



Proven Solutions for Cost Containment

The Trauma of Severe Injuries



Understanding the Scope Helps to Determine the Treatment

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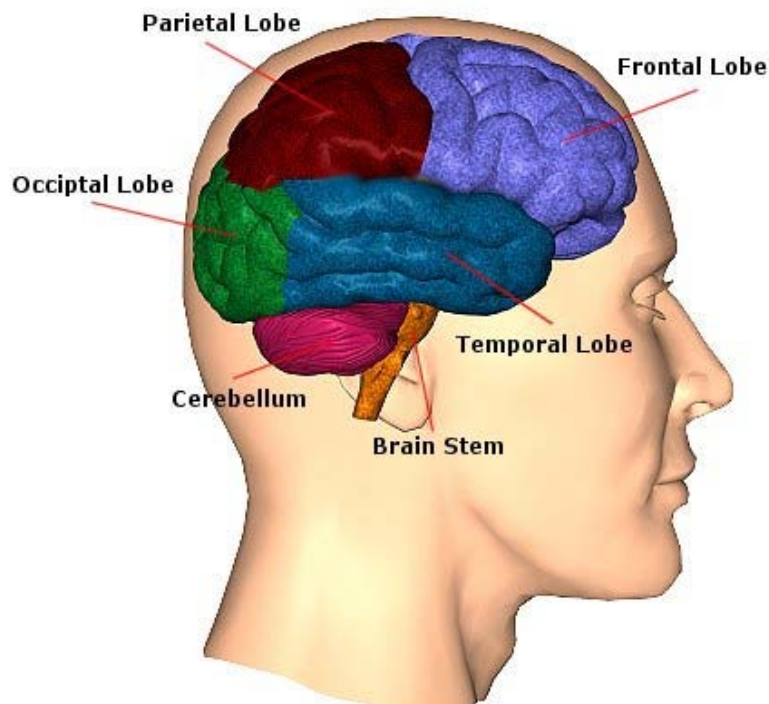
Pharmacy

**Medical Services
and Equipment**

Settlement Solutions

The Brain

Brain Terminology



The **cerebellum** is involved in the coordination of voluntary motor movement, balance and equilibrium, and muscle tone. It is located just above the brain stem.

The **cerebrum**, or cortex, is the largest part of the human brain and is associated with higher brain function, such as thought and action.

The **cerebrum** is divided into **four sections**, called “**lobes**” — the frontal lobe, parietal lobe, occipital lobe, and temporal lobe.

Brain Injuries

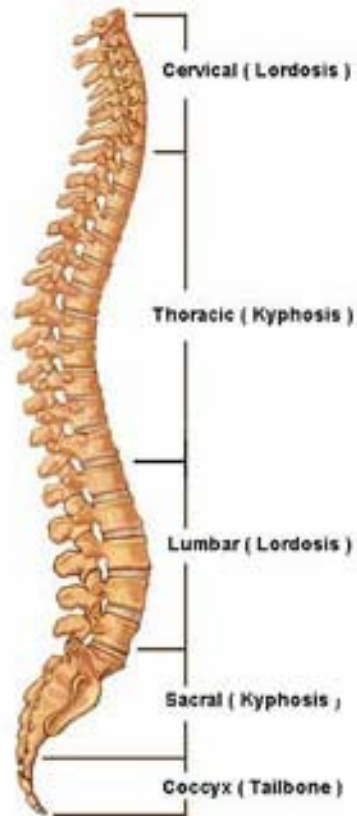
Acquired or Traumatic Brain Injury (ABI/TBI)

The severity of a brain injury may reduce bodily functions similar to what may be experienced by a spinal cord injury. This is because the brain is the body's master computer, governing all human capability and function. Interventions and outcomes for these patients are developed on an individual basis. Functional impairments are determined as a result of the TBI.

The Spinal Column

Spinal Column Terminology

Lateral (Side) Spinal Column



- **Cervical (C)** – of or relating to the neck (seven bones)
- **Thoracic (T)** – the part of the spine between the neck and the abdomen (12 bones)
- **Lumbar (L)** – the part of the spine between the thoracic vertebrae and sacrum (five bones)
- **Sacrum (S)** – the large irregular triangular shaped bone below the lumbar region (five fused bones)
- **Coccyx** – a small bone that articulates with the sacrum (usually consists of four fused vertebrae)
- **Quadriplegia (or Tetraplegia)** – paralysis from the neck to the toes
- **Paraplegia** – paralysis from mid-chest to the toes
- **Hemiplegic** – paralysis of one side of the body

Spinal Cord Injuries

Spinal Cord Injury – Levels Cervical 1 – 3 and C4

- **C1 – C3** injuries occur high in the spinal cord, resulting in paralysis from the neck down to the toes. Individuals with this injury require extensive assistance around the clock for almost all of their mobility and self-care needs. They are likely to require long-term ventilatory support and will need a power wheelchair equipped with pneumatic controls (chin, sip and puff) for propulsion.
- **C4** is the level where nerves run to the diaphragm—the main muscle that allows us to breathe—which means a C4 injury includes special concerns. C4-injured individuals can be weaned off a ventilator but are prone to respiratory complications or infections as a result of paralysis to the muscles important for breathing and coughing. Individuals with C4 injuries typically have no control of the wrist or hand, but do have some control in the shoulder and bicep areas.

Spinal Cord Injuries (cont.)

Spinal Cord Injury – Levels Cervical 5 – 6

- **C5 – C6** injured individuals have functional use of elbow flexion. With the help of specialized assistive devices (such as wrist or hand orthotics) these people can achieve independence in feeding, grooming and can assist with upper-extremity dressing and bed mobility. Survivors with C5 injuries can lead very fulfilling lives.
- **C6** is the highest level at which patients with a complete injury can function independently in the activities previously mentioned with some assistance. Intermittent catheterization for bladder care may be possible with set-up and assistive devices, although it is not common and is technically more difficult for women than for men.

Spinal Cord Injuries (cont.)

Spinal Cord Injury – Levels Cervical 7 – 8

- **C7 – C8** injured individuals have the functional ability to extend their elbow, which greatly enhances their mobility and self-care skills. **C7** is usually the highest level at which injured individuals can have an injury and live independently. They may achieve independence in feeding, upper-extremity dressing, bathing, bed mobility, transfers and manual wheelchair propulsion, although they may require assistance with moving across uneven surfaces). **C8** individuals can achieve independence in bladder and bowel care, feeding, grooming, upper- and lower-extremity dressing, bathing, bed-mobility transfers, manual wheelchair propulsion. Other skills can be achieved such as typing, writing, answering phones, and using computers. With adapted van and hand controls, these individuals can drive independently.

Spinal Cord Injuries (cont.)

Spinal Cord Injury – Thoracic (T1 – 12) and Lumbar Paraplegia

- **Thoracic (T1 – 12)** and lumbar paraplegia individuals can achieve functional independence in self-care, bladder and bowel skills, and mobility with a wheelchair. By using an adapted van/car with hand controls, these individuals can drive independently. Individuals with lumbar paraplegia may be able to stand and walk with the use of orthotics.

Inactivity from Severe Injuries Creates Problems

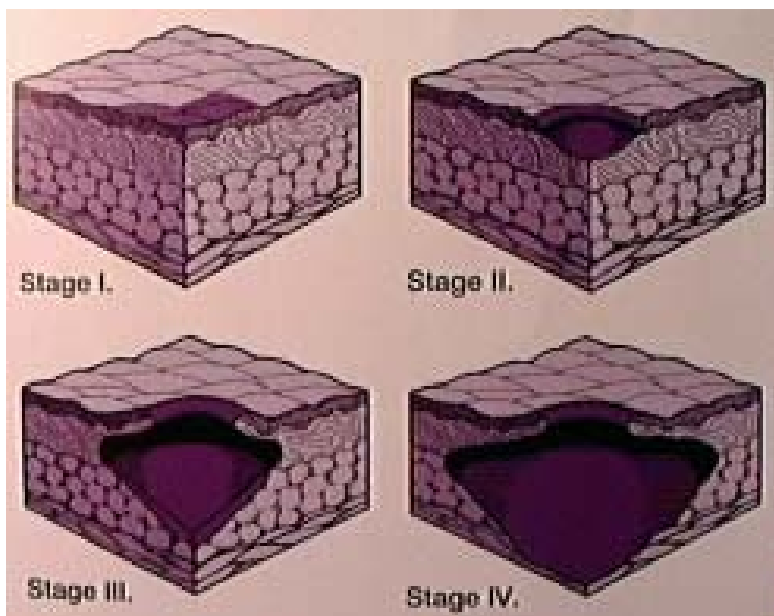
Pressure Ulcers

Our skin represents the largest organ of our body and functions to protect and regulate many body functions. It is the first line of defense against disease and injury. Skin breakdown forms when the blood supply to the skin is compromised. This loss of blood flow is usually due to externally applied pressure. As it relates to the catastrophic and chronically ill, an ulcer can begin to form with as little pressure as it takes to place a stamp on an envelope. Other factors are immobility, decrease in body temperature, malnutrition, poor bladder and bowel control, too much or too little perspiration, loss of sensation, spasticity, rapid loss of collagen and contractures. If not prevented, pressure ulcers send medical costs skyrocketing and the individual's quality of life plummeting.

Pressure Ulcers

Pressure Ulcer Terminology

Pressure Ulcer Stages



- A pressure ulcer is an area of skin that breaks down when you stay in one position for too long without shifting your weight. This often happens if you use a wheelchair or are bedridden, even for a short period of time (for example, after surgery or an injury). The constant pressure against the skin reduces the blood supply to that area, and the affected tissue dies.
- A pressure ulcer starts as reddened skin (Stage I) but gets progressively worse, forming a blister (Stage II), then an open sore (Stage III), and finally a crater (Stage IV). The most common places for pressure ulcers are over bony prominences (bones close to the skin) like the elbow, heels, hips, ankles, shoulders, back, and the back of the head.

Amputations

Amputations are a surgical or traumatic separation of a body part. Crush, guillotine and avulsion mechanisms are the three most common forms of traumatic amputation. A successful outcome following a traumatic amputation depends on cause, severity, length of time the limb is separated from blood supply, nerve involvement and the patient's pre-existing health status. Complications can occur during the healing process delaying prosthetic placement. Length of hospitalization is usually 3 to 15 days and the intermediate recovery phase is approximately 4 to 6 months. The average life of a prosthetic is 3 to 5 years depending on the patient's activity level.

Burns

Burns are considered a break in the skin and the risk of infection exists both at the sight of the injury and potentially throughout the body. Burns are not static in nature and can evolve into deeper skin destruction, i.e., a second-degree burn can evolve into a third-degree burn. Our skin regulates our temperature, provides sensory stimulation, regulates fluids through excretion and absorption and is necessary for the synthesis of Vitamin D. If enough skin area is injured, the ability to maintain that control can be lost.