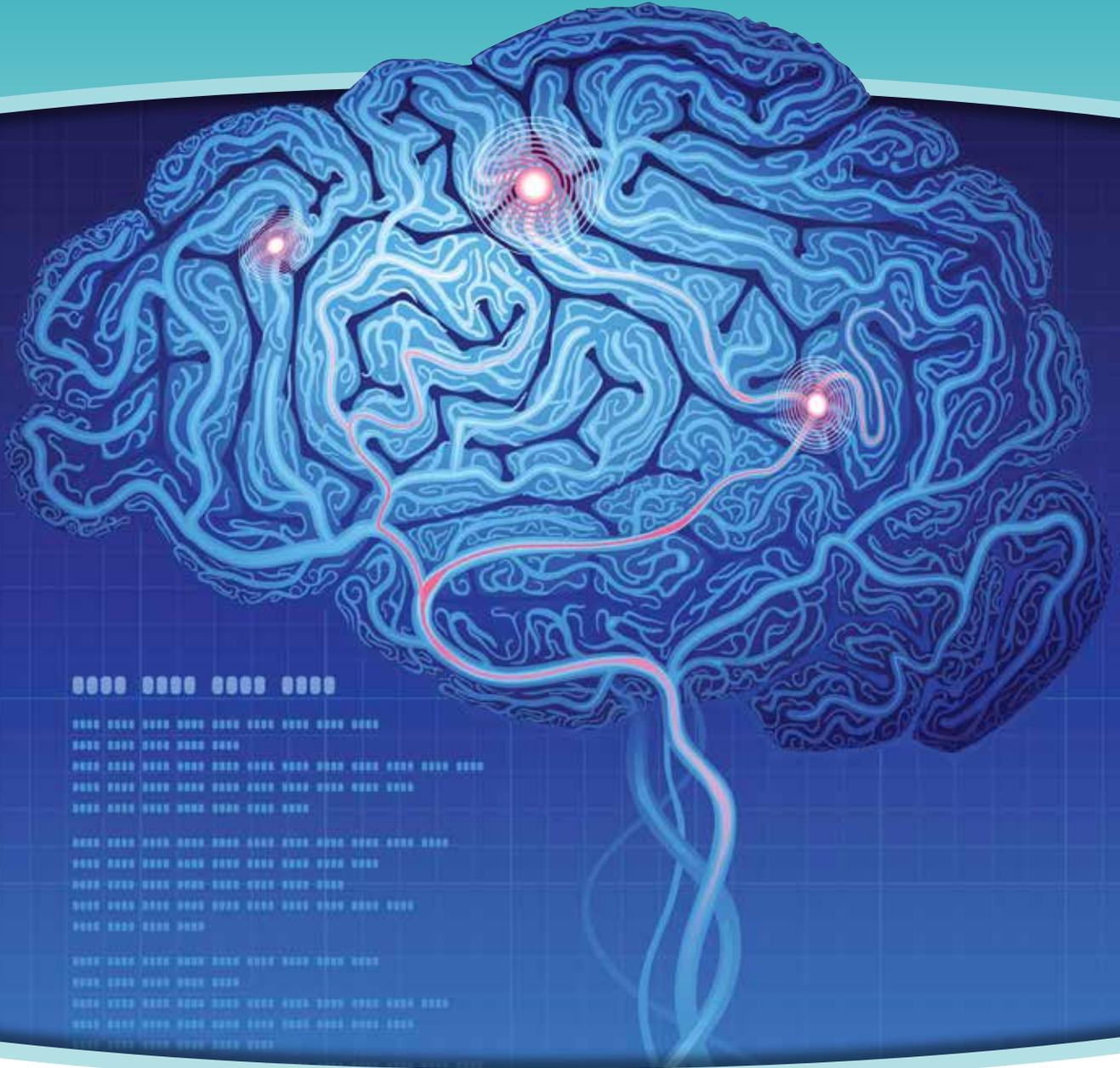


A Patient's Guide to Brain Injury



CONE HEALTH[®]
Rehabilitation

Brain Injury

Notes: All of us feel more comfortable dealing with changes in our bodies when we understand what is occurring, why it is happening and how it can be treated. That's why the staff of the Cone Health network has developed a health care education series. This is a library of booklets, pamphlets, fact sheets and other materials designed to answer the questions of patients, family members, and others in the community about important health topics.

Brain injury happens quickly. This booklet has been developed to help you understand brain injury. We recognize that this is a difficult time for you. You are not alone. The Centers for Disease Control and Management reports that each year 1.7 million people suffer a brain injury. These injuries are often severe enough to keep people from returning to their normal lives. By learning more about the effects of brain injury and our team of specialists, we hope to ease some of the anxiety that this type of injury causes. We encourage you to ask questions. It is important that you give the physician and staff any information that may help. You may be asking yourself questions, such as:

- What is the brain responsible for?
- What is a brain injury?
- How serious is a brain injury?
- What is brain swelling?
- When will we know how serious the brain injury is?
- What can I do to help?

In this booklet, you'll find answers to those and many other questions. Because each patient's needs are different, not all the information in this booklet will apply to you. Ask your physician and health care team for specific information.

About Brain Injury

Your body's control center

Just like any part of the body, the brain can be damaged as a result of an accident or interruption in the blood flow. The effects of this damage can range from minor thinking and memory problems to coma. The injury may also affect speech, vision and the ability to move. It often results in changes in the person's behavior, emotions and personality. Each of these problems may be temporary or permanent, and they may cause partial or total disability. Every person's recovery is different. It depends on many factors, including the patient's personality before the injury, the part of the brain that was injured, the amount of damage to the brain, how much time has passed since the injury and whether drugs or alcohol were used.

Common questions about brain injury

You will probably have many questions as your family member or friend recovers. Below is a list of frequently asked questions. Every person is different, and you may find that not all of these questions apply to you.

Questions in early stages

Q. How serious is a brain injury?

A. Brain injuries are serious. There are two critical periods in brain injury recovery. The first is the initial few days immediately following the injury. Despite intensive treatment and care, the injury may be so severe and overwhelming that the person may not recover. The second critical period starts a few days later and continues for two weeks or longer. During this time, there is close monitoring for complications such as swelling of the brain.

Q. What is brain swelling and how can it be controlled?

A. Brain swelling, or cerebral edema occurs

as the result of a head or brain injury. Medications, surgery and close monitoring may be used to control swelling. If it cannot be controlled, brain swelling may result in death.

Q. *When will we know how serious the brain injury is?*

A. It is difficult to predict the outcome of a brain injury in the first hour or first few days after it occurs. It may seem cruel and uncaring when the physicians say you will have to wait and see. But this is the most accurate answer. Typically, the longer a person remains in a coma the less likely he or she will recover completely. Few people fully recover after several months in a coma. Others may suffer permanent injury after only a brief time in a coma. Patients with a brain injury often do better if there are no other serious injuries.

Q. *What is a coma? Can a person in a coma hear, smell or see?*

A. A coma is a sleep-like state in which the injured person does not respond to his or her surroundings. Waking from a coma may take several weeks. It is usually a slow process of increasing alertness and awareness. While in a coma, people sometimes show signs that they can hear and understand. These signs are often just reflexes such as squeezing an object placed in the hand, sucking or response to pain. Since most people cannot remember this time period, it is impossible to know if they actually recognize voices or can see. However, it is very important to talk to them as though they can hear and understand.

Q. *Do patients in a coma feel pain?*

A. Although patients with a brain injury may react to pain by moving or groaning,

they do not remember their pain. Many tests are necessary to care for them. If a painful procedure is necessary, medication is provided to relieve pain. Nurses and physicians avoid unnecessary painful procedures. If you have questions about any tests or procedures, please ask the nurse or physician to explain.

Q. *When will my loved one wake up?*

A. No one knows for sure when your loved one will awaken. It is a day-by-day process. Becoming fully alert may take hours, months or years. Some people may only partially recover. Others may never fully regain awareness of their surroundings. The physician may order therapy services (physical, occupational or speech therapy) to begin in this stage of recovery. It is important to understand that staff does not “stimulate” someone out of a coma. Staff provides a structured, therapeutic opportunity for a patient to respond in some way to some type of sensory stimulation.

Q. *What reactions can I expect in myself and others?*

A. Most people are shocked at the news that a loved one has suffered a brain injury. They often experience a range of feelings, such as:

- **Guilt:** You may feel that you could have changed the outcome if you had done something differently. The best way to deal with guilt is to recognize your feelings and then put them aside until you better understand the situation.
- **Denial:** Sometimes people refuse to believe what physicians and others tell them. Others show denial by becoming angry with anyone with bad news. It’s OK to have hope.
- **Anger:** This strong emotion is often

directed at family members, staff or even a higher being. Anger isn't helpful in these situations. Try to recognize your anger and be cautious about acting on it.

- **Shock:** Some people show their emotions; others hide their feelings. People in shock are usually anxious, forgetful and in a dreamlike state. Remember that shock is normal. Most people find the inner strength necessary to make good decisions.

Q. What can I do to help?

- A. It's important for you to be supportive during this time of recovery. However, it's equally important for you to take care of yourself. Here are a few tips:
- Maintain a family routine that is as normal as possible. Stay in touch with the outside world. Openly express your feelings. Remember that anger, frustration and sorrow are normal feelings. They should be shared rather than kept inside.
 - Pace yourself. Get plenty of rest, relaxation and exercise. Allow time for yourself — go out to dinner, shop or take a walk. This will help you be more physically and emotionally prepared to support and care for your loved one. Rotate hospital visits with other family members.
 - Learn to ask for and accept help from friends and relatives. These favors may include anything from being taken out for dinner to helping with household chores.
 - Evaluate and discuss what new responsibilities and roles the family will need to assume to help care for the person once discharged from the hospital. Be prepared to make these decisions and share responsibilities.

Learn to identify signs of burnout, including:

- Lack of sleep.
- Not taking care of yourself.
- Depression.
- Physical and emotional exhaustion.
- Feeling overwhelmed and worthless.
- Feeling completely alone.
- Abuse of alcohol or other drugs.
- Family and marital conflicts.
- Frequent sickness.
- Difficulty concentrating or listening.

If you experience these symptoms, recognize that you may need help. Consider family, friends, support groups, chaplaincy services, social workers, physicians or nurses for support and assistance.

Questions in later stages:

- If the patient is not able to do their former job, what are his/her options?
- When can he/she return to school?
- Will he/she need special assistance?
- When can he/she drive?
- What should he/she know about use of drugs and alcohol?
- When can he/she resume sexual activity?
- What should I do if I notice personality changes such as depression?

Answers to these questions will differ for each person. The treatment team can best answer them for you

The Treatment Team

Rehabilitation of a patient with brain injury involves a team of professionals — each with special knowledge of a specific part of brain injury recovery. Family members are important members of the rehab team. The family provides information about the person's history,

supports the person through the trauma phase and assists in continuing therapy. In order to best address each person's needs and goals, information about the recovery process is shared among the team members.

The following team members may work with the person and his/her family at some point during rehabilitation:

Physicians: Several types of physicians may work with patients with a brain injury. These include physiatrists (physicians specializing in rehabilitation), neurologists (specialists in the brain, spinal cord and nerves), and neurosurgeons (specialists who operate on the brain, spinal cord and nerves).

Physician's assistants (PAs): PAs help the physician care for the person's medical needs.

Neuropsychologists: These are psychologists who specialize in the relationship between the brain and behavior. They perform tests and may treat thinking or personality problems. They assist in behavior management.

Nurses: Nurses provide care 24 hours a day and monitor the patient's medical status. They make sure the treatment plan is followed. They also provide education on bladder and bowel training and medications.

Nurse technicians (NTs): NTs assist nurses with the person's daily care.

Physical therapists (PTs)/physical therapist assistants (PTAs): PTs and PTAs work on problems with moving, balance and coordination. They teach mobility skills such as walking, using a wheelchair, and getting in and out of bed.

Occupational therapists (OTs)/occupational therapist assistants (OTAs): OTs and OTAs help the person relearn daily activities such as eating, bathing, dressing, toileting, writing, thinking skills and cooking. They may teach the person new techniques and/or how to use adaptive equipment. They may also work on arm function and teach patients how to adapt to vision problems.

Speech-language pathologists (SLPs): SLPs help the person with language and other communication skills. They treat thinking and memory problems so that patients can make safe decisions and communicate needs better. They also help find safe ways to eat and drink if patients have trouble swallowing.

Recreation therapists (TRs): TRs assist people with activities they enjoyed before the brain injury such as playing cards, gardening, computer games or community activities. They help people practice new skills in a group setting. They also help the person find new leisure activities.

Social workers/case managers: Social workers and case managers ensure that all services fit together as smoothly as possible. They also help the patient and/or family with financial management and problem solving. They help individuals and their families/caregivers arrange for services and equipment they may need after discharge. They also serve as counselors to the person and the family/caregiver for emotional issues caused by the illness or injury.

Nutritionists/dietitians: Nutritionists/dietitians make sure that the person gets healthy meals and eats well while in the hospital. They also provide education about healthier eating habits both in the hospital and at home.

Respiratory therapists: Respiratory therapists treat breathing problems and operate special equipment such as ventilators/breathing machines.

Therapy Options

The case manager and/or social worker coordinates the rehabilitation process with the treatment team. He or she will make suggestions for the most appropriate level of care.

Acute hospital care

Medical stability is the goal of acute hospitalization. Limited therapy services are provided while patients with a brain injury are in the acute care section of the hospital.

Subacute programs

Subacute care is designed for a person who is very weak but showing functional progress. These patients no longer require complex medical care but are not yet stable enough for intensive rehabilitation or home. These programs provide at least one hour of therapy a day.

Inpatient rehabilitation programs

These programs, usually found in hospital settings, are created for patients who still need 24-hour medical and nursing care but have reached the point where intensive therapy is necessary for recovery. Individuals receive at least 4.5 hours of therapy a day. Family/caregiver training is an important part of the inpatient rehabilitation setting.

Outpatient rehabilitation programs

Outpatient programs are designed for patients who have been discharged from the hospital but still need therapy. They may receive one therapy or multiple therapies depending on their needs. The individuals can practice

their skills at home with their caregiver(s). If appropriate, driving evaluations are performed through our Outpatient Rehabilitation Program.

Home health services

Home health care provides therapy or care to people who are physically unable to travel to an outpatient center. Professionals travel to the person's home to provide service. One advantage of home health is that individuals learn skills in the home setting where they are most used.

Placement Options

For some families, taking care of a person with a brain injury may not be possible. Placement in a skilled nursing facility or an assisted living facility may be the safest option. This is a very difficult decision to make. The treatment team will give recommendations and help with this planning process.

Skilled nursing facility

At a skilled nursing facility, a person receives 24-hour nursing services. If recommended, follow-up therapy is available for activities such as bathing, dressing, swallowing, communication and moving around. Group activities, which allow people to meet other residents, are encouraged.

Assisted living facility

An assisted living facility provides 24-hour supervision for safety. A person needs to be independent with mobility and self care. Meals as well as assistance with medicines are provided.

Resources/community service:

See the back page of this booklet for a listing of community resources in your area.

Adult day care programs

These programs provide day care for people whose caregivers work during the day.

They provide meals, minor health care and recreational activities. These programs usually operate five days a week.

Respite care

Trained professionals provide respite care in the home. These individuals are hired by the caregiver/family and can provide anywhere from a few hours to a full day of care. Respite care is typically used when the caregiver must run errands.

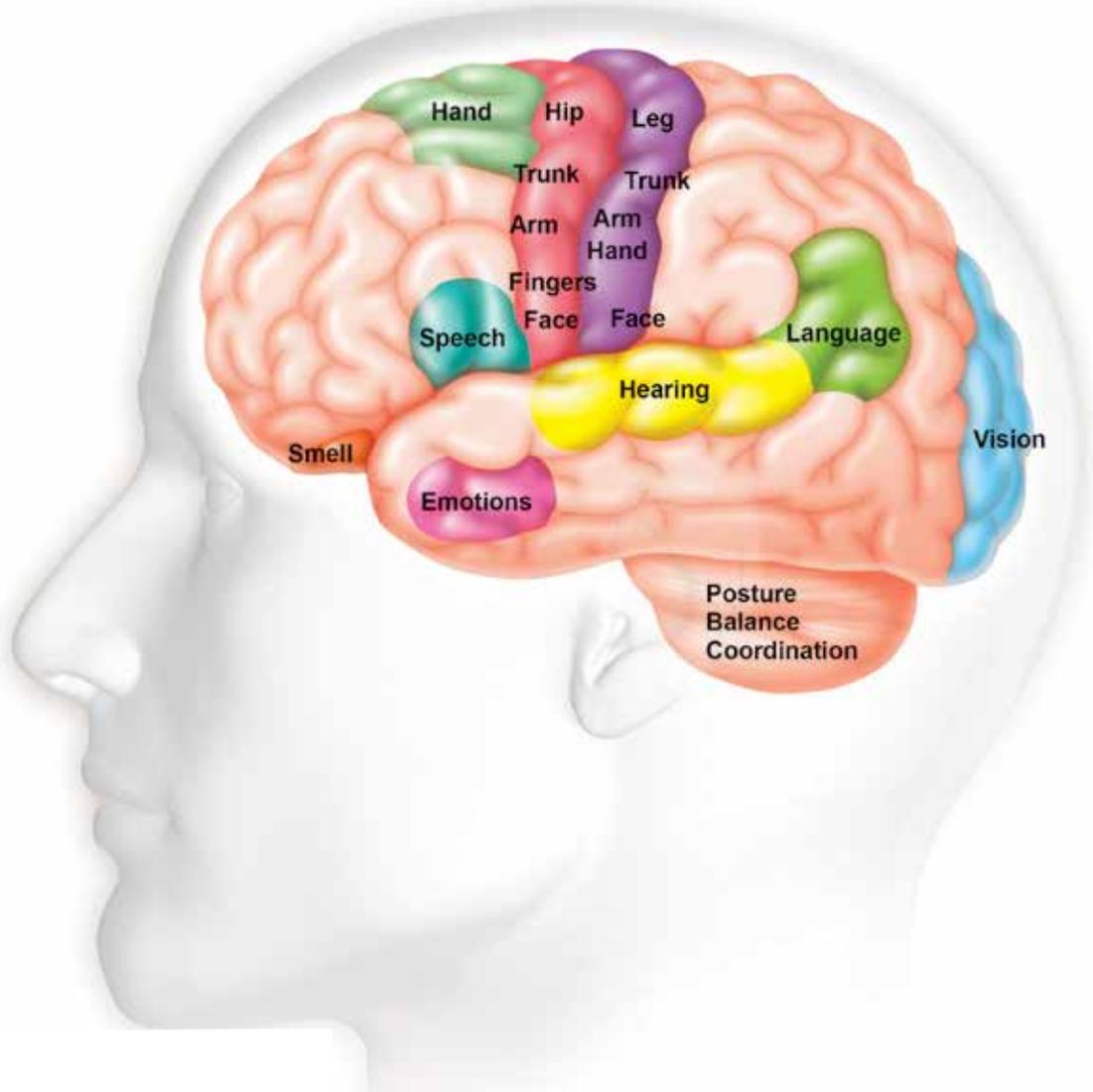
Community transportation

Transportation is available to drive people to and from physician appointments, grocery stores and social activities. Transportation may be by bus, taxi or specially equipped vans.

About the Brain

The brain is the control center for all the body's functions. These functions include thinking, speaking, moving and breathing. The hard skull protects the soft and spongy brain.

The Areas of the Brain



*Image courtesy of The National Stroke Association.
Also see illustration on page 8.*

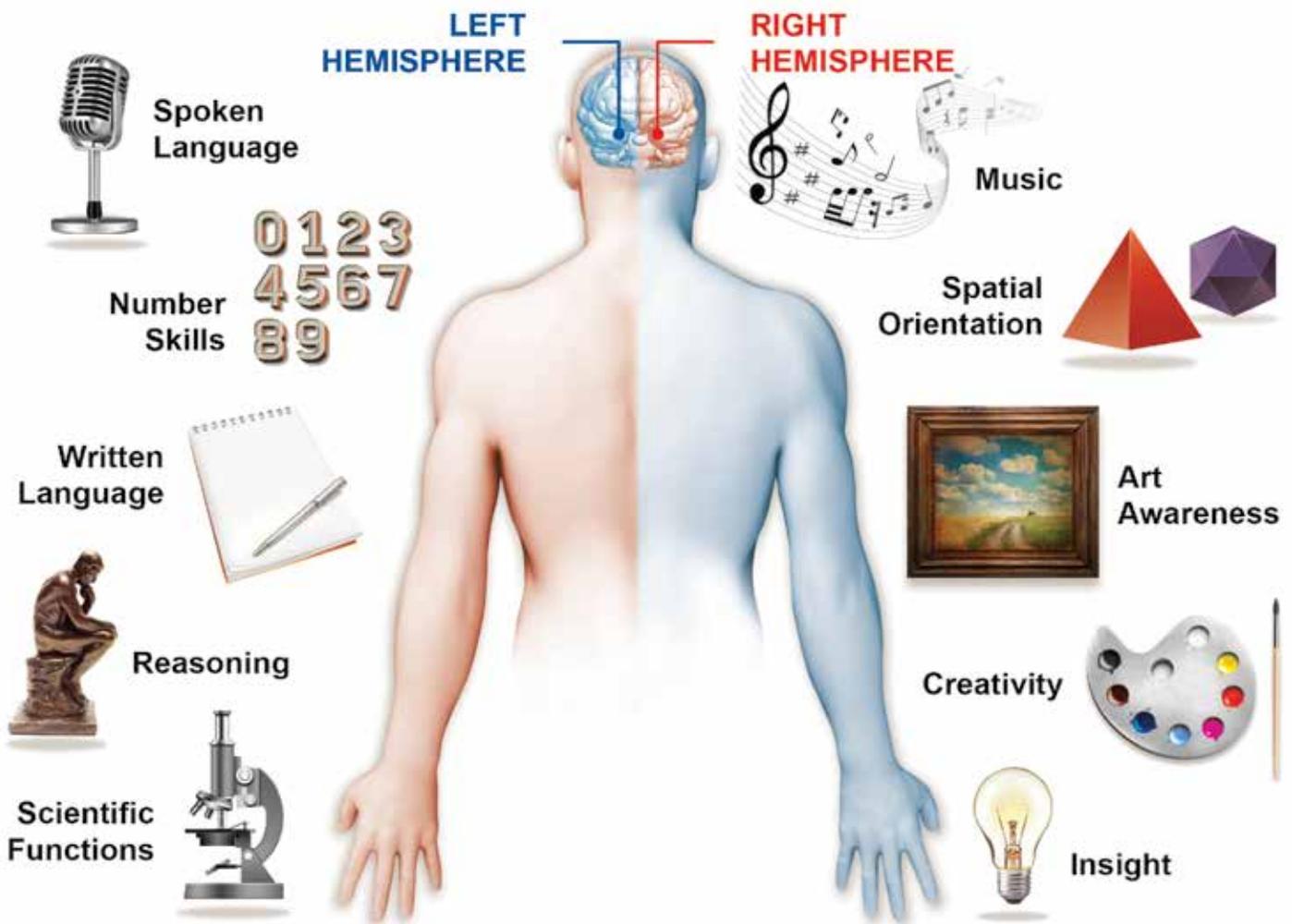


Image courtesy of The National Stroke Association

The cerebrum is the largest part of the brain. It is divided into sections, or lobes. Each lobe controls different body functions. The brain is also divided into two halves, or hemispheres. Typically, the left hemisphere controls speaking, writing, reading and math skills. The right hemisphere controls music, drawing and body awareness. The right side of the brain usually controls movement and feeling on the left side of the body, and the left side of the brain controls movement and feeling on the right side of the body. The frontal lobe is located just behind the forehead. It controls a person's emotions, thinking, motivation, self-control, use of words and body movements. The temporal lobe is located on the side of the head. It controls a person's hearing, memory, and understanding of written and spoken words,

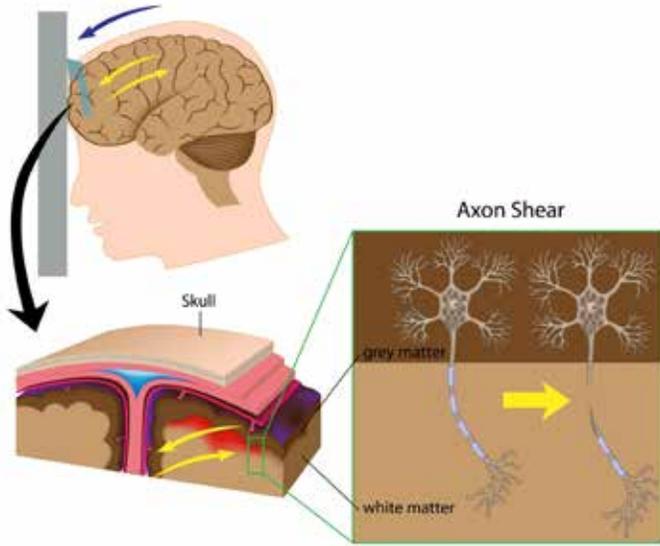
smell and taste. The parietal lobe is located on the top of the head behind the frontal lobe. It controls how a person senses touch, temperature and pain. It also controls reading and our ability to tell how far away objects are from us and from other objects as well as how we perceive the world. The cerebellum coordinates movement and balance. The brain stem controls basic body functions such as breathing, heart rate, alertness, balance and swallowing.

Effects on Thinking

Following a brain injury, a person will most likely experience cognitive changes — changes in his or her ability to think. These changes depend on where the brain damage occurred. An injury can limit a patient's ability to think, remember,

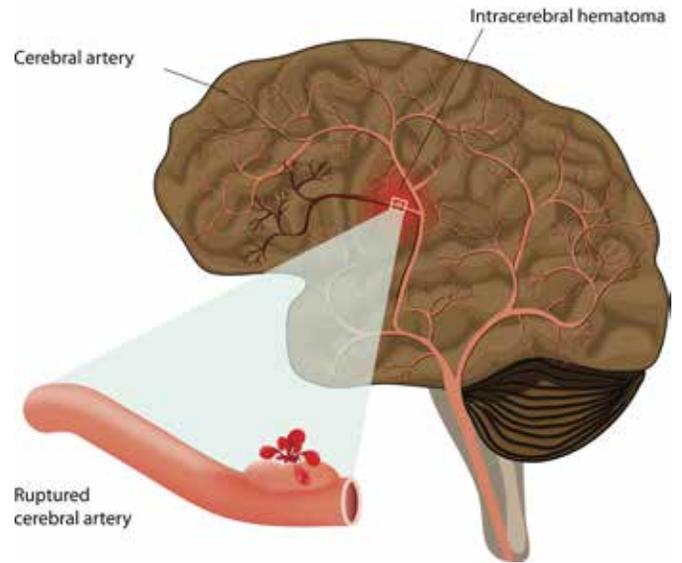
How Injury Happens: The Types of Damage

Diffuse axonal Injury/axon shearing:



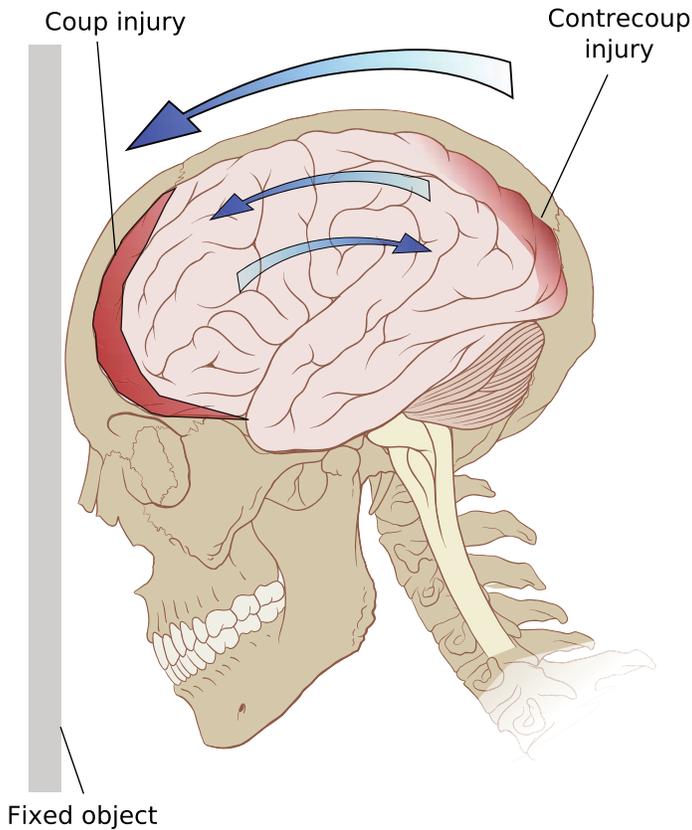
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Subdural/arachnoid hemorrhage:



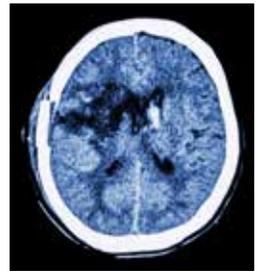
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Coup-countercoup:



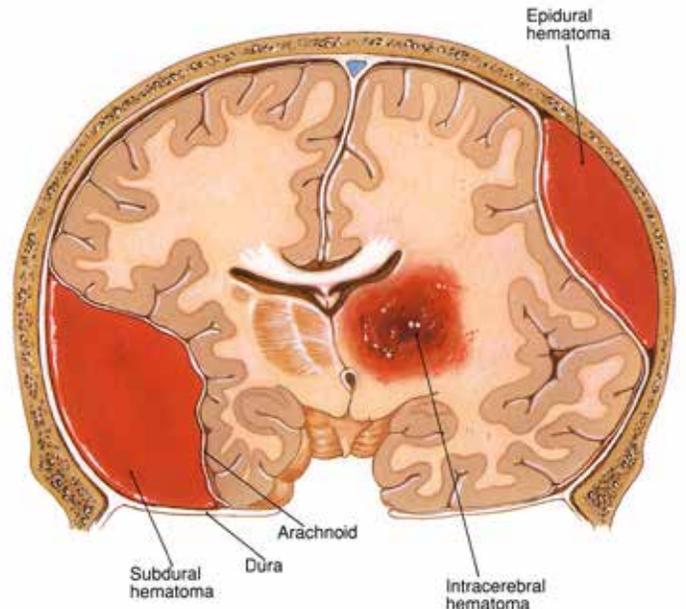
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Brain hemorrhage with edema (swelling) CT image:



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Hematoma:



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reason, judge and communicate. The rehab team may use special tests to measure the extent of the problems. They may also create a cognitive home program for the patients with suggestions for transitioning back home.

Levels of Recovery

Cone Health measures progress based on the eight levels of recovery as defined by the Rancho Los Amigos Rehabilitation Hospital in California. Recovery from a brain injury does typically follow a predictable pattern of expected recovery. How long a person will remain in each stage varies. Progress may slow down or even stop at any level. Patients with a brain injury may show signs of more than one level at the same time. These levels are only guidelines and may not apply to each person.

Below are some suggestions on how to help your loved one during each recovery level. Team members may also make further recommendations.

Rancho Levels: Description and Suggestions

Level 1: No response

At this stage, individuals are in a coma. They appear to be in a deep sleep. They will not respond to anything including pain, noise or people.

You can help:

Although it's not known how aware patients in a coma are of their surroundings, it is important to talk to them in a normal tone. For example, tell them who you are, the date, where they are and why they are in the hospital. Limit stimulation (such as the television, music and visitors).

Level 2: Generalized response

At this level, patients occasionally respond or react to noises, touch and people. The responses may be limited to slight body movements or sounds that may sound like groans. These responses are likely to be slow.

You can help:

- Show affection.
- Speak in a normal tone. Do not whisper or shout.
- Allow only one or two visitors at a time.
- Limit your interactions (touching and talking) to 15 minutes.
- Let only one person talk at a time. Speak slowly in short, simple sentences.

Level 3: Localized response

Individuals react more often to noises, touch and people. However, they still may not respond every time. Responses are more direct, such as turning their head toward a sound or focusing on an object. A person in level three may occasionally follow simple commands but need more time because their actions are slow. They may also react to discomfort or pain. A person in level three may also show signs of restlessness by moving around a great deal in the bed and fidgeting with tubes and lines.

You can help:

- Remember that patients at this level may not respond every time.
- Talk at eye level.
- Limit your interactions (touching and talking) to 15 minutes or less.
- Let only one person talk at a time. Speak slowly in short, simple sentences.
- Pause between sentences.
- Help them begin daily self-care activities, such as washing their face and brushing their hair.

- You will need to give plenty of help.
- Bring in familiar objects and photographs of family members and friends with names written on the back so the staff will know who is in the pictures.
- Each time you see the person, say who you are. Talk about the month, the year and any upcoming holidays.
- As they become more awake, ask them questions that have “yes” or “no” answers. Allow plenty of time for them to answer since their actions may be slow. Do not expect them to remember right away. Making demands will not make the brain heal faster.

Level 4: Confused – agitated

At this level, patients with a brain injury are confused, often showing strange behavior. They have a poor memory. As a result, they may make up stories, have a poor attention span and need a lot of help with simple tasks such as bathing, dressing and eating. They may show aggressive behavior such as hitting, biting and cursing. Restraints may be necessary to keep them and others around them safe. They may need a specialized bed called an enclosure bed to keep them safe. The physician may recommend medications to help decrease the agitation. Staff may assist the patient in walking around the unit to help reduce the agitation as well. They may show behaviors inappropriate to the situation such as taking off their clothes in public, use of foul language, and difficulty controlling and expressing their sexual feelings. Light, noise and touch may be difficult for them to handle, increasing the above behaviors.

You can help:

- Have them try simple and familiar tasks such as washing, dressing and eating. Success will

help them feel good about themselves and may improve their behavior.

- Talk to them about familiar things.
- Correct them matter-of-factly if they are wrong. Don’t argue. Change the subject if they continue to disagree.
- Limit visitors to one or two at a time.
- If they become upset, notify the staff. Visiting hours may be restricted if the person becomes too upset.

Level 5: Confused – inappropriate

In this stage, patients with a brain injury are beginning to make some sense of their environment. They recognize familiar people and carry on simple, short conversations. They can follow simple instructions most of the time. However, their attention span may be short. They may need to be reminded of the instruction or conversation topic. They may remember past events before the brain injury but may not remember what happened only minutes earlier or yesterday. Inappropriate behaviors seen in level four may also continue. They may be able to perform daily tasks such as eating or dressing. However, learning new information is difficult. They may also wander off, hoping to “go home.”

You can help:

- Keep visits short and brief but you are welcome to visit often.
- Introduce yourself when you greet your loved one.
- Go through family photo albums with your loved one.
- Try to come and visit at the same time every day.
- Frequently remind them of the day, time, place, situation, etc.
- Review information about family and friends.
- Review orientation information daily.
- If they are confused or incorrect, offer correct information. Don’t argue.

- Discuss injury-related problems honestly and matter-of-factly.
- If there are feelings of sadness, fearfulness or frustration, it's OK to talk about it.
- If they get stuck on one activity or topic, talk about it and then help them move on to another topic.
- Memory notebooks are often used to keep track of daily activities.
- Use picture flash cards with your loved one.
- Speak slowly.
- Speak in simple sentences.
- Ask yes or no questions.
- Give your loved one extra time to understand and respond.
- Help your loved one stay on topic in conversation. It can be common to get stuck on one idea.
- Don't talk down to your loved one as if they were a young child.
- Don't ignore your loved one when they are trying to express themselves.
- It may be helpful to keep a schedule or have a daily routine.
- Memory notebooks may be helpful at this stage.
- Use a journal to record what you talked to your loved one about and any decisions made.
- Find out what your loved one is working on in therapy and ask them to try to demonstrate the task.
- Allow for extra time for them to process information.
- Change topics of conversation or tasks if your loved one gets frustrated or confused.
- Try to come and visit at the same time every day.
- Review orientation information daily.
- Use a journal to record what you talked to your loved one about and any decisions.
- Create a meaningful environment for your loved one. Discuss family, friends, pets and interests. Bring in items from homes that are meaningful for the person. This may include:
 - Photos of family and friends
 - Favorite clothes
 - Grooming items
 - Posters
 - Music
 - Knickknacks

Level 6: Confused – appropriate

At this level, individuals are more aware of time and place. They are able to pay attention longer and follow simple directions. They now remember how to do daily activities such as eating, bathing and dressing. However, they may have a hard time adjusting to change. Memory of the past (before the brain injury) continues to improve, but memory of recent events may be poor. Learning new information is still difficult. They may not understand that their brain injury has changed what they are able to do. This may make them feel ready to go to work or drive a car before they are able.

You can help:

- Allow them to do more for themselves. Be there for safety.

Level 7: Automatic – appropriate

In a familiar environment, patients with a brain injury are able to perform daily activities with little or no confusion. Awareness of other people and surroundings improves, but they may still show poor judgment and memory. They now have the ability to learn new information but at a slower than normal speed. They show more interest in recreation and social activities. The ability to solve everyday problems and handle everyday situations may still be difficult. They cannot plan (realistically) for the future. Some supervision is required to ensure their safety.

You can help:

- Encourage independence but maintain supervision.
- Wait patiently for answers to questions. They may be slow in responding.
- Encourage active problem solving with everyday activities.
- Guide your loved one with questions rather than just telling them how.
- Act as a sounding board rather than giving the answer.
- Be watchful for signs of depression.
- Reinforce any aids or suggestions the therapy team may make.

Level 8: Purposeful — appropriate

Memory about the past is good, but memory about recent events (an hour or a day ago) may still be poor. They can learn new information but not as quickly as before. These memory problems may be permanent. If physically able, they may be independent at home and in the community. They may not have good judgment in emergencies or unusual situations. These problems may seem mild but may still be significant enough to prevent returning to hobbies. Counseling may be helpful. It is important to have support from family and friends.

You can help:

- Encourage patients at this level to be as independent as possible at home, school and work.
- Vocational rehabilitation may help with job training.

Effects on Senses

Sometimes an injury damages the part of the brain that controls balance, sight or hearing.

Hearing and vision

A patient may be sensitive to light or have

double vision. In these cases the therapist will continually assess the patient's ability to see and may refer them to a eye doctor or a neuro-ophthamologist to suggest sunglasses or special lenses. Some patients lose hearing or vision on one side. They can be taught strategies to accommodate.

You can help:

- Limit distractions (i.e., turning off TV, close the door).
- Adjust the lighting in the room to your loved one's comfort level.
- Ask the rehab team about your loved one's abilities. From their therapist, learn how to help the patient.
- Go slowly.

Effects on Physical Abilities

Injury to the brain can affect how the patient can move their body. As a result of injury, patients may have little or no control over their bodies. Muscles may become weak, tighten or twitch. Therapy can help patients relearn how to move and gain strength. Improving posture and the ability to sit is an early goal of therapy. Range of Motion exercises can also help to improve movement and help prepare the patient to be able to perform a task. Sometimes patients may wear a splint or brace to hold a joint in a proper position.

Regaining balance and depth perception are common problems. A therapist may help a patient sit up, stand or walk. They may practice walking on a level surface and then progress to uneven surfaces and stairs. Some patients may need to use a wheelchair, walker or cane.

You can help:

- Show interest in your loved one's recovery.
- Ask how you can be most helpful.
- Remind your loved one to use good posture.
- Make sure an affected arm or leg is supported in a proper position.
- Help your loved one to carry out their prescribed exercise program.
- Help make sure your loved one is following their splint schedule.

Glossary of Common Brain Injury Terms

ADLs: (Activities of Daily Living): Everyday activities such as bathing, dressing and housekeeping.

Agitated: A stage of brain recovery when patients may be easily upset or angered. They may hit, kick or bite.

Ambulate (gait): To walk.

Anoxia (hypoxia): Brain damage caused by no oxygen or too little oxygen getting to the brain.

Anti-convulsant: A type of medicine used to prevent seizures.

Aphasia: Difficulty understanding what others are saying and using words or sentences to talk to others.

Apraxia: Difficulty planning movements needed to start and/or finish a task (speaking, combing hair, shaving, brushing teeth). The signal from the brain does not get to the body correctly.

Aspiration: When food or liquids enter the lungs while eating or drinking. This can lead to pneumonia.

Ataxia: When muscles are uncoordinated, resulting in jerky and uncontrolled movements. This can make everyday activities such as walking, eating and dressing difficult.

Behavior management: A plan developed by the rehab team to help deal with a person's behavioral problems which may affect safe and successful treatment.

Bilateral: Both sides of the body (right and left).

Catheter: A tube used to drain urine from the bladder.

Clonus: Uncontrollable jerking movement of a muscle, often seen at the ankle or wrist. This most often occurs when the ankle is stretched to put on a sock or shoe.

Cognition: Thinking skills that include our ability to pay attention, remember, solve problems, reason and make decisions.

Coma: A state of unconsciousness.

Community re-entry: A type of therapy designed to retrain the person how to function outside of the hospital. Various activities and individual skills are addressed.

Contracture: Stiffness in the joint due to muscle and tissue changes, making movement difficult.

Craniotomy: Cutting through an area of the skull to expose the brain for surgery.

CAT scan (Computerized Axial Tomography): A series of X-rays to show all structures in the brain and detect obvious changes.

Diplopia (double vision): Seeing two images instead of one. This occurs when the eyes are not in focus with each other.

Dysarthria: Difficulty speaking due to weakness of the face and mouth muscles. A person's talking may be slower or hard to understand. The voice may be softer. Drooling may occur.

Dysphagia: Difficulty swallowing due to poor control of the muscles of the lips, mouth and throat.

Edema: Swelling caused by fluid buildup. This is most commonly found in the arms, legs, hands, feet and brain.

Emotional lability: Quick changes in emotions/moods (laughing, crying, anger) without reason.

Extension: Straightening of a joint such as the elbow.

Flaccid: When muscles don't work causing an arm or leg to be floppy.

Flexion: Bending of a joint such as the elbow.

Hematoma: When an area of the body fills with blood due to a broken blood vessel (bruise).

Hemorrhage: Bleeding.

Impulsive: Moving and doing things quickly without thinking.

Incontinent: When a person is unable to control bowels and/or bladder.

ICP bolt (Intracranial Pressure Bolt): A small metal bolt placed through the skull by a physician. It rests on the brain and is connected to a machine that checks brain pressure.

Judgment: Good sense. A person with good judgment is able to make safe choices.

Memory: The ability to remember.

Short-term memory: Remembering from 30 seconds to a few minutes.

Recent recall: Remembering from a few minutes to 24 hours.

Long-term memory: Remembering from 24 hours to many years.

MRI (Magnetic Resonance Imaging): A test which takes pictures of the brain. An MRI usually gives more detail than a CAT scan.

Neglect (hemi-inattention): When a person ignores or pays little attention to one side of his/her body. For example, a person may forget to bathe or dress one side of his/her body.

NG tube (Nasogastric Tube): A tube placed in the nose to allow food to go to the stomach. The tube may also be used to remove stomach contents.

NPO: A person who is NPO cannot have any liquids or food by mouth.

Orientation: Awareness of what is happening. Knowing the date, time and place.

Orthotics: Braces or splints.

Paralysis: Loss of movement.

Paresis: Weakness. Hemiparesis: Weakness of one side of the body. Paraparesis: Weakness of the legs. Quadriparesis: Weakness of the arms and legs.

PEG (Percutaneous Endoscopic Gastrostomy):

A feeding tube surgically placed directly into the stomach.

Perseveration: Doing the same thing again and again (talking or moving).

Pre-morbid: Before the disease or injury.

Pressure ulcer (bed sore): A sore on the skin caused by lying or sitting for long periods of time without moving. Common areas are the heels, buttocks and back of head.

Prone: Lying on the stomach, face down.

Restless: The need to move. The person is not able to stay still and may move around a lot.

ROM (Range of Motion): The movement of a joint such as the elbow.

PROM (Passive Range of Motion): Someone else moves the body part.

AROM (Active Range of Motion): A person uses his/her muscles to move the body part.

Seizures: Sudden uncontrollable jerking of body parts which can happen after a brain injury. Medications are usually given to prevent this.

Sensation: The ability to experience feelings of touch, temperature, pressure and pain.

Spasticity: Tightness in muscles caused by a brain injury.

Supine: Lying on back, face up.

Synergy: A movement where muscles of the arm or leg work together instead of separately.

For example, a person's shoulder and elbow may move when the intent is to move only the hand.

Tracheostomy (trach): Opening made in the throat to help a person breathe easier.

Transfer: Moving a person from one place to another such as wheelchair to bed, wheelchair to toilet or wheelchair to car, etc.

Visual field deficit: Loss of sight to the left or right because of brain damage.

Visual perception: The brain's ability to interpret what the person is seeing.

Void: To urinate or empty the bladder.

Resource Directory And Support Groups

Greensboro, NC

Greensboro Brain Injury Support Group

Second Tuesday of each month, 7-8:30 p.m.

Meeting Location:

The Moses H. Cone Memorial Hospital

Department 4 West, Rehabilitation Center Dayroom

1121 N. Church Street

Greensboro, NC 27401

Lucy Hoyle

336-832-7450, 336-319-2214 (pager)

lucy.hoyle@conehealth.com

High Point, NC

Brain Injury Alliance of High Point

First Tuesday of each month, 7 p.m.

Meeting Location: Millis Health Education Center

600 N. Elm Street

High Point, NC 27262

Kittie Barringer- 336-713-8582

Statesville, NC

Surviving Angels

Third Tuesday of each month

7-8:30 p.m.

Meeting Location: Fairfield Inn (Exit 50 off I-77)

Kim Munro

704-528-0399, kimboom@bellsouth.net

184 Autumn Leaf Road

Troutman, NC 28166

Winston-Salem, NC

Back on Track

First or second Monday each month

Robin Alexander, 336-718-3407

REAlexander@novanthealth.org

Lilana Hines, 336-718-5736

Tory Walker, 336-718-1610

3333 Silas Creek Parkway

Winston-Salem, NC 27103

Learning Services

Locations in Raleigh, Durham and Creedmoor.

Services available include: residential rehab, therapeutic day activities and group home living, neurobehavioral rehabilitation.

LSNI - East

800 Recovery Drive

Creedmoor, NC 27522

Contact: Brian Preston, Regional Program Director

888-419-9955

More information

Brain Injury Association

1176 Massachusetts Ave., N.W., Suite 100

Washington, DC

800-444-6443

www.biausa.org - The Brain Injury Association of America, Inc.

Group Homes/day Programs

Group homes are usually run by a corporation.

Adults live in small, family-like communities, which may be limited by age, gender or disability.

Group homes in North Carolina are usually licensed by the NC Division of Facility Services.

Huntersville, NC

Hinds Feet Farm

14625 Black Farms Road

Huntersville, NC 28070

704-992-1424

www.hindsfeetfarm.org

William DeGrauw, Day Program Director

Day Programs and Residential Programs

Lutheran Family Services

336-275-7295

1600 Wendover Avenue

Fax: 336-691-0068

Greensboro, NC 27115

www.lfscarolinas.org

Peacehaven Home

336-659-1247

1007 N. Peacehaven Road

Fax: 336-659-0637

Brain Injury Association of North Carolina

P.O. Box. 748

133 Fayetteville Street Mall, Suite 310

Raleigh, NC 27602

800-377-1464 or 919-833-9634

www.BIANC.net

Offices also in Greenville, Charlotte and Asheville

State Department of Vocational Rehab

www.ncdhhs.gov/divisions/dvrs



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