



INOVA REGIONAL TRAUMA CENTER

# Trauma Patient Handbook



INOVA<sup>®</sup> REGIONAL  
TRAUMA CENTER

## **Purpose**

This handbook is designed to provide information about a patient's care while at Inova Fairfax Hospital and Inova Fairfax Hospital for Children. Additionally, there is room in this booklet for a patient and his/her family to write down questions for medical staff or take notes regarding treatment.



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## Welcome to Inova Fairfax Hospital, Inova Fairfax Hospital for Children and the Inova Regional Trauma Center

Trauma is an unexpected occurrence. Hardly anyone thinks, “I’m going to get hurt today.” A sudden injury, the accompanying hospitalization and resulting recovery can be an anxiety-provoking, frightening and frustrating time. You may feel confused by some things you hear. You might not understand some words that people use. This experience of advanced medical care may even be a whole new world for you.

This handbook is designed specifically for trauma patients, family members and loved ones to provide background information about the Inova Regional Trauma Center, a basic explanation of some of the most common types of injuries and their treatments, and the overall process for patient care. Inside, you will find answers to some of your questions about a variety of important topics, from where to park to a simplified explanation of a coup/contre-coup injury or intracerebral hematoma.

There is also a section that includes feedback from former trauma patients who share a little of what they have learned during their time with us. In the back of the handbook, you will find room to make notes about ongoing treatment or jot down questions that you may have for your medical team.

You will have many questions during your time with us. Some of the answers may be in this handbook; some may not. Remember that the staff at Inova Fairfax Hospital and Inova Fairfax Hospital for Children is here to help. Do not be afraid to ask any questions or express any concerns you have. We look forward to your recovery!

### Parking

Patient and visitor parking areas are located near the gray and blue hospital entrances and are designated by the color of the nearest entrance. Parking tickets are also color-coded: blue for the blue garage and white for the gray patient and visitor parking lot. A flat fee of \$5 is charged for parking in either the garage or lot. When lots are full, valet parking also is available at no additional charge.

Special discounted parking permits are available to patients’ immediate family members. These permits provide unlimited parking on seven consecutive days for a set fee. You may purchase these permits from the parking attendants. Senior citizens (60 and older) who show ID to the garage attendant when leaving the garage pay a reduced parking fee. Handicapped persons may park at a reduced cost in designated areas.

### Inova Regional Trauma Center

Inova Fairfax Hospital, part of Inova Health System, has been providing superior care since 1961 to Northern Virginia and the surrounding region. Inova Regional Trauma Center was designated in 1983 by the Commonwealth of Virginia as the only Level I trauma center in Northern Virginia. As a Level I trauma center, the Inova Regional Trauma Center has around-the-clock capability to provide immediate, state-of-the-art, all-inclusive care by a team of trauma experts to the most severely injured patients. The Center is committed to trauma research, education, prevention and outreach activities. It is the only trauma center in Virginia certified by the American College of Surgeons Committee on Trauma, which indicates the achievement of meeting the highest standards of care. The Inova Regional Trauma Center is a comprehensive trauma center, offering highly specialized care from pre-hospital through rehabilitation to approximately 3,000 pediatric and adult patients annually. Access to a trauma center has been strongly associated with improved survival after injury.

## 2 The Trauma Flow



### Scene

When trauma occurs, local county emergency medical system (EMS) personnel respond immediately with highly trained professionals and/or volunteers. In Fairfax County, basic life support attempts to arrive within four to six minutes, and advance life support's goal for arrival is within four to seven minutes of a 911 call. Trauma patients are brought to the Inova Regional Trauma Center by ground or air, depending on the severity of their injuries, travel distance and traffic conditions. The Fairfax County Police, Inova AirCare or MedStar helicopters fly critically injured patients to the trauma center.

### Emergency Department (ED)

When a patient arrives at the trauma center, a team of trauma and emergency responders is standing by. Trauma specialists are on-call 24 hours a day, seven days a week, to receive trauma patients in two fully equipped trauma bays, (increasing to five once the new ED construction is complete in 2006). Immediately, an initial assessment is performed, identifying and treating life-threatening injuries. Board-certified specialty physicians are on-call and available at any time for consultation and treatment.

*The Inova Regional Trauma Center responds to each patient based on the severity of the injury. There are two distinct levels that are identified before the patient arrives at the hospital:*

*Code Blue* patients are severely injured with unstable vital signs. EMS personnel notify trauma responders at the hospital via pager and a Code Blue team assembles immediately to receive the patient. The team includes a trauma surgeon, emergency medicine physician, senior surgical resident, trauma nurses and other care providers.

*Code Yellow* patients are seriously injured but have stable vital signs. Team composition and response are modified slightly for these patients.

### Surgical Care

Many trauma patients require surgery. The operating room suite consists of more than 30 rooms staffed by an expertly trained multidisciplinary team that uses the latest surgical technologies. Board-certified surgeons in all specialties are available and can provide simultaneous multi-specialty approaches to optimize patient outcomes.

### How is the family taken care of?

When the family members of a trauma patient arrive at the Emergency Department (ED), they are taken to see the patient and discuss the medical situation with a physician as soon as possible. A social worker is always available to support families and facilitate this process. If the patient is having a computed tomography (CT) scan or surgery, the social worker or ED staff will take the family to the appropriate waiting area until it is complete.

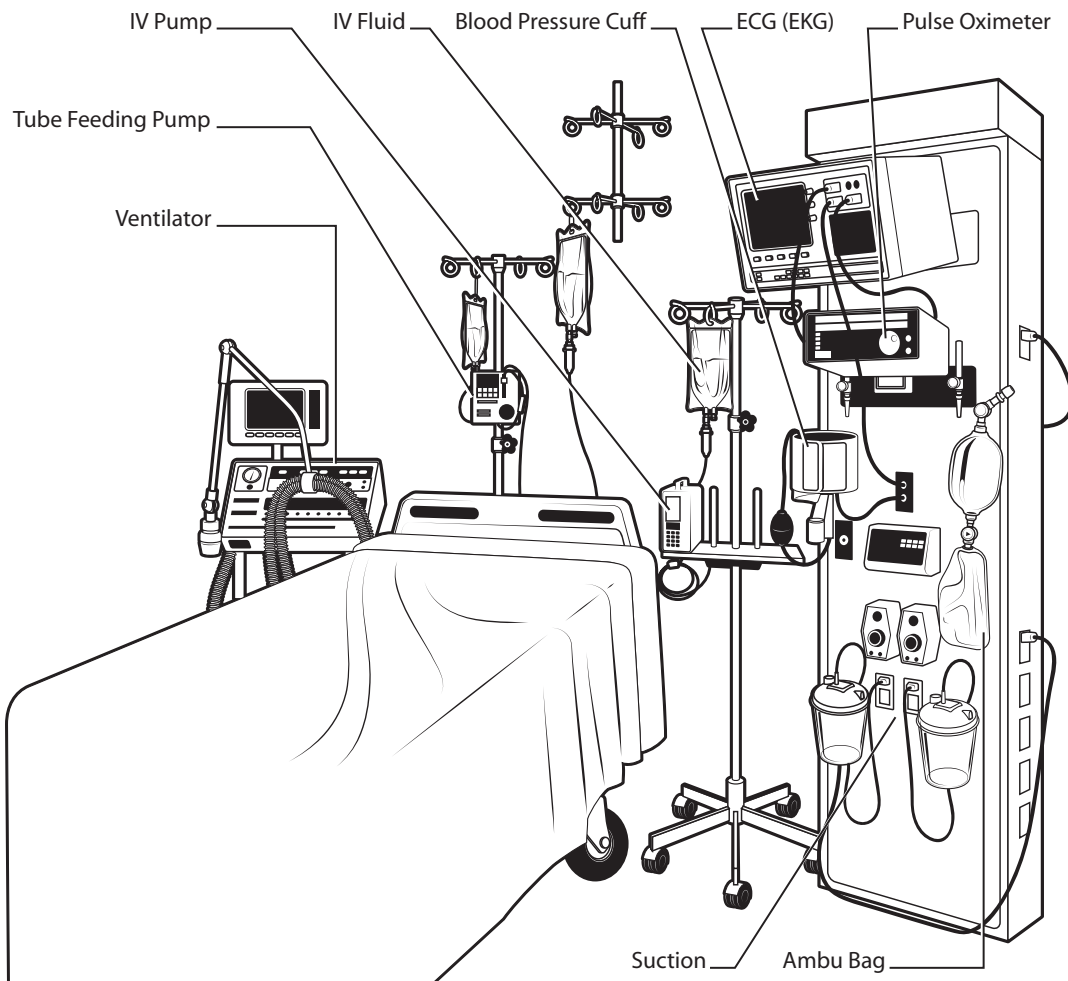


#### Emergency Department (ED)

Trauma patients are transported to the Emergency Department at Inova Fairfax Hospital and Inova Fairfax Hospital for Children by a medical helicopter or ground ambulance. During the transport, the rescue crew is in radio contact with the hospital's communications center to relay information about the patient's injuries and medical condition. The communications center staff alerts key medical personnel so they can prepare for the patient's arrival and decide how to best evaluate and treat injuries. The ED has specially equipped treatment rooms (called trauma bays) that are used specifically for trauma patients.

#### Intensive Care Unit (ICU)

Patients in the trauma/neuroscience intensive care unit need the specialized care provided by intensive care nurses and doctors. These patients are still in critical condition and require continuous monitoring. Each nurse in the ICU has only one or two patients. There is a lot of unfamiliar equipment in this room, and the diagram below helps to explain what each device is for.



## **Intermediate Care Unit (IMC)**

As patients in the ICU improve, they are often transferred to the IMC. Patients may also go straight from the ED to IMC if they are severely injured, but not as unstable as to require treatment in the ICU. These patients are more stable than those in the ICU and require less monitoring, but are not independent or stable enough to move to a regular nursing unit. Nurses in the IMC may have three patients.

## **Medical and Surgical Care Units**

Patients with less critical injuries and those who no longer require the monitoring levels found in ICU and IMC are admitted to a medical or surgical care unit. On these floors, the nurses may have six patients each. There are three general units that admit trauma patients.

### *Orthopedic Unit*

The Orthopedic Unit is located in the Tower building on the sixth floor. These patients primarily have broken bones.

### *Neuroscience Unit*

The Neuroscience Unit is located in the Tower building on the third floor. These patients typically have suffered some sort of brain or spinal cord injury.

### *Surgical Unit*

The Surgical Unit is located in the Tower building on the seventh floor. These patients primarily have internal injuries that may or may not have required surgery.

## **Pediatric Intensive Care Unit (PICU)**

The PICU at Inova Fairfax Hospital for Children is the only such unit in Northern Virginia. It provides intensive care for children, from birth to age 18, with life-threatening injuries, as well as post-operative care for patients recovering from some surgical procedures. Like the ICU, the PICU is staffed 24 hours a day by a multidisciplinary team of pediatric critical care specialists.

## 4 Medical Professionals



### Case Manager

Case managers are primarily nurses who work with your insurance company to ensure appropriate management of your benefits. Additionally, case managers will assist with your discharge plans to make certain you have what you need to continue your recovery.

Most case managers at Inova Fairfax Hospital and Inova Fairfax Hospital for Children are registered nurses (RN). However, you may have a case manager who has a Masters of Social Work (MSW).

### Clinical Nurse Specialist

A clinical nurse specialist is a master's-prepared registered nurse with extensive expertise in trauma care who monitors the patient's plan of care. One of his/her major roles is to act as a liaison between the patient, family and the various professional disciplines involved in the patient's care.

### Clinical Technician

A clinical technician assists the nurse with a patient's care. A clinical tech has advanced technical skills and may start an IV, draw blood, or insert or remove a foley catheter. Additionally, they may help get the patient out of bed or help with feeding. Clinical technicians function under the direction of a nurse. To be a clinical tech, one must have a high school level education with advanced courses in basic patient care.

### Neurosurgeon

Neurosurgeons are physicians specially trained in surgery for the brain or spinal cord. All neurosurgeons are physicians with seven years of specialized training (residency) in brain and spinal cord surgery.

### Nurse

The patient's nurse communicates with the physicians and other medical care providers regarding a patient's care. Nurses at Inova Fairfax Hospital and Inova Fairfax Hospital for Children are either registered nurses (RN) or licensed practical nurses (LPN). RNs have anywhere from two to four years of educational experience and are state licensed. LPNs are also state licensed.

### Nurse Practitioner

A nurse practitioner is a nurse with advanced training at the master's level who manages patients in collaboration with a physician. The trauma nurse practitioner manages acutely injured patients by conducting comprehensive physical examinations, ordering and interpreting diagnostic tests, prescribing medications and other therapies, and making referrals to other specialists all in collaboration with a trauma surgeon.

### Occupational Therapist

An occupational therapist helps the patient regain his or her ability to perform activities of daily living (getting out of bed, eating, dressing, toileting, bathing, etc). Occupational therapists at Inova Fairfax Hospital and Inova Fairfax Hospital for Children must have a bachelor's degree.

### Orthopedic Surgeon

Orthopedic surgeons are physicians specially trained in surgery to repair broken bones. All orthopedic surgeons are physicians with five to six years of specialized training (residency) in repairing broken bones.

## **Orthopedic Technician**

An orthopedic technician is responsible for casting broken bones, setting up and maintaining traction, helping in the Emergency Department, performing dressing changes, setting up the continuous passive motion machine (CPM), and assisting in putting on halos.

## **Patient Care Director (PCD)**

A PCD is the administrative manager or head nurse of the hospital floor. (For example, the orthopedic floor has its own PCD.) Any hospital staff members who work on that particular floor report to the PCD. All PCDs are nurses and most have master's degrees or are currently working on their master's.

## **Physical Therapist**

A physical therapist helps the patient maintain muscle strength and regain the stability to move his or her extremities. Physical therapists at Inova Fairfax Hospital and Inova Fairfax Hospital for Children must have a master's degree.

## **Resident**

Residents are licensed physicians who have finished medical school but are continuing training in a chosen specialty. They are not student doctors. They are responsible for routine patient care activities and keep the attending surgeon informed of each patient's progress. All residents are MDs.

## **Respiratory Therapist**

Respiratory therapists provide breathing support and treatments when needed by the patient. Respiratory therapists have a two-year associate's degree and are state licensed.

## **Social Worker**

Social workers provide emotional support and help patients and family members adjust to injury. Hospital social workers specialize in medical and crisis counseling, communications between patients and the medical team, and facilitating access to services within the hospital and with the outside community. The social worker also may help coordinate home needs. All social workers at Inova Fairfax Hospital and Inova Fairfax Hospital for Children have a Master's of Social Work (MSW) and most are licensed clinical social workers (LCSW).

## **Speech and Language Therapist**

A speech therapist works with a patient on language, memory and swallowing difficulties. Speech and language therapists at Inova Fairfax Hospital and Inova Fairfax Hospital for Children must have a master's degree.

## **Trauma Surgeon**

Trauma surgeons are physicians specially trained in trauma surgery, for internal injuries not involving the brain, spinal cord or broken bones. Trauma surgeons deal with abdominal and chest injuries that cause damage to internal organs. A trauma-attending surgeon will oversee the total care provided to you or your family member while a patient of the Inova Regional Trauma Center. This physician regularly visits patients to check on their progress and to coordinate with other members of the trauma team. A trauma surgeon is in the hospital 24 hours a day. All trauma surgeons are physicians with five years of specialized training (residency) in general surgery. Full-time trauma surgeons also have an additional one to two years of fellowship training in trauma and/or critical care.

## 5 Types of Traumatic Injuries



### Head

#### Sub-types of injuries

A traumatic brain injury is defined as an occurrence of injury to the head, arising from blunt or penetrating trauma or from acceleration/deceleration forces. There are many different types of brain injuries:

#### Mechanisms of Injury

**Coup/Contre-Coup** – occurs when there is rapid acceleration/deceleration of the brain inside the skull. The damage is caused by the brain hitting first on one side of the skull and then rebounding and hitting the opposite side.

**Diffuse Axonal Injury** – forces twist the brain around so the nerve fibers (which are made up of axons) are stretched, snapped and sheared. This also is referred to as a closed head injury.

#### Types of Injuries

**Cerebral concussion (minor)** – a brief loss of consciousness following a blow to the head. A mild concussion may produce a brief period of confusion with some memory loss of the events surrounding the incident.

**Cerebral contusion (more severe)** – described as bruising of the brain tissue. This can occur beneath a skull fracture, or because of a powerful blow to the head that causes the brain to shift and bounce against the inside of the skull.

**Skull fracture** – characterized by cracks in the bones of the skull and caused by external forces against the outside of the head; may occur when the skull bone breaks, causing damage to the brain and the blood vessels below the injury.

Head injuries and skull fractures may cause tearing and cutting of the blood vessels carrying blood into the brain, resulting in blood clots that exert pressure on the brain. A blood clot in the brain is referred to as a hematoma and may be any of the following types:

**Subdural hematoma** – occurs when a vein in the brain is damaged and bleeds, putting pressure on the normal brain tissue.

**Epidural hematoma** – refers to damage to an artery, which bleeds and puts pressure on normal brain tissue.

**Intracerebral hematoma** – occurs when there is bleeding directly within the brain itself. This usually occurs with penetrating injuries or blood vessels that rupture deep within the brain.

A traumatic brain injury that is described as “mild” implies that there was minimal or no loss of consciousness at the time of injury. These types of injuries often go unreported or untreated. Neurological exams in these cases often appear normal, making the diagnosis of the injury difficult. Symptoms of these “mild” injuries often surface at a later time.

## Diagnosis/evaluation

Close observation is required for a patient with a head injury. Emergency medical staff will:

- **Assess the patient's pupils** – exposure to light should cause constriction
- **Determine level of consciousness** – determine if patient is awake, alert or oriented using the Glasgow Coma Scale (GCS). The GCS is a scale used to find out how badly the brain and nervous system have been hurt. The scale rates the responses of the patient by looking at eye opening, verbal responses and motor responses. GCS scores range from a high of 15, to a low of 3.
- **Evaluate motor functions** – observe the patients movement
- **Evaluate the patient's sensory function** – does the patient respond to touch, do they feel dull, sharp or tingling sensations

If emergency medical staff members suspect that a patient has a head injury, a CT scan will be ordered. This scan of the brain can determine if there is any swelling of the brain or any bleeding. It also can determine the presence of a hematoma.

When the patient is more stable and has been transferred to a treatment unit (ICU, IMC, orthopedic or neurosciences floor), doctors and nurses also will evaluate the patient's level of functioning and severity of the brain injury using the Rancho Los Amigos Scale. The Ranchos Scale consists of eight levels describing cognition and behavior. Level I is the lowest possible level of functioning and Level VIII indicates the highest level of functioning.

## Treatment

Treatment for a brain injury will vary for each patient. Some of the possible treatments may be:

**Craniotomy** – a surgical incision made in the cranium (the part of the skull that surrounds the brain) to relieve pressure.

**Shunt** – a tube surgically placed to drain excess fluid from within the brain.

**Intracranial Pressure Monitor (ICP)** – a monitor that measures pressure in the brain. It can be hooked up either via a “bolt” inserted into the skull or by a catheter inserted into a small cavity in the brain.

## Specialists involved

There may be many specialists involved in the treatment of a patient with a brain injury. Some of those may include a neurosurgeon, trauma surgeon, physical therapist, occupational therapist, speech and language therapist, and clinical nurse specialist. There may be additional specialists involved in the patient's care once he/she is discharged from the hospital.

## Chest

Since chest injuries are often life threatening, time is critical in restoring and maintaining airway and heart/lung function. More than 60 percent of patients admitted with blunt chest injuries suffer from rib fractures which require medication to relieve pain and allow deep breathing. Pain usually decreases in five to seven days and rib fractures customarily heal in three to six weeks.

## Sub-types of injuries

**Flail Chest** – refers to a section of the chest where two or more ribs have been broken in multiple places.

**Hemothorax** – characterized by a collection of blood in the chest cavity.

**Pneumothorax** – a collection of air from an injured lung in the chest cavity.

**Hemo-pneumothorax** – both air and blood are found in the chest cavity.

### **Diagnosis/evaluation**

In order to determine the severity of a chest injury, a chest X-ray or CT scan is often used. A procedure called a thoracotomy may also be performed to assess the extent of injury. This procedure involves making a surgical incision in the chest wall.

### **Treatment**

Patient participation in the recovery process is essential with chest injuries. To promote healing of the lung(s), the patient may be instructed to cough, perform deep breathing exercises and stop smoking.

By following these instructions and participating in the healing process, the patient greatly reduces the risk of other problems such as pneumonia, recurrent lung collapse, and breathing problems requiring a respirator.

### **Specialists involved**

Specialists involved in the care can include trauma surgeon, thoracic surgeon, cardiovascular surgeon, respiratory therapist, physical therapist, occupational therapist.

## **Abdominal**

### **Sub-types of injuries**

**Blunt abdominal trauma** – part of the body is hit and injured but there is no open wound.

**Penetrating abdominal trauma** – indicates an open wound as in cases of gunshot or stabbing.

### **Diagnosis/evaluation**

There are many ways to diagnose an abdominal injury. A physical examination, CT scan, H&H (hemoglobin and hematocrit, which tests the patient's blood level), ultrasound and exploratory surgery are all possible methods that may be used for a diagnosis.

Additionally, a procedure called a laparotomy may be performed to assess the extent of injury. This procedure involves making a surgical incision in the abdominal area.

### **Treatment**

Treatment for an abdominal injury will vary based on the area injured and the severity of the injury. Treatment may range from close observation of the patient to surgery to repair or reconstruct the injured area. Many injuries to the kidney, spleen or liver can be treated without surgery.

### **Specialists involved**

Trauma Surgeon

## Orthopedic

### Sub-types of injuries



Simple



Greenstick



Comminuted



Hairline



Compound



Spiral

**Open fracture** – also known as a compound fracture; when the bone breaks in such a way that the bone pushes through the skin. This type of fracture is more serious because infection of the wound and the bone is possible.

**Greenstick fracture** – a fracture in which the bone is partially bent and partially broken; occurs most often in children.

**Spiral fracture** – a fracture that follows a line like a corkscrew.

**Transverse fracture** – a fracture in which the fracture line is at right angles to the long axis of the bone.

**Comminuted fracture** – a fracture in which the bone is broken or splintered into pieces.

**Hairline fracture** – a minor fracture in which all the portions of the bone are in perfect alignment. The fracture is seen on an X-ray as a very thin line between two segments that does not extend entirely through the bone.

### Diagnosis/evaluation

To determine if a bone is broken, an X-ray is typically used. This is usually sufficient to determine whether or not the bone is broken. However, for other bones such as the spinal column, a CT scan may be used. To determine if there is additional damage to the surrounding tissue, a magnetic resonance imaging scan (MRI) may be obtained.

### Treatment

Treatment for a broken bone is quite varied depending on the type and severity of the break, as well as the particular area that is broken. A physician may choose to treat a fracture by casting it, operating on the bone, or applying a special device known as an external fixator.

**Open reduction** – surgery in which the surgeon first returns the bone to its normal position and then holds the fracture together by inserting pins, wires, plates and/or screws.

**External fixator** – treats fractures with the insertion of pins into the bones above and below the break. The pins are connected to metal bars outside the skin and hold the bones together so they can heal. The fixator is removed after the fracture is healed.

### Specialists involved

Orthopedic surgeon, physical therapist, and occupational therapist are typical specialists that follow orthopedic patients. If there are other injuries, additional specialists may be involved.

## Spinal Cord Injury

### Sub-types of injuries

**Quadriplegia** – (also referred to as tetraplegia) injury to the spinal cord from the cervical first vertebra (C1) to thoracic first vertebra (T1) level causing paralysis of all four limbs. Injury at the C3 – C4 level affects the diaphragm and breathing.

**Paraplegia** – injury to the spinal cord at the T2 – T12 level causing paralysis of the lower limbs and possibly the chest and abdominal region.

**Complete vs. Incomplete** – a “complete” spinal cord injury indicates that the patient has no sensation. Having a complete injury does not necessarily mean that the spinal cord has been severed. An “incomplete” spinal cord injury means that the patient has some functioning. Incomplete injuries may be to the posterior, anterior or central part of the cord. With a posterior injury (to the back part of the spinal cord), the patient may have movement, but be unable to feel that movement. With an anterior injury (front part of the cord), the patient may lose movement, but may be able to feel touch and temperature.

### Diagnosis/evaluation

X-rays, CT scans and MRI exams are used to diagnose spinal cord injury. X-rays do not actually show the cord itself but do show damage to the vertebral column. A CT scan produces a clearer and more detailed picture of the spinal column.

### Treatment

In the first 12 hours of the injury, steroids often are given to the patient to try to reduce paralysis. If the spinal cord was completely severed, no treatment can reduce paralysis.

Special attention to bladder and bowel function, as well as skin care is crucial in the early management of a spinal cord injury.

**Decubitis ulcers** – are breakdowns in the skin caused by constant pressure applied to one area due to immobility, plus decreased circulation because of inactivity. Daily monitoring of the skin is very important to prevent these pressure sores, which can take up to six months to heal or even require surgery in extreme cases. Moving the patient – rotating from side to side, propping up the feet, etc. – helps prevent decubitis ulcers. The earliest sign that a sore may be developing is redness of the skin.

**Autonomic dysreflexia** – is a complication occurring in individuals who have an injury at or above the T6 level. It is the body’s response to pain when messages cannot be sent through the spinal cord because of the injury. Blood pressure typically rises in response to pain. However, for someone with a spinal cord injury, the messages within the spinal cord are not sent properly so the blood pressure does not go back down. Symptoms of autonomic dysreflexia include headache, seeing spots or blurred vision, sweating, or flushing of the skin. This can cause a stroke, so it is very important to recognize the warning signs and determine the cause. Conditions that may cause autonomic dysreflexia include a twisted catheter, a full bladder or bowel or even an ingrown toenail.

### Specialists involved

Neurosurgeon, orthopedic surgeon, physical therapist, occupational therapist, clinical nurse specialist and respiratory therapist are some specialists that may be involved in the patient’s care.



### **Anesthesia and Pain Management**

The Anesthesia and Pain Management Service works with patients who have acute or chronic pain. A team of specially trained physicians and nurses coordinates care with the patient's referring physician to create a personalized treatment program. All treatment is focused on moderating pain and improving overall quality of life. Treatment options include:

- medication
- steroid or local anesthetic injections
- special procedures to inject specific nerves
- implantable pumps or nerve simulators
- physical therapy or behavioral programs

### **Physical Medicine and Rehabilitation**

**The Physical Medicine and Rehabilitation Department provides the following services to patients:**

#### **Physiatric Consultation and Management**

The purpose of physiatry is to provide diagnostic and therapeutic treatment to assist physicians in the care and treatment of their patients. Treatment includes preventive, restorative and/or corrective measures to improve a patient's level of function and independent living.

Consultation services include electrodiagnostic tests, medical examinations to determine the direction of rehabilitation for a patient, and examination and prescription for orthotic and prosthetic devices (including training in their use).

#### **Occupational Therapy**

Occupational therapy services include the evaluation and initiation of treatment programs designed to increase a patient's function in the following areas:

- activities of daily living
- motor coordination and strength
- hand function
- cognitive, perceptual dysfunction
- energy conservation and joint protection
- fabrication of temporary splints
- recommendations for adaptive equipment, seating and/or wheelchairs

### **Physical Therapy**

Physical therapy services include the evaluation and initiation of treatment programs to increase a patient's function in the following areas:

- ambulatory skills (walking, moving about)
- muscle weakness and coordination
- respiratory problems
- cardiac problems
- musculoskeletal pain
- joint stiffness
- wound healing

### **Speech and Language Therapy**

Speech and language therapy services include the evaluation and initiation of treatment programs to increase a patient's function in the following areas:

- articulation (speaking distinctly and clearly)
- cognitive and high-level language
- communication including receptive language (processing language that is read or heard), expressive language (responding/communicating via words or facial expressions), oral motor coordination (movement of mouth and tongue) and strength
- fluency (smooth, polished speech)
- hearing (evaluations of hearing status)
- swallowing and feeding

## 7 Discharge Planning Process



If special arrangements need to be made upon discharge, a discharge planner (a nurse or social worker) will meet with the patient and family to help with these plans. This can include ordering special equipment or nursing care, arranging continued care in another facility, or simply helping work out a family schedule of care for the patient. This planning often requires the discharge planner to communicate with the insurance company to determine benefits and preferred providers for care and equipment. If the patient does not have health insurance, the social worker or financial counselor can help the patient determine where to apply for assistance.

### Levels of Care in the Community

#### *Rehabilitation hospital*

Patients who are able to tolerate three hours or more of therapies each day may qualify for placement in an acute rehabilitation hospital such as Inova Rehabilitation Center located at Inova Mount Vernon Hospital in Alexandria, VA. In addition, there are several other rehab facilities in the area.

#### *Skilled nursing facility (SNF)*

Patients requiring continued daily physical, occupational and/or speech therapies may benefit from a short stay at a skilled nursing facility. SNF care is available at many local nursing homes and must be arranged by your case manager or social worker.

#### *Home with home care*

The discharge planner will make arrangements for patients requiring home nursing or therapy prior to discharge. The patient will receive the name and contact information for the agency providing the service with his/her discharge paperwork.

#### *Home with outpatient care*

Patients requiring outpatient care (physical or occupational therapy, for example) will be given a prescription upon discharge from the hospital and will need to make an appointment with a clinic near their home.

#### *Home with no home care*

Many patients will not require specialized home care from a nurse or therapist and will be discharged to the care of family with recommendations for physician follow-up only. Patients must make their own appointments with the physician's office.

## 8 Post-Traumatic Stress Disorder (PTSD)/Emotional Reactions



Many trauma victims experience post-traumatic stress in the days or weeks following exposure, or develop PTSD in the following months. Experiencing the emotional effects of trauma is perfectly normal. Symptoms usually develop within the first three months after trauma, but may not appear until many months or even years have passed. Some people do not recognize they have PTSD or post-traumatic stress because they may not associate their current symptoms with a past trauma. PTSD is non-discriminating; anyone who has been exposed to a traumatic event could get PTSD or have symptoms of post-traumatic stress. Treatment for PTSD may include any combination of group therapy, individual therapy and/or medication – no one therapy is a requirement for treatment.

### PTSD vs. Post-traumatic Stress

**PTSD** is a specific anxiety disorder that occurs in response to a traumatic event. Initially described in combat veterans, it has become abundantly clear that PTSD is a common consequence of injury. To be diagnosed with PTSD, there are precise criteria that must be met, including having a specified number of defined symptoms for a given length of time (four weeks).

**Post-traumatic stress** occurs when an individual is experiencing stresses related to the trauma, but either does not have the number of symptoms needed or has not had symptoms long enough to be diagnosed with PTSD. Victims of trauma may experience symptoms associated with PTSD without actually having the disorder. The symptoms are the same in either case, but in order to have PTSD, an individual must meet all the defined criteria.

The symptoms for PTSD are divided into three categories: hypervigilance, intrusive re-experiencing of the event, and avoidance or numbness. The following chart details some of the symptoms associated with each category.

Category	Symptoms
<b>Hypervigilance</b>	Difficulty falling asleep or staying asleep Irritability or outbursts of anger Difficulty concentrating Exaggerated startle response
<b>Re-experiencing</b>	Recurrent recollections of the event Recurrent dreams about the event Acting or feeling as if the event were re-occurring (hallucinations or flashbacks) Distress at exposure to cues that resemble the event
<b>Avoidance</b>	Avoiding thoughts, feelings, conversations, activities, places or people that are reminders of the trauma Diminished interest or participation in activities that were previously important Feeling of detachment, inability to feel

Only a mental health professional can make a diagnosis of PTSD, but if a friend or family member notices any of the above symptoms, it may be a sign that help is needed.

## 9 “What I wish I had known” *(Feedback from former trauma patients)*



- Dates and times given for medical procedures, tests or even discharge are never set in stone. There are usually many factors or people involved and the coordination of efforts does not always work out as initially intended. Remember that if you are scheduled for an MRI, for example, but an emergency comes in, the emergency will take precedence. Consider dates to be targets, not guarantees.
- Don't be afraid to ask for pain medicine. However, remember there is a process that must be followed, and it may take awhile to fulfill the request, i.e., your nurse must have authorization from the physician before you receive any medications.
- Get involved in your treatment. You have the right to consider different options and to discuss those options with your physician. If you are told that you need a certain test, feel free to ask for an explanation of the test and what that test will show.
- Identify a point of contact for your insurance coverage. It can be helpful, depending on the severity and complexity of the injury, to have one single point of contact at the insurance company. The social worker or case manager at the hospital may be able to help you find this person. Having someone who is familiar with your case and can advocate for you can be very helpful when the bills start rolling in.
- Physical therapy really is important. Muscles weaken VERY quickly and any activity that you can handle will help you recover more quickly. Try to arrange for pain medication about 30 minutes or so before you have physical therapy. This can help minimize the amount of pain and soreness the therapy undoubtedly will cause.
- Plan ahead. Your discharge from the hospital may come more quickly than you expect, and you may be discharged before you feel really ready to go. The best way to be prepared is to make plans early. Ask your nurse about what kind of help is available to arrange for rehabilitation, home care, equipment or follow-up appointments. Even with all this preparation, you may discover you need other equipment or devices after you return home. Don't panic. Your home care provider or doctor's office can help you make arrangements once you are home.
- Try to be patient with yourself. Your recovery may not always follow a “straight line.” It's not unusual to feel relatively good one day, then really tired and cranky the next. It can be frustrating to feel like you're losing ground, but you'll need to be patient and focus on your long-term progress.
- Take notes. Ask a family member or friend to keep a journal of what happens during the hospitalization. These notes may be interesting to you in the future.
- Ask for help. Unexpected hospitalization disrupts every bit of your life – routines, schedules, relationships and plans. You are probably used to being very independent, but you now rely on other people for everything in your life. Don't be afraid to ask for the help you need. Your family and friends probably appreciate the opportunity to help out in any way they can, and only need your invitation to do so.



### Patient Rights

While you are a patient at Inova Fairfax Hospital or Inova Fairfax Hospital for Children, your rights as a patient include the right to:

- have access to treatment or accommodations that are available and medically indicated
- receive care with respect and dignity
- make decisions about your treatment or refuse treatment under applicable law (You are responsible for your actions if you refuse treatment or do not follow your physician's instructions.)
- personal privacy and confidentiality in accordance with Virginia law
- know the identity and role of the individual(s) caring for you, as well as which physician is primarily responsible for your care
- voluntarily participate in clinical training programs or any research project affecting your care or treatment
- consult with another physician at your own request and expense
- a complete explanation of the need for a transfer to another facility, the alternatives to a transfer, and the assurance that the other facility has agreed to accept your transfer
- be informed by your treating physician of any continuing care needs that must be met following discharge from the hospital
- receive an itemized bill with explanation for all hospital services
- be informed about the hospital's rules and regulations including how patient complaints are addressed

### Patient Responsibilities

The care you receive while you are a patient depends partially on you. Your responsibilities include:

- providing complete and accurate information about past, present and developing health conditions
- indicating whether you clearly understand the course of treatment and what is expected of you
- following the treatment plan recommended by your physician
- following hospital rules and regulations affecting patient care and treatment
- being considerate of the property and rights of other patients and hospital personnel
- reporting any changes in condition to your nurse or doctor
- keeping follow-up appointments (When you are unable to do so for any reason, notify the office in advance.)

## **Medical Information - What Is Kept, Why, Who Has Access**

Whenever you come to the hospital, you will be asked for information that is appropriate to your care. Details of your name, address, date of birth and next of kin are examples of data that is kept. Information about your medical conditions and treatments also are stored. This information may be found as paper records in your hospital notes or on a computer database. Any X-rays and test reports also are kept on file for a limited period, usually eight years in the case of adults.

There are very strict laws regarding who has access to this information. You are entitled to see your medical records, although this may not be possible on the day of the request. Your family and friends are not allowed to see your records, unless you specifically give permission. On the whole, only those staff members directly involved in providing your care are able to see the information. There are some members of the hospital staff who may see the information for other reasons such as teaching purposes, or to monitor the standard of care.

## **Spiritual Considerations**

Inova Fairfax Hospital and Inova Fairfax Hospital for Children have a Chaplaincy Office onsite. The office is open Monday through Friday from 8:30 a.m. to 5 p.m. There are also on-call chaplains available for emergency assistance to patients and families, 24 hours a day, seven days a week. To contact an on-call chaplain, call ext. 3767 and follow the instructions on the recorded message.

There are two types of on-call chaplains:

- Interfaith chaplain: available for all patients and families for such needs as:
  - end-of-life issues
  - crisis situations
  - loss or grief
  - a desire for prayer, Scripture, and/or sacraments
  - emotional distress or anxiety
  - loneliness
  - to initiate the bioethics consultation process
  - a need for information regarding spiritual or religious values of various faith traditions
- Roman Catholic clergy: currently provided by area parishes on an as needed, emergency-only basis.

Additionally, there are volunteers scheduled each week, Monday through Friday, to visit patients according to their denominational preference. Services offered include friendly visitation, prayer with patients and families, providing inspirational literature or Scripture from the patient's faith, and to help contact a patient's clergy or faith community.

## **Teaching Hospital**

Inova Fairfax Hospital and Inova Fairfax Hospital for Children are teaching hospitals with student nurses, physical therapists, occupational therapists, respiratory therapists, physicians and other health professionals working here. These students gain practical experience in the treatment and care of patients. The hospital hopes that patients will agree to let students be involved in their treatment and care. However, if a patient does not wish students to be involved, he/she has the right to say so.

## **Why Visitation May Be Limited**

There are times during a patient's stay when visitation may be limited. This may be because the patient needs rest, treatment must be carried out or, in some cases, because too many visitors can be harmful to the patient's recovery. For certain injuries, such as brain injury, too many stimuli can hinder the patient's healing. For these patients, the number of visitors and their length of the stay may be limited.

## **Visitor Responsibilities**

Inova Fairfax Hospital and Inova Fairfax Hospital for Children are committed to providing a safe, healthy environment for patients and their families. To maintain that environment, we count on you, as a family member or friend, to assist us in the following ways:

- Observe the visiting hours for the area you are visiting. Please do not sleep in patient rooms or waiting rooms unless you have permission.
- Respect our patients' right to privacy and leave the patient room or care area when asked by hospital staff.
- Be considerate of the rights of our patients and hospital staff by treating them with courtesy and respect, and assisting with the control of noise and the number of visitors.
- Do not visit if you are not feeling well or have an illness that could be transferred to our patients. If you are not sure, please check with your health care provider.
- For the safety of young children, please provide adult supervision in all areas of the hospital. Consult with the patient's nurse before bringing any children under the age of 12 into a patient's room.
- Be respectful of the property of other people and of the hospital.

## **Library**

The Health Sciences Library, located in the hospital, provides resources and services to assist patients and their families. The library contains information regarding medicine, nursing, allied health, health care administration and patient education. The library provides access to online databases, full-text electronic journals, books, journals, audiovisual and multimedia materials, and Internet access. Library hours are Monday – Friday 8 a.m. – 8 p.m., and Saturday 9 a.m. – 5 p.m.



### Rebuild

Rebuild is a program at Inova Fairfax Hospital and Inova Fairfax Hospital for Children that focuses on the psychosocial concerns of the trauma patient. Recovering patients participating in the program help each other deal with the long-term consequences of their injuries through support groups.

Rebuild offers support groups for general trauma, spinal cord injury and traumatic brain injury. Rebuild members also provide new patient support and mentoring in the hospital, and patient-focused training for health care professionals at conferences, training academies and graduate schools.

Presentations by trauma survivors are arranged to provide patient-focused training to health care professionals to enhance caregivers' understanding of the trauma experience and increase their ability to address the emotional needs of trauma patients. Group members engage in active dialogue with their audiences, giving both the professional and survivor an opportunity to learn from each other.

### CIREN (Crash Injury Research and Engineering Network)

CIREN, in collaboration with the Fairfax County Fire and Rescue and Police Departments, Inova Regional Trauma Center and Honda Motor Company, allows clinicians, engineers and crash reconstruction experts to analyze vehicle crashes and patient injuries in order to improve auto safety and reduce death and disability. CIREN team members attempt to determine which area of the vehicle caused each injury to the patient in the hopes of making cars safer in the future.

By participating in CIREN case reviews, trauma surgeons have learned to more completely understand mechanisms of injury, which has led them to consider the seriousness of side vs. frontal impacts. Additionally, trauma surgeons now are paying more attention to the fire and rescue and police providers reporting on the mechanism of injury, as well as pictures taken at the scene to help determine the risk of injury.

### Reality Check

The Reality Check program is a collaboration of the Inova Regional Trauma Center, the Fairfax County Public School Driver's Education Program, and Fairfax County Fire and Rescue Department. Groups of students are brought to the Trauma Center for a realistic, interactive program consisting of:

- educational overview by a trauma surgeon of the traumatic effects of unsafe driving
- visit to the trauma unit where a trauma victim resuscitation is simulated
- interview with local paramedics and tour of ambulance
- survivor presentation where a recent crash survivor speaks about his/her injuries and rehabilitation

### Education and Outreach

The Inova Regional Trauma Center plays a key role in educating the community and health care professionals regarding the care of trauma patients and the prevention of injury. Some of our educational efforts include — annual trauma symposium, weekly critical care lectures and EMS night, which provides educational opportunities to EMS providers.

## **S.A.F.E (Substance and Alcohol Focused Education)**

Inova Fairfax Hospital and the Fairfax Alcohol Safety Action Program, in cooperation with the 19<sup>th</sup> Judicial District Juvenile and Domestic Relations District Court, offers the S.A.F.E program for teens 15 to 18, who are charged with a first time alcohol or substance abuse offense. This is a mandatory, court ordered program.

Components of the program include:

- program overview
- discussion and slide presentation with a medical examiner about alcohol and drug-related fatalities
- spending three hours on a weekend night in the Inova Fairfax Hospital trauma ICU, orthopedic and neuroscience units, with a trained counselor observing patients and talking with victims of alcohol- and drug-related crashes
- participating in a group discussion

## **Northern Virginia Injury Prevention Center (NVIPC)**

NVIPC was created in 1996 to reduce preventable injuries through educational efforts throughout the local community. NVIPC has prevention programs in the areas of teen drinking and driving, motor vehicle crashes and safety, aggressive driving and children falling from windows.

## **Research**

The Inova Regional Trauma Center is involved in numerous research projects regarding the care, recovery and prevention of trauma. Our approach has been to engage in research driven by the needs of our patient population to generate knowledge that can be used in treating other patients. Examples of current research projects include:

- aggressive driving
- management of traumatic brain injury
- impact of hospital-based intervention on teen driving
- effectiveness of patient-focused training on the patient-provider relationship



### Terms and Definitions

#### Procedures

*Craniotomy* – making a surgical incision through the cranium (the part of the skull that encloses the brain); usually done to relieve pressure around the brain

*Gastrostomy* – making a surgical opening into the stomach for feeding through a tube

*Jejunostomy* – making a surgical opening in the small intestine for feeding through a tube

*Laparotomy* – making a surgical opening in the abdomen; an abdominal operation

*Suction* – a procedure to vacuum out oral secretions from the mouth and lungs

*Thoracotomy* – making a surgical opening in the chest wall

*Tracheotomy* – an operation where an incision is made in the throat area, just over the trachea to allow breathing

#### Equipment

*Ambu bag* – bag used to assist in providing artificial ventilation of the lungs

*Blood pressure cuff* – velcro wrap that goes around the arm and is attached to a monitor that causes the wrap to squeeze the arm lightly in order to read what the heart is doing

*Continuous passive motion (CPM)* – the use of a machine to provide continuous movement through specific ranges of motion at selected joints. This is often used in the hospital following surgery to reduce complications and promote recovery.

*ECG/EKG (electrocardiogram)* – A record of the electrical activity of the heart. The ECG gives important information concerning the diagnosis of abnormal heart rhythms and heart damage.

*Endotracheal tube* – a tube that is put down a patient's throat to help with breathing. The tube passes through the vocal cords so the patient cannot speak while it is in place.

*Foley catheter* – a tube inserted in the urinary tract used to collect and monitor a patient's urine output

*Halo* – a halo and vest is a form of external fixation for cervical spine immobilization of the head and neck

*ICP Monitor* – a machine that monitors the intracranial pressure (ICP) of the brain that is caused by the accumulation of excess fluid

*IV fluid* – medicine and nutrition to keep the body cells nourished

*IV pump* – a special pump designed to provide constant but adjustable rate of flow of solutions given intravenously (into a vein)

*Nasogastric tube (NG tube)* – a tube inserted through the patient’s nasal passages that is used to deliver medication and nutrients directly to a person’s stomach or to remove excess fluids and secretions

*Orthotic* – a device used to stabilize or immobilize a body part – such as an arm sling

*Prosthetic* – an artificial device used to replace a missing body part

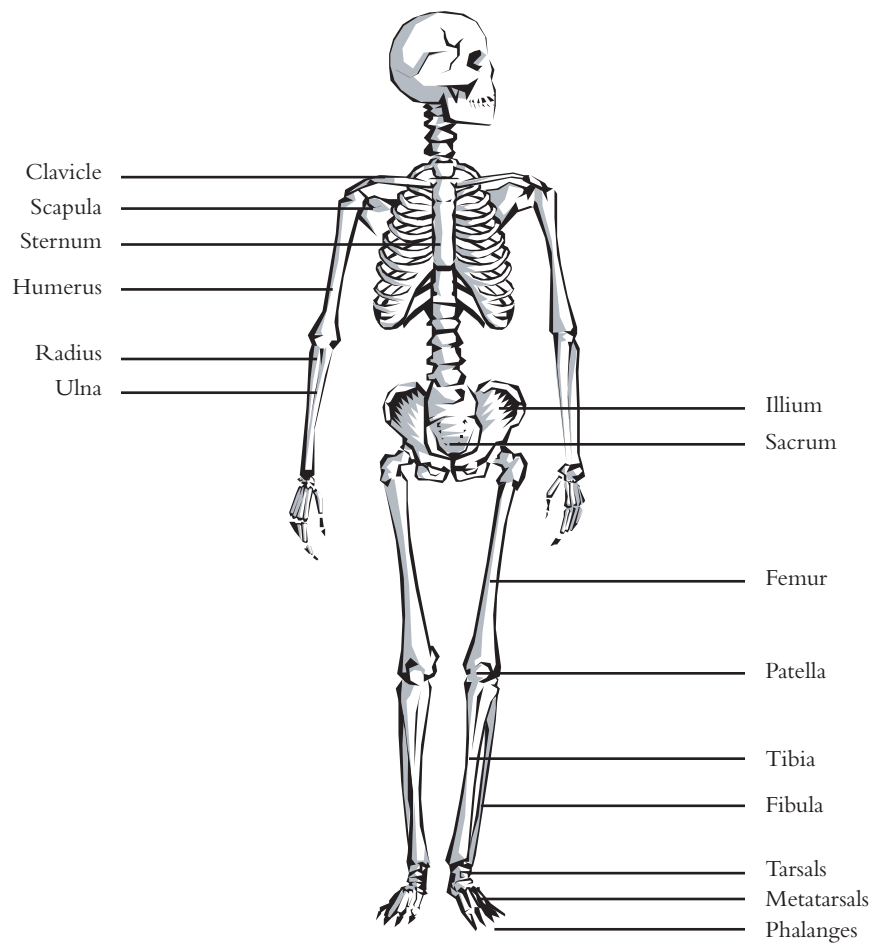
*Pulse oximeter* – an electronic device placed on the finger for determining the oxygen concentration in arterial blood

*Tube feeding pump* – provides the patient’s fluids and nutritional requirements by putting foods in the stomach via a nasogastric tube (NG tube)

*Ventilator* – a mechanical device for artificial ventilation of the lungs

## Anatomy

### Skeletal Bones



*Carpals* – the eight bones of the wrist joint

*Clavicle* – a.k.a. the collar bone; a bone curved like the letter ‘f’ that articulates with the sternum and the scapula

*Femur* – the thigh bone; extends from the hip to the knee and is the longest and strongest bone in the skeleton

*Fibula* – the outer and smaller bone of the leg from the ankle to the knee; it is one of the longest and thinnest bones of the body

*Humerus* – the upper bone of the arm from the elbow to the shoulder joint

*Ilium* – one of the bones of each half of the pelvis; it is the upper and widest part and serves to support the flank (outer side of the thigh, hip and buttock)

*Ischium* – the lower portion of the hip bone

*Metacarpals* – the bones in the hand that make up the area known as the palm

*Metatarsals* – the bones in the region of the foot known as the arch

*Patella* – a.k.a. the kneecap; the lens-shaped bone situated in front of the knee

*Pelvis* – the structure that serves as support for the vertebral column (spine) and for connection of the lower limbs. The pelvis is made up of three bones connected by ligaments and is an unmovable joint.

*Phalanges* – any one of the bones of the fingers or toes

*Pubis* – the front of the pelvis; pubic bone

*Radius* – the outer and shorter bone in the forearm

*Sacrum* – consists of five united vertebrae and forms the base of the vertebral column

*Scapula* – a.k.a. the shoulder blade; the large, flat, triangular bone that forms the posterior part of the shoulder

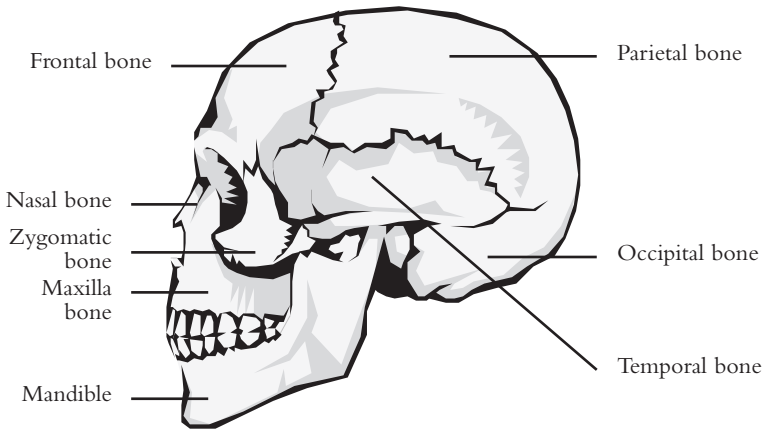
*Sternum* – the narrow, flat bone in the middle line of the chest

*Tarsals* – the seven bones of the ankle, heel and mid-foot

*Tibia* – the inner and larger bone of the leg between the knee and ankle

*Ulna* – the inner and larger bone of the forearm, between the wrist and the elbow, on the side opposite the thumb

## Skull Bones



*Frontal bone* – forehead bone

*Mandible* – the horseshoe-shaped bone forming the lower jaw

*Maxilla* – the jawbone; a paired bone that forms the skeletal base of most of the upper face, roof of the mouth, sides of the nasal cavity and floor of the eye socket

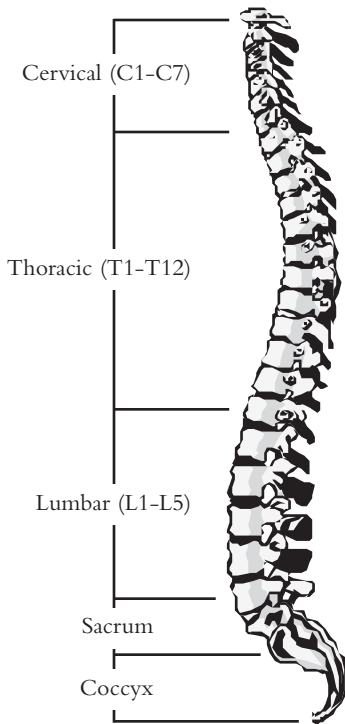
*Nasal bone* – either of the two small bones forming the arch of the nose

*Parietal bone* – one of two bones that together form the roof and sides of the skull

*Temporal bone* – a bone on both sides of the skull at its base

*Zygomatic bone* – the bone on either side of the face below the eye

## Spinal Cord



*Atlas* – the first cervical vertebra

*Axis* – the second cervical vertebra

*Cervical vertebrae (C1 – C7)* – the first seven bones of the spinal column controlling the neck and arms, as well as the diaphragm (breathing); injury to the spinal cord at the C1-C7 level may result in quadriplegia

*Coccyx* – a small bone at the base of the spinal column, also known as the tailbone

*Complete spinal cord injury* – spinal cord is not severed and patient may have some sensation

*Intervertebral disk* – the shock-absorbing spacers between the bones of the spine (vertebrae)

*Lumbar vertebrae (L1 – L5)* – the five vertebrae in the lower back; injury to the spinal cord at the lumbar level may affect bowel and bladder function, and may or may not involve paraplegia

*Paraplegia* – paralysis of the lower portion of the body and of both legs; when caused by an injury at the thoracic level, the patient will have full use of arms, but chest and abdominal area will be paralyzed

*Quadriplegia* – a.k.a. tetraplegia; paralysis of all four extremities and usually the trunk caused by an injury to the spinal cord in the cervical spine; the higher the injury, the less function is available in the arms; injury above the third cervical vertebra requires a mechanical respiratory device to maintain life

*Sacral vertebrae* – the vertebrae that form the sacrum

*Sacrum* – the triangular bone between the fifth lumbar vertebra and the coccyx

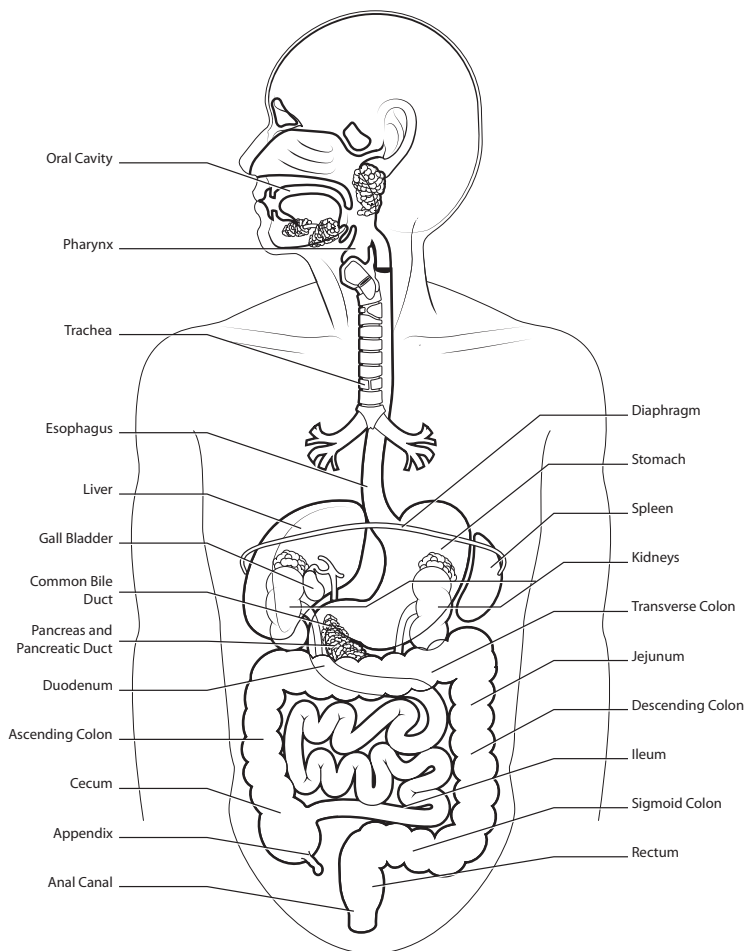
*Sciatic nerve* – the largest nerve in the body, passing through the pelvis and down the back of the thigh

*Spinous process* – the small bone that protrudes at the back of each vertebra

*Thoracic vertebrae (T1-T12)* – the twelve vertebrae in the middle of the back that are connected to the ribs; injury to spinal cord at the thoracic level may result in paraplegia and may affect other organs such as the liver, stomach and kidneys, and functions such as breathing

*Transverse process* – the two small bones that protrude from either side of each vertebra

## Digestive System



*Colon* – final piece of the large intestine that mixes the intestinal contents and absorbs any remaining nutrients before the body expels them

*Duodenum* – the first part of the small intestine; receives hepatic (liver) and pancreatic secretions through the common bile duct

*Esophagus* – the muscular tube, just over nine inches long, that carries swallowed foods and liquids from the pharynx to the stomach

*Gallbladder* – a pear-shaped sac on the underside of the liver that stores bile received from the liver

*Ileum* – the lower three-fifths of the small intestine

*Jejunum* – the second part of the small intestine extending from the duodenum to the ileum

*Kidneys* – one of a pair of purple-brown organs situated at the back of the abdominal cavity; form urine from blood plasma; the major regulators of the water, electrolyte, and acid-base content of the blood and, indirectly, all body fluids

*Large intestine* – absorbs nutrients and moves stool out of the body

*Liver* – due to its large size and location in the upper right portion of the abdomen, the liver is the organ most often injured; it filters and stores blood, secretes bile to aid digestion, and regulates glucose

*Pancreas* – produces insulin for energy and secretes digestive enzymes

*Pharynx* – the passageway for air from the nasal cavity to the larynx and for food from the mouth to the esophagus

*Rectum* – the lower part of the large intestine between the sigmoid colon and the anal canal

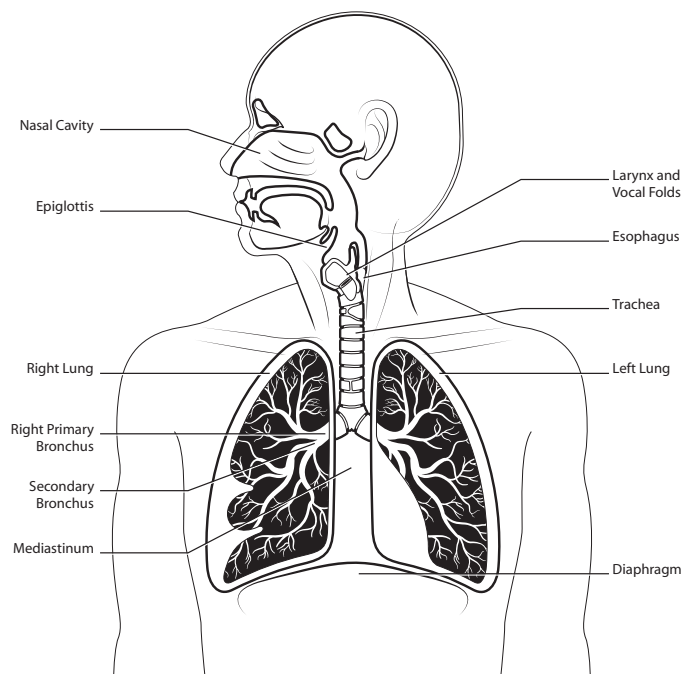
*Sigmoid colon* – the part of the colon between the descending colon and the rectum; shaped like the letter ‘s’

*Small Intestine* – breaks down and moves food into the large intestine and also absorbs nutrients

*Spleen* – located in the upper left portion of the abdomen, the spleen filters the body of unwanted substances, waste and infecting organisms; not vital to survival and a normal existence is possible without it, but there is a higher risk of infections

*Stomach* – located below the diaphragm and to the right of the spleen, partially under the liver; a reservoir that permits digestion to take place gradually

## Respiratory System



*Diaphragm* – the dome-shaped skeletal muscle separating the abdomen from the chest cavity; contracts when inhaling, flattening out downward, permitting the bases of the lungs to descend; relaxes when exhaling, elevating itself

*Epiglottis* – the uppermost cartilage of the larynx, located immediately posterior to the root of the tongue; covers the entrance of the larynx when the individual swallows, thus preventing food or liquids from entering the airway

*Larynx* – part of the airway and the organ of voice (vocal chords)

*Lung* – one of two cone-shaped spongy organs of respiration; brings air and blood into contact so that oxygen can be added to the blood and carbon dioxide removed from it

*Mediastinum* – the mass of organs and tissues separating the lungs; contains the heart, trachea, esophagus, thymus, lymph nodes and connective tissue

*Nasal cavity* – one of two cavities between the floor of the cranium and the roof of the mouth, opening to the nose; warms and moistens inhaled air, and traps dust and pathogens on mucus that is then swept toward the pharynx

*Pharynx* – the passageway for air from the nasal cavity to the larynx and for food from the mouth to the esophagus

*Trachea* – a.k.a. windpipe; a cylindrical tube, from the larynx to the primary bronchi

*Vocal cord* – either of two thin, reed-like folds of tissue within the larynx that vibrate air passing between them, producing sounds that are the basis of speech

## **Brain**

*Brain stem* – controls basic physical functions such as blood pressure, breathing and heartbeat

*Cerebellum* – second-largest part of the brain; controls balance, coordination and walking

*Cerebrum* – the largest part of the brain with two halves known as hemispheres; right hemisphere controls the body's left side; the left hemisphere controls the body's right side; each hemisphere is divided into four lobes

*Frontal lobe* – helps control body motor movement, speech, behavior, memory and thought process

*Occipital lobe* – helps interpret the meaning of written words and understanding things that are seen

*Parietal lobe* – receives and interprets sensations that include pain, touch, pressure, body-part awareness, hearing, reasoning, memory and orientation in space

*Temporal lobe* – controls emotion, memory, and the ability to speak and understand language

*This booklet is provided as a public service by the Rebuild program of the Inova Regional Trauma Center at Inova Fairfax Hospital and Inova Fairfax Hospital for Children. The Rebuild program and this material are supported by a grant from The Centers for Disease Control and Prevention (CDC). This material also is funded by a generous donation from Robert and Susan Baldassari.*









Inova Health System is a not-for-profit health care system based in Northern Virginia that consists of hospitals and other health services including emergency and urgent care centers, home care, nursing homes, mental health and blood donor services, and wellness classes. Governed by a voluntary board of community members, Inova's mission is to provide quality care and to improve the health of the diverse communities we serve.

[www.inova.org](http://www.inova.org)

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