusional state may or may not have post-traumatic amnesia (am-NEE-zhuh). Patients:
  - May not be able to walk or talk, recall memories, or recognize people.
  - Can't remember where they are or what happened.
  - Can't recall day to day details or perform lengthy tasks.
  - May sleep a lot during the day but find it hard to sleep at night.
  - May be restless or agitated.
  - May do unsafe things like pull on feeding and breathing tubes, or try to get up without help.

## Key Points about Recovery

- Often, the longer the person remains in a coma, the more likely it is that they will be severely disabled.
- Visual tracking is a sign of improvement. Visual tracking means that someone follows a moving object with their eyes. It is often one of the first meaningful behaviors seen when a person moves from a coma or vegetative state to a minimally conscious state.
- The earlier a person improves to the minimally conscious state, the better the outcome. For example, if a person can follow simple one step commands by 2 to 3 months after a TBI, the better the outcome is likely to be.
- Younger people are more likely to return to living more independent productive lives than older people.
- People with consciousness problems that last for many months can still improve. They may benefit from specialized TBI rehabilitation in a facility after they leave the hospital.
- A correct diagnosis about level of consciousness is vital. It helps to predict short and long term outcome and also helps your team decide if specialized rehabilitation is needed. It can also help family members make difficult decisions, like whether to stop care.



## What to Expect in the Hospital

### Being Cared for by a Team

While your loved one is here, they will be seen by many health care workers, but only one team oversees their total plan of care. This team is led by an attending doctor. To learn more about your other hospital care team members and what they do, see page 5.

Once a patient's medical concerns are stable, our physical, occupational and speech therapists evaluate them and create a rehab plan of care. The therapy team works with patients throughout their stay and adjusts their rehab plan of care as needed. This team also talks with the medical team and nurse care coordinator to form a discharge plan. The goal is ensure your loved one has the proper level of care after they leave the hospital.

### Daily Rounds

The hospital care team sees patients each day during their **daily rounds**. Rounds are often done in the morning. During rounds, the team looks at things like vital signs, weight, lab results and test results. It is very helpful family take part in rounds. Rounds are a great time to ask questions, take notes, share thoughts or concerns and learn about your care. If you need more time to ask questions, or if a family member cannot attend, please let us know.




### Questions to Ask Your Care Team

- What is my loved one's level of consciousness?
- What information and tests were used to determine the diagnosis and prognosis
- What are the care options for people with severe TBI?
- How is my loved one doing? How are they progressing?
- What is the care team doing today to manage their condition?



## Your Hospital Care Team

The members of this team are an important source of information and support. They may include:

- **General medical team:** Doctors, nurses, nursing assistants who provide daily care.
  - **Intensive care specialists:** Medical team members who specialize in trauma care and recovery. They may include neurosurgeons, orthopedic surgeons, or plastic surgeons and critical care doctors. They treat people in intensive care, monitor their condition closely and help diagnose and treat medical problems.
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- **Critical care nurses:** Nurses who work in the intensive care unit. They perform bedside neurological exams, help doctors perform procedures, communicate with you and your care team and provide education and support.
  - **Neurologists:** Doctor who evaluate and treat disorders of the brain. They may perform tests to help determine the extent of the brain injury. They may perform bedside tests to guide diagnosis and monitor brain recovery.
  - **Pulmonologists or respiratory therapists:** Specialists that diagnose and treat breathing problems. They determine whether a person needs a breathing tube or machine to help them breathe.
  - **Dieticians:** Dietitians monitor a person's nutritional status and manage their dietary needs. They may also help determine if a feeding tube is needed to provide nutrition.
  - **Pharmacists:** In a hospital setting, they work closely with doctors to monitor a person's medicines. They may also provide education about the purpose of medicines given and their side effects.
  - **Physiatrists** (fiz-ZAHY-uh-trists): Doctors that help diagnose and treat medical conditions that include pain, muscle, joint or nerve problems during the rehabilitation process. They direct and oversee the team of physical therapists, occupational therapists, and speech therapists. People with TBI receive these rehab services while they are in intensive or acute care units.
  - **Physical therapists:** Rehab specialists that focus on recovery of strength, conditioning, flexibility, walking, balance, body mechanics, posture, positioning for pressure relief, assistive devices, and mobility.



- **Occupational therapists:** Rehab specialists that focus on activities of daily living such as bathing, feeding, showering, dressing, toileting and grooming. They also work to help patients with thinking (cognition), sensation, visual perception, strength and endurance, equipment training, orthotics, and safety.
- **Speech Language Pathologists:** Sometimes called Speech therapists. These rehab specialists evaluate and treat feeding and swallowing abilities, and speech cognitive-language impairments. If a person needs a communication device if needed. A person may need a communication device if they are intubated with a tracheostomy or on a ventilator.
- **Neuropsychologists:** Psychologists that evaluate and diagnose changes in behavior, thinking, and emotion caused by TBI. They may perform bedside tests to help determine levels of consciousness, plus educate you and your family.
- **Case managers and social workers:** Staff who coordinate the health care plan by handling insurance benefits, financial matters and discharge planning. They are also a valuable resource who can give you emotional support and information about TBI.
- **Other health care team members:** Our chaplain and/or patient representative may be available to provide spiritual and emotional support to people with TBI and their family members.

## Common Tests and Procedures

These tests help doctors understand more about a brain injury. They help with diagnosis, prognosis and treatment decisions throughout the recovery process.

- Neuroimaging studies (CT scans or MRIs): Helps doctors see bleeding and injured parts of the brain. Results will be used to help determine if surgery is needed.
- Electroencephalogram (EEGs): Measures electrical activity in the brain. Results are used to diagnose seizures and show where and how much of the brain was injured.
- Neurological monitoring/neuromonitoring: Helps track the amount of pressure in the brain and manage brain swelling. One of these devices is a tube in the brain attached to wires and a monitoring screen. If needed, the tube device can drain excess fluid and relieve pressure in the brain. Neuromonitoring helps diagnose and treat hydrocephalus, which is a build-up of too much fluid in the brain. It can also help determine if surgery is needed to place a more permanent pressure valve called a shunt.
- Bedside neurological exams and formal behavior assessment scales: Helps determine a person's level of impaired consciousness. These exams often test basic reflexes. They can look at how the eyes react to light, how a person responds to sound, voice, touch and pain. They can look for signs of purposeful behaviors like visual tracking, following commands or communicating.

## Ways You Can Help



You may feel powerless, helpless, and afraid. But you play a major role in the care of your loved one. Listed below are some of the things you can do to move treatment along and support their recovery.

- Keep a journal or diary of daily events and milestones in recovery
- Be ready to answer questions from the health care team
- Find out who is the legal decision maker of your loved one, as your loved one won't be able to make decisions about their medical care
- Become a legal guardian for your loved one or appoint someone
- Learn about changes that may occur in people with severe TBI
- Learn about skills needed to take care of your loved one
- Don't forget to take care of yourself
- Ask questions, raise concerns, share your observations
- Understand how to interact with your loved one.

If you help or support at any time, please talk with a member of the health care team.

### **Suggestions on how to interact with a loved one with severe TBI:**

- Balance periods of rest and stimulation. Follow the team's advice about how much or what type of stimulation is ok. Too much may make behaviors worse. Limit visitors, turn off the TV during visits, and make sure the room is calm and quiet.
- Physical contact is important. Even if a loved one can't respond, hold their hand. If the bedside nursing staff allow it, gently massage your loved one's hands, arms, legs or feet.
- Stimulate your loved one's senses. Offer different smells, sounds, things to look at or touch. Show pictures of family and friends. Play their favorite music. Bring in a favorite blanket, toy, or piece of clothing

- Talk to your loved one even if they can't hear or understand you. Read a book or newspaper to them. Recall important, special, or funny life events. Put on their favorite TV show.
- Every so often, test your loved one's ability to make eye contact or watch people move around room. Ask them to follow simple commands like "squeeze my hand", "raise your arm," or "open your mouth". Ask them simple yes or no questions. It may take them many seconds to respond, so let them rest briefly between questions.
- Don't pressure your loved one when they don't show you the behaviors you're hoping for or if they only show them some of the time. Your loved one can't control changes in consciousness. As recovery continues, you may see these behaviors more often.
- When your loved one regains consciousness, they may be confused and behavior problems may develop. Tell them they are in a safe place. Tell them people are there to help. Remind them of what happened, where they are, and the current day, date, and time. Keep a clock and easy-to-read calendar in clear view.
- Use de-escalation techniques if patient is agitated: speak in low-normal voice, take breaks, remain calm, reassure loved one
- Change surroundings to decrease agitation. If your loved one is agitated:
  - Limit number of visitors
  - Limit unnecessary sounds such as the TV, radio or background conversations
  - Speak and behave in a calm and reassuring manner
  - Reduce confusion by having one person speak to your loved one at a time
  - Be brief, clear and straightforward when talking
  - Remove bright lights
  - Avoid sudden touching or grabbing
  - Always explain what you plan to do before starting an activity
  - Help figure out what things may cause or trigger behavior problems in your loved one and write down what was going on just before the problem occurred.

## Where to Learn More and Find Support

- **Model Systems Knowledge Translation Center**  
Visit [www.msktc.org](http://www.msktc.org) – click on Traumatic brain injury for fact sheets and videos.
- **Brain Injury Association of America**  
Visit [www.biausa.org](http://www.biausa.org) or call 1-800-444-6443
- **Brainline.org**  
Visit [www.brainline.org](http://www.brainline.org)



Content in this booklet was adapted with permission from *Severe Traumatic Brain Injury: What to Expect in the Trauma Center, Hospital, and Beyond* developed by Amy M. Rosenbaum, PhD; Alan Weintraub, MD; Ron Seel, PhD; John Whyte, MD, PhD; and Risa Nakase-Richardson, PhD, in collaboration with the Model Systems Knowledge Translation Center.

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