

Some Very Basic Information on Brain Injury

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The brain is an amazing organ; it makes our heart beat, our eyes blink and our skin shiver; it enables us to think, laugh, and love. The brain is what observes and understands the world around us. It has the consistency of Jello or congealed oatmeal, and weighs about 2 lbs. at birth and 3 lbs. in an adult.

Brain injury can be called by different names, like concussion, shaken baby syndrome, and head injury to name a few. The brain can be hurt in many different ways; injuries to the brain are classified as non-traumatic or traumatic.

Non-Traumatic injuries occur as a result of strokes, lack of oxygen, infection, brain tumors, and exposure to toxic substances. The challenges someone with a non-traumatic injury faces can be different, but are often very similar to those faced by someone with a traumatic injury.

Traumatic injuries fall into two categories:

Open head injuries are those in which the skull is crushed or seriously fractured. Open head injuries also happen when the skull is penetrated, as in a gunshot wound.

Closed head injuries, in which the skull is not damaged, occur much more often, usually because of a car accident or fall.

Several things happen to the brain during traumatic injuries. The effects of some of these can go on for quite some time after the actual accident.

- The brain bounces around in the skull and rubs against the bony ridges on the inside of the skull; *this is known as a coup/contra-coup injury*. It can cause bleeding and swelling within the brain; because the brain sits in a tightly enclosed space, there is no way to accommodate the increased swelling and pressure.
- The microscopic pathways that send messages through the brain and out to the body are damaged; *this is known as diffuse axonal injury*.
- The chemicals that help the brain work are disturbed, and instead of helping, begin to hurt the brain; *this is known as the neurochemical cascade*.

The brain is divided into different parts called *lobes* and *hemispheres*. While the whole brain works together to get things done, its different parts are responsible for different jobs.

The Cerebellum (just above the brain stem) controls balance and coordination.

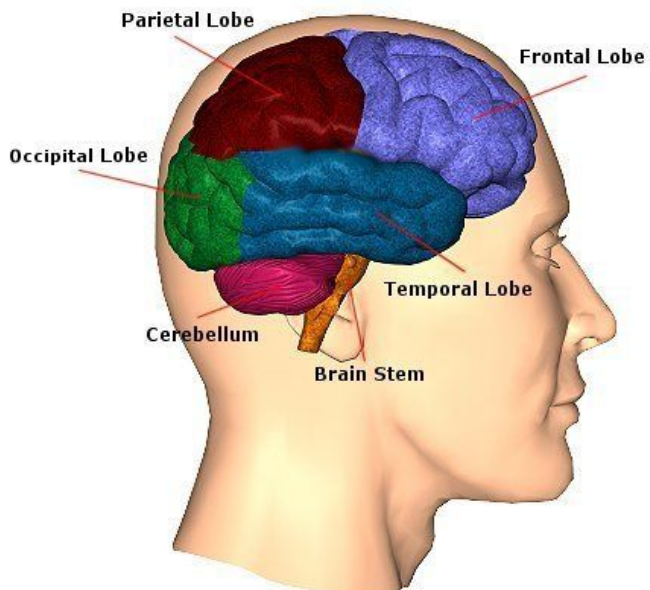
The Brain Stem (the bottom of the brain) is responsible for basic life functions like heart beat, breathing, and blood pressure.

The Occipital lobe (at the back of the head) controls vision.

The Temporal lobes (on the sides of the head) manage speech, language, memory, and hearing.

The Parietal lobes (on the top of the head) interpret sensations and the position of our body and other objects.

The Frontal lobe (at the front of the head) helps us control our emotions and impulses, motivates us, and helps us plan and make good decisions.



The left and right sides of the brain are called hemispheres; they have different strengths.

The left side of the brain is associated with verbal, logical, and analytical thinking. It is very good at naming and categorizing things, reading, writing, arithmetic. It likes to think about things logically and in order. It controls the right side of the body.

The right side of the brain is the creative and curious side of the brain, and allows us to be flexible and think about the future. It is good at visual and intuitive information; it thinks quickly and looks at the whole picture. It controls the left side of the body.

The changes seen after a brain injury depends on a number of factors such as (but not limited to): the severity of the injury, where and how the damage was sustained, how quickly the person was diagnosed and treated, their general health and age at the time of injury.

Common physical changes after brain injury include difficulty walking, trouble with balance, falling or bumping into things, dizziness, spasticity (very tight muscles), poor coordination, difficulty grasping objects, headaches, nausea, fatigue, and seizures.

Common sensory changes after brain injury include vision, hearing, smell and taste disturbances

Common cognitive problems after brain injury include trouble with memory, concentration and attention, following directions, finding the right word, problem solving, abstract thinking, organization, planning, social judgment, decision making, self monitoring, and initiating tasks.

Common behavioral/emotional changes after brain injury include irritability, mood swings, acting without thinking, difficulty accepting someone else's point of view, sadness, low energy, low self-esteem, hostility, depression, and anxiety.

Although the physical, sensory, cognitive and psychological changes may improve with treatment and time, they may not go away completely. The key for most survivors and caregivers is learning how to recognize the difficulties that have been caused by their brain injury and how to manage them. The best way to do that is through the use of compensatory strategies, which involves using different ways to accomplish a task that is more difficult since the injury.

Compensatory strategies focus on a person's intact skills and strengths to help them be successful with overcoming challenges in the areas of self-care, attention, memory, behavior. We all use some of these methods. These strategies can be simple, like writing things down in notebooks, posting notes on the refrigerator, or carrying a pocket calendar; some can be more complex, like Palm-Pilots, medication alarms, or emergency response systems. Compensatory strategies do not fix the underlying problem; it takes more time, energy, and attention to make them work, but when used consistently, they can dramatically improve function.

Recovery from brain injury can last a lifetime, even though formal rehabilitation ends. When that happens, the survivor and those who care about him or her need to find ways to manage the day to day challenges and continue the recovery process. Good rehabilitation lays a foundation for managing opportunities and challenges, and life in general.

In one study¹, those individuals who continue to recover are those who:

1. Focus on using their family and support systems to help them get better, instead of focusing on individual skill improvement.
2. Develop skills that help them belong to a group; they are able to deal with the challenges of friendship, and living and working with others. They realize that they need to depend on others sometimes, and don't live isolated lives.
3. Continually work to improve their self-awareness. They understand their brain injury, their strengths, and their challenges; they work hard to understand how these things are related, and when and how to make changes when necessary.
4. Reduce the tendency to blame other people or situations. They understand and accept responsibility for their own behavior.
5. Develop and maintain anchoring relationships. People who do well after brain injury usually have one person they trust and can go to when things get tough. They know this person will tell it like it is, but with compassion.
6. Develop and maintain collaborative relationships. The successful person is one who recognizes when assistance is needed and doesn't resist help or ask for it when it isn't really necessary.
7. Learn how to advocate for their needs and desires. These individuals seek out and take advantage of positive opportunities that will help them get better.
8. Develop an identity that is outside of the brain injury. They see themselves as more than a "brain injury"; he or she becomes someone who is recognized for features that are different from their brain injury-related needs.

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For more information on brain injury or the resources around the state that can help in the recovery process, contact the Brain Injury Association of Virginia (see below).

¹ Patrick, P, Hebda, D., and Shuffleton, M. (1995). Recovery Beyond Rehabilitation. Re-Learning Times, 2 (2).