



**VCU** Medical Center  
VIRGINIA COMMONWEALTH UNIVERSITY

# Handbook for Trauma Patients and their Families



This handbook has been developed for you by VCU Medical Center in collaboration with the Trauma Survivor Network (TSN) of the American Trauma Society. We hope this information will help you and your loved ones during the hospital stay.

There is room in this handbook for you to take notes and to write down questions for the hospital staff. You can use this to make sure you get all your questions answered.

We also encourage you to visit the TSN website at [www.traumasurvivorsnetwork.org](http://www.traumasurvivorsnetwork.org) to learn about the services this program provides. You can also use this website to keep your friends and family informed during your loved one's hospital stay.

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# ARRIVAL

## 1. INTRODUCTION

### WE ARE HERE TO HELP

Trauma is an unexpected occurrence. Hardly anyone thinks, “I’m going to get hurt today.” A sudden injury, being in the hospital and going through recovery can cause anxiety, fear and frustration. You may feel confused and frightened by some things you hear and see. You may not understand some words that people use. You may have many questions along the way. We are here to help.

We hope that the information in this book will help you better cope during this difficult time. It includes basic facts about the most common types of injuries and their treatments, the patient care process, and hospital services and policies.

There is space within this book to take notes. We encourage you to write down questions that you have for the doctors and staff. **Every** member of the hospital staff is here to help you.

### ABOUT VCU MEDICAL CENTER

VCU Medical Center is a multidisciplinary clinical, educational and research facility dedicated to the highest standards of prevention and care of critical injury and illness. Our mission is to preserve and restore health for all people, to seek the cause and cure of diseases through innovative research and to educate those who serve humanity.

VCU Medical Center is the only comprehensive Level I trauma center in Virginia verified in adult, pediatric and burn trauma care. We are one of only two adult Level I trauma centers in Virginia verified by the American College of Surgeons. VCU Medical Center staff are ready 24 hours a day, 7 days a week to provide care to patients who experience severe brain, bone and organ injuries. We provide care across the continuum from arrival into the Emergency Department to rehabilitation, home health and follow-up services.



At VCU Medical Center, we focus on the safety of our patients, staff and visitors because that's what matters to us. It's also what makes us winners — our outstanding programs and patient care were recognized with the 2014 American Hospital Association-McKesson Quest for Quality Prize, a distinction awarded to one standout U.S. hospital annually for leadership and innovation in quality improvement and safety.

VCU Medical Center is committed to excellence in patient care and education as the leading academic medical center in the mid-Atlantic region. The mission of VCU School of Medicine is to provide preeminent education to physicians and scientists in order to improve the quality of healthcare for humanity. More than 700 students from around the world come to VCU School of Medicine every year to pursue a career as a physician. We currently serve as the headquarters for the Panamerican Trauma Society, the lead organization for the advancement of trauma care systems in the Americas.

### **PARKING ON VCU MEDICAL CENTER'S MCV CAMPUS**

VCU Medical Center's Patient and Visitor Parking Deck, located near the corner of 12th and Leigh streets, is open 24 hours a day, 7 days a week. Reduced parking rates for self-parked cars in the Patient and Visitor Parking Deck (\$2.00 per visit) are available for patients and visitors who obtain a parking validation at the Information Desks located in the Gateway Building, Ambulatory Care Center and Critical Care Hospital. (This reduced rate does not apply to valet parking.) There is a \$10.00 charge for lost parking tickets. Parking is free on the weekends.

Valet parking is located at the front entrance of the Gateway Building, 1200 E. Marshall St.

Who survives in our trauma centers? Many believe it is the incredible team of doctors and nurses. Few are aware that it is those surrounded by an amazing support structure of family, friends and people who walked that journey before. Even fewer are aware of the inspiration that survivors and their loved ones give to us, the ones privileged to provide medical care. We are at our best, when our patients are loved.

— Dr. Michel Aboutanos,  
chair of the Division of Acute Care Surgical Services  
at VCU Medical Center

## 2. IMMEDIATELY AFTER THE INJURY

### ARRIVAL AT THE HOSPITAL

Here is what has happened so far...

Most likely you or your loved one was brought to the Emergency Department by an ambulance or helicopter. The trauma staff can tell you which service brought you or your loved one to the hospital.

During the transport, the rescue crew was in radio contact with the hospital. They gave information about you or your loved one's injuries. This allows the team at the trauma center to be ready to provide treatment as quickly as possible.

The trauma team typically includes;

- Trauma surgeons
- Emergency doctors
- Registered nurses
- Respiratory therapists
- X-ray and CT techs
- Social worker
- Chaplain

The team is ready 24 hours a day, seven days a week. Also, board-certified specialty doctors are on call to help with care.

VCU Medical 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:

- **Delta Alert patients** are severely injured with unstable vital signs. EMS personnel notify the Emergency Department (ED) via telephone and the trauma team assembles in the trauma bay in the ED. The team includes a trauma surgeon, emergency medicine physician, senior surgical resident, trauma nurses and other care providers. An operating room is immediately ready should emergency surgery be needed.
- **Echo Alert patients** are seriously injured but have stable vital signs. Team members and response are modified slightly for these patients.

### INITIAL ASSESSMENT

Trauma care at the hospital begins in the ED. It includes:

- An exam to find life-threatening injuries
- X-rays, ultrasound and perhaps a CT scan so that doctors can better understand the extent of the injuries
- If needed, transfer to the OR for surgery. An expert team staffs the OR.
- Transfer from the admitting area, ED or OR to a unit in the hospital.

## HOW THE HOSPITAL CARES FOR THE FAMILY

Initially the patient is evaluated in the ED. Please note that the ED is under Restricted Access. While the patient is being assessed, family can't be present in the room. A member of the medical team will keep the family and friends informed. Every attempt will be made to update the family as soon as possible.

When the family members of a trauma patient arrive at the ED, they are taken to see the patient and discuss the medical situation as soon as possible. A social worker and chaplain are always available to support you and your family. If your loved one is having a computed tomography (CT) scan or surgery, the social worker or ED staff can help you and your family locate the appropriate waiting area until the scans or surgery is completed.

## WHY A PATIENT MAY HAVE A DIFFERENT NAME

Sometimes the hospital does not know the name of the patient. To make sure that doctors can match the right lab and other reports with that patient, the hospital may give the person a different name. These names may be "Delta Delta" or "Tango Tango." At VCU Medical Center, we use names that begin with the letters "TR" then add a letter of the alphabet and a word. An example would be TRNFlower.

This temporary name may have made it hard for you to locate your loved one at first. When hospital staff can be sure of your loved one's name, they change to the real name.

If the patient is a victim of crime, they may keep this temporary name. This is for safety reasons.

## 3. VISITORS ARE IMPORTANT

Visiting is a time to be with your loved one, ask questions, and meet with staff. Research shows that comforting visits from friends and family help most patients to heal. Family and close friends know the patient better than anyone else and can make a difference in treatment. Visiting is often a good time to begin learning how to take care of your loved one at home.

You may have to wait before you can visit your loved one. Visits are often limited for patients with brain injuries because they need quiet to recover.

## WE ARE HERE TO HELP

Feel free to ask for help finding a patient room, department, etc. **All of our employees, doctors and volunteers wear ID badges.**

### » Family Waiting Rooms

There are family waiting rooms available in all of the ICUs as well as a surgical waiting area to provide you with a place to sit. In addition, there is a waiting area across from the Three Bears Gift Shop on the first floor of the Critical Care Hospital. There is also a chapel located on the second floor of Main Hospital.

Please remember that you share waiting rooms with other patients' family members and friends. People can feel on edge, so extra courtesy is always welcome.

#### 4. THE HEALTH CARE TEAM NEEDS A FAMILY'S HELP

The primary job of the trauma unit team is to treat patients. We need your help in taking care of your loved one and making sure he or she gets the best care possible. Here are things you can do to help your loved one and us.

##### » Take Care of Yourself

Worry and stress are hard on you, and you need strength to offer support to your loved one. The trauma unit team understands that this time can be just as stressful for family and friends as it is for patients.

Be sure to continue taking any medicines that your doctor has prescribed for you. Take breaks. Go for a walk around the hospital campus. Getting plenty of sleep and eating regular meals helps you think better, keep up your strength and prevent illness so you can be there for your loved one when you are needed.

##### » Ask for Help from Your Family and Friends

Do not hesitate to ask for help. Make a list in the back of this book so you will be prepared to accept help when friends offer. Friends often appreciate being able to help and be involved in the patient's care.

Visit the Trauma Survivors Network Website at [www.traumasurvivorsnetwork.org](http://www.traumasurvivorsnetwork.org) and find out how you can create your own "CarePage". This makes it easy for you to connect with friends and family. If you need help with this, let the TSN Coordinator or your peer visitor know.

##### » Ask Questions and Stay Informed

The trauma team knows how important regular updates are to family and friends. The family is an important part of the health care team. It helps if you choose one person from your group to represent the family. This allows staff to focus on caring for the patient instead of repeating the same updates.

**When you think of questions during the day, write them down. Be sure to ask your doctor these questions when you see them. You will want to ask questions until you understand the diagnoses and options for treatment. It's all right to ask the same question twice. Stress makes it hard to understand and remember new information. Ask until you understand. Write down what you are told so you can accurately report the information to other family members. We have provided space throughout this handbook to write down your questions and the answers.**

##### » Help Maintain a Restful and Healing Place

When you are visiting, please talk in a quiet voice. Patients need quiet and families deserve your courtesy. To help maintain a healthy environment for patients and their families, the hospital counts on your help. Please:

- Observe the visiting hours for the area you are visiting.
- Do not sleep in patient rooms or waiting rooms unless you have permission.
- Respect other patients' right to privacy.
- Leave the patient room or care area when asked by hospital staff.
- Knock or call the patient's name softly before entering if a door or curtain is closed.
- The medical record is a private document.
- Wash your hands before you go into a patient's room and when you come out.
- Do not visit if you are not feeling well or have an illness that could be transferred to our patients.
- Talk with the patient's nurse before bringing any children under the age of 16 into a patient's room.
- For the safety of young children, provide adult supervision in all areas of the hospital.
- Respect the property of other people and of the hospital.
- Do not ask other patients and families about private details of their care.
- Respect the rights of all patients and hospital staff.

I kept my feelings to myself for seven years until I heard about a trauma support group at our hospital. I started attending the meetings and found that I was not alone in my feelings of anxiety. I felt "safe" in opening up with others in the group. Both Sue (my wife who was also injured) and I attend the meetings and visit current trauma patients to give them hope and inspiration. I often wonder, Why us? Why twice in the same family? Maybe it was so I can be part of TSN and help others. I hope so.

— Bob and Sue, trauma survivors



# STAY

## 5. WHERE PATIENTS STAY WHILE IN THE HOSPITAL

After doctors evaluate patients, they are moved to another unit in the hospital. Where they are moved depends on their injury.

Patients may first go to the intensive care unit. When they are ready, they may then move to a step-down unit. They may also go to another unit in the hospital. Patients are only moved from one unit to another when the trauma team believes they are ready.

The hospital staff does its best to let family and friends know when a patient is moved from one unit to another. If your loved one has been moved and you do not know where he or she has gone, please call VCU Medical Center General Information at (804) 828-9000.

These are the hospital units that care for trauma patients:

### » Surgery Trauma Intensive Care Unit (STICU)

Patients in the STICU receive care from a team of doctor and nurses. They trained to take care of seriously injured patients. The first step is to make sure the patient is medically stable. Medically stable means that all body systems are working. As the patient is being treated, the team begins to plan with the patient and family. This plan will help the patient return to as normal a life as possible, as quickly and as safely as possible.

### A TYPICAL DAY IN THE ICU

Most patients are attached to equipment that gives doctors and nurses important information. This allows them to make the best decisions. The equipment:

- Monitors patients
- Delivers medicine
- Helps patients breathe

Do not worry if you hear alarms. Some alarms do not need immediate attention. The staff knows which ones to respond to.

In the morning, the trauma team “rounds” to each patient’s bed to do exams, check progress and plan the patient’s care. This time is valuable for everyone involved in the care of your loved one. Family members are encouraged to be involved in the patient’s plan of care.

Physical therapists, occupational therapists and nursing staff work together to help patients begin to move normally and regain strength. For instance, they may:

- Raise the head of the bed
- Turn a patient every two hours
- Help a patient sit on the bed or in a chair

Patients may be moved to other areas of the hospital for tests. During this time, other patients may be brought into the unit. You can expect a busy place. Sometimes, the staff asks all visitors to leave the unit to preserve a patient’s privacy.

### » Step-Down Unit

As patients in the ICU improve, they are often moved to a step down unit. Patients may also go straight from the admitting area to this type of unit. This happens if they do not need the care provided in the ICU.

### » Medical and Surgical Care Units

Less injured patients may be moved to another unit in the hospital. Also, those who no longer require the care found in ICU or step-down may be moved to these units.

## CARING FOR CHILDREN

As the only Level 1 pediatric trauma center in the region, we care for more than 500 pediatric inpatient admissions annually and see many more in consultation. Children's Hospital of Richmond at VCU provides optimal resources and outcomes for all traumatically injured children in Central Virginia and beyond and is a leader in injury prevention, research, education and advocacy.



With a combined Level 1 pediatric and adult trauma center, we must define the pediatric trauma patient by age. The pediatric trauma service will manage all children aged 14 years and younger. Patients aged 15 years and older will be managed by the acute care surgery service. Pediatric trauma patients may be initially cared for in the trauma resuscitation area by experts in both pediatric emergency and trauma care. Many patients will receive care in the dedicated pediatric emergency department that is designed to meet the unique needs of children from infancy through adolescence.

Critically injured children will be admitted to the Pediatric Intensive Care Unit (PICU). Other units that our patients may spend time on include the Pediatric Progressive Care Unit (PPCU) and the acute care pediatrics units. All pediatric units are located on the seventh floor of Main Hospital.

All of our pediatric nurses receive special training in the care of injured children and their families. We receive extensive support from our dedicated chaplain, social workers and child life specialists. Child life specialists are here to ease the emotional stress of a serious injury, providing smiles and support to help children and their families cope. They ease their young patients' adjustment to unfamiliar hospital surroundings through playful activities and celebrations that make everyone more relaxed and comfortable. Child life specialists may be involved in the care of a pediatric trauma patient at any phase of care from the trauma resuscitation room in the Emergency Department to our acute care pediatrics units. We offer three areas for therapeutic play – an infant/toddler room, a pre-school/school-age room and a rooftop Children's Garden for everyone.

## HELPING CHILDREN

Be direct, simple and honest. Explain what happened in terms that the child can understand. Encourage the child to express feelings openly. Crying is a normal reaction to loss. Accept the child's emotions and reactions; be careful not to tell the child how he or she should or should not feel. Maintain as much order and security in the child's life as possible. Be patient. Know that children need to hear "the story" and ask the same questions again and again.

"In your darkest day,  
know that it is only temporary."

— Jen, Trauma Survivor

## 6. WHO TAKES CARE OF THE PATIENT

Many types of caregivers may take care of your loved one while he or she is in the hospital. Different patients will need different types of care. Here is a list of the kinds of doctors, nurses and other caregivers you may meet or hear about.

### » Trauma Surgeon

Trauma surgeons are physicians who have five years of specialized training in general surgery and usually additional training in trauma and/or critical care. A trauma surgeon is in the hospital 24 hours a day to deal with abdominal and chest injuries that cause damage to internal organs and to treat internal injuries not involving the brain, spinal cord or broken bones. An attending trauma surgeon will oversee the total care of you or your family member in the hospital. He or she regularly makes rounds to check on patients' progress and coordinate with other members of the trauma team.

### » Nurse Practitioner

Nurse practitioners are nurses who have advanced training at the master's degree level and who manage patients along with a physician. Trauma nurse practitioners do physical exams, order and interpret tests, prescribe medications and other treatments, and refer patients to other specialists, all in collaboration with the attending trauma surgeon.

### » Registered Nurse

Nurses manage the day-by-day treatment and recovery of patients and communicate with physicians and other caregivers about their patients' care. Our patient units are staffed with RNs and the average length of employment for our nurses in the Trauma program is 10 years.

### » Anesthesia and Pain Management Specialists

These specialists are trained to work with patients who are in pain. They create a plan to ease pain and improve quality of life. Treatments may include;

- Medications
- Implanting pumps or nerve simulators
- Physical therapy or behavioral programs.

### » Care Coordinator

All admitted patients have a care coordinator. Care coordinators have experience to help you through your stay in the hospital.

Your care coordinator can:

- Work with your insurance company to ensure appropriate management of your benefits
- Get supplies you will need at home if covered by your insurance provider
- Help you learn how to care of yourself
- Refer you to a home health agency if you need it
- Help you get continued care with a specialist
- Coordinate your transfer to a rehabilitation facility

### » Chaplain

Chaplains have special skills to help people during times of illness. They meet the spiritual needs of patients and families from many different religions. Chaplains visit all who want spiritual support.

This department provides:

- Pastoral care visits
- Pastoral counseling
- Worship
- Memorial services
- Support groups

A nondenominational chapel for meditation and prayer is located on the second floor of Main Hospital. Weekly chapel services are conducted on a regular basis, and all are invited to attend. Our chaplain counselors are trained in helping patients and their families respond to the emotional and spiritual aspects of illness and hospitalization.

You can contact a chaplain counselor by calling (804) 828-0928, or by visiting the Chaplain's Office, located on the second floor of Main Hospital. You may also ask a staff member to contact them for you. The Chaplain's Office is open from 8:00 a.m. to 4:30 p.m., Monday through Friday. After hours, your nurse can contact a chaplain for you. Chaplain counselors are available around the clock.

Your own minister, priest, or rabbi is welcome to come to the hospital at any time.

### » Clinical Nurse Specialists or Case Managers

Clinical nurse specialists are registered nurses who have a master's degree. They also have expertise in trauma care. They monitor the patient's plan of care. They also act as a link between the patient and the patient's various caregivers.

### » Patient Care Technician

Patient care technicians help nurses with a patient's care. They have advanced technical skills and may start an IV, draw blood, or insert or remove catheters. They also may help get the patient out of bed or help with feeding. Patient care technicians work under the direction of a nurse or a doctor.

### » Transitional Care Coordinator

A nurse who helps coordinates the transition from the inpatient trauma patient to the outpatient trauma survivor. Helps ensure patients and families have access to resources such as finding primary care physicians, wound care supplies, patient instruction, communication with providers and resources such as the Trauma Survivors Network.

### » Dietitian

Dietitians are the food and nutrition experts. They work closely with the trauma team in caring for patients. For example, if a patient needs a feeding tube at home, the dietitian explains the proper diet.

### » Geriatrician

Geriatricians are doctors who treat older adults. At VCU Medical Center, every trauma patient of the age 60 or above receives a geriatrician consult.

### » Neurosurgeon

Neurosurgeons are doctors who are trained in surgery for the brain or spinal cord.

### » Occupational Therapist

Occupational therapists help the patients regain strength for daily events. This includes:

- Getting out of bed
- Eating
- Dressing
- Using the toilet and bathing.

They also recommend equipment that can help patients.

### » Orthopedic Surgeon

Orthopedic surgeons are physicians who have specialized training in repairing broken bones.

### » Orthopedic Technician

Orthopedic technicians do the following:

- Cast broken bones
- Change wound dressings
- Set up and maintain treatment equipment such as traction
- Place splints on injured arms and legs

### » **Pharmacist**

Pharmacists are medicine experts. They work closely with nurses and doctors. They provide information and help with choosing medicines.

### » **Physiatrist or Rehabilitation Medicine Physician**

Physiatrists are doctors who use a number of tests and exams to plan a patient's rehabilitation. They prescribe devices including wheelchairs, braces and artificial limbs. Their goal is to help the patient live independently.

### » **Physical Therapist**

Physical therapists help patients regain their strength and movement. They also help with stiff joints and other problems with moving and wound healing.

### » **Procedure Nurse**

Procedure nurses have special training to help surgeons perform such procedures as opening patients' airways, examining their lungs and changing surgical dressings.

### » **Psychologist**

Psychologists are licensed mental health professionals. A psychologist is not a medical doctor but has advanced training at the masters or doctoral level (a Ph.D. or Psy.D.)

### » **Psychiatrist**

Psychiatrists are medical doctors (MDs) who treat mental and emotional disorders. Psychiatrists can prescribe medication.

### » **Resident**

Residents are licensed physicians who are getting more training in a specialty. They provide patient care and keep the attending doctor informed of each patient's progress.

### » **Respiratory Therapist**

Respiratory therapists provide breathing support and treatments. Respiratory Therapists are specially trained and state licensed.

### » **Social Worker**

Social workers help patients and family members adjust to the injury. Hospital social workers specialize in medical and crisis counseling. They talk with patients and the medical team. They also help patients and families with services both within the hospital and in the community. The social worker also may help ease the change from hospital to home.

### » **Speech and Language Therapist**

Speech therapists work with patients on language, memory and swallowing problems, often under the direction of a physiatrist. They may also evaluate hearing.

### » **Pediatrician**

Pediatricians are doctors who have specialized training in treating children and adolescents.

### **» Spine Surgeon**

A spine surgeon may be a neurosurgeon or an orthopedic surgeon who has had special training in spine surgery.

### **» Burn Surgeon**

A burn surgeon has had special training in burn surgery. A burn surgeon is in house 24 hours a day to provide care to our burn patients.

### **» Patient Transport**

Patient Transporters are members of the health care team that assist with the physical transportation of patients between departments. They are under the direction of the Nursing staff and are skilled in handling patients during transitions.

### **» Unit Secretaries**

Unit Secretaries are available to assist with the patient and family direction and assist with scheduling follow-up appointments. They are also available to answer questions regarding general hospital navigation and policies.

### **» Student Nurses**

As an affiliated academic institution, Student Nurses are present on the medical floors during the patient's care. They assist with direct patient care under the direction supervision of the Registered Nurse.

### **» Trauma Survivors Network Coordinator**

The Trauma Survivors Network (TSN) Coordinator helps coordinate support through your recovery. The TSN Coordinator is specially trained by the American Trauma Society the Johns Hopkins Bloomberg School of Public Health to provide helpful resources and support during recovery from major injury.

### **» Trauma Survivors Network Peer Visitors**

All Peer Visitors have received hospital training as volunteers, and specialized training as peer visitors. Although Peer Visitors are not trained counselors and will not offer medical, legal, or personal advice, they understand the concerns of a new trauma patient and provide a "been there, done that" perspective. They are available upon request through the Trauma Survivors Network Coordinator.

## 7. FOR YOUR COMFORT

### Hospital Resources

#### **vcuhealth.org Website**

This is where you can find maps and directions to the VCU Medical Center's MCV Campus as well as information on how to find a physician, your rights and responsibilities as a patient, billing and insurance, financial assistance and more.

#### **myVCUhealth**

myVCUhealth provides you with fast, easy online access to your health information, allowing you to:

- Request a prescription refill
- View and request appointments
- View medications, allergies, immunizations, health issues and selected lab results
- Send a secure message to your health care provider
- View and download your depart summaries

With myVCUhealth, you can view key components of your electronic medical record, anytime and anyplace you have Internet access. You can use your account to communicate electronically with your VCU Medical Center clinician for non-urgent matters, saving you precious time while providing valuable access to personalized health information.

Visit [vcuhealth.org/myvcuhealth](http://vcuhealth.org/myvcuhealth) for more information or ask your VCU Medical Center clinician how to sign up.

#### **Community Health Education Center**

VCU Medical Center's Community Health Education Center (CHEC) offers up-to-date health information for patients and their families. The center also provides a business center for e-mail, fax and Internet access. Located on the ground floor of the Gateway Building, the center is open Monday through Friday, 10 a.m. to 4 p.m. **Visit [vcuhealth.org/chec](http://vcuhealth.org/chec) for more information.**

#### **Pharmacy**

VCU Medical Center pharmacies offer services for prescriptions, prescription refills and a variety of over-the-counter medications. For your convenience, we have a pharmacy on our MCV Campus, located on the ground floor of the Ambulatory Care Center, at the corner of 11th and Clay streets. The pharmacy is open Monday through Friday, 8 a.m. to 7 p.m., and Saturday, Sunday and holidays, 9 a.m. to 5:30 p.m.

#### **Food and Dining**

There are many dining services located in the Gateway Building and Main Hospital, as well as street vendors during the weekday.



### **Surgical Waiting Area**

Located on the fifth floor of the medical center's Gateway Building, the check-in and waiting areas are a busy home to those whose loved ones are in surgery. The newly renovated space offers a comfortable and relaxing environment for them.

### **Hospital Hospitality House**

Hospital Hospitality House (HHH) provides a full range of conveniences designed to reduce day-to-day stresses so that patients may focus on recovery and families can concentrate on helping their loved one. Located just five blocks from VCU Medical Center's MCV Campus, guests are encouraged to give a \$15-a-day minimum donation, but no one is turned away because of an inability to contribute.

You may stay at HHH if a doctor, nurse, patient representative or hospital administrator from a participating hospital provides a referral. Referrals are necessary to ensure that rooms are available. **For more information, visit [hhhrichmond.org](http://hhhrichmond.org) or call (804) 828-6901.**

### **Ronald McDonald House**

Located at 2330 Monument Avenue, this is a non-profit organization that provides a home away from home for seriously ill children and their families. **For more information, visit [rmhc-richmond.org](http://rmhc-richmond.org) or call (804) 355-6517.**

Now, almost a decade after my accident, I realized my dreams and reflect on my experience. I feel that I recovered in such a positive way because of the expertise and perseverance of my team of doctors, nurses and therapists and because of the ever-constant love and support of my family, friends and relatives. As I look into my daughter and son's eyes and watch them play and develop, I see a reflection of myself in them and am more than grateful for my life and for the success of my story.

– Carrie, Trauma Survivor

## 8. INSURANCE AND DISABILITY INFORMATION

### INSURANCE AND DISABILITY

Insurance coverage for trauma patients can be very complex. A financial counselor can help with insurance and payment questions.

### FINANCIAL ASSISTANCE

VCU Medical Center is proud of its mission to provide quality care to all who need it. If you do not have health insurance and worry that you may not be able to pay in full for your care, we may be able to help. It is important that you let us know if you will have trouble paying your bill.

We provide financial assistance to patients based on their income, assets and needs. In addition, we may be able to help you get free or low-cost health insurance, or work with you to arrange a manageable payment plan.

Financial counselors can help you to understand your hospital bill, apply for health coverage, renew your health coverage and update your insurance information.

Financial Assistance programs include:

- Discounts for self-pay patients are available with additional discounts for prompt payments
- State-Sponsored Indigent Care Program provides free care to patients with income below the Federal Poverty Level and a slide scale discount for patients with incomes less than 200% of the Federal Poverty Level
- Virginia Coordinated Care Program provides added care coordination for indigent patients in certain localities
- Medicaid and FAMIS programs, which are state insurance programs that assist with payments for medical care if an individual meets certain criteria

Documents that may be required:

- Paycheck receipts (your last three pay stubs)
- Child support verification
- Unemployment verification
- Social Security income verification
- Current bank statement

**For more information, call our Financial Counseling Call Center at (804) 828-0966, Monday through Friday from 8:30 a.m. to 4 p.m.** You can speak to one of our financial counselors from the convenience and privacy of your home. Trained certified application counselors are also available to assist you with enrolling in the Health Insurance Marketplace.

### DISABILITY PAYMENTS

Payments to help a patient through long-term or short-term disability are different. Patients or family members are responsible for applying for these payments. Your social worker or case manager can answer basic questions.

## APPLYING FOR SHORT-TERM DISABILITY

Your loved one may be entitled to short-term disability through an employer. If you are applying for short-term disability, please remember:

- Sign everything on the form that needs to be signed, and identify the fax number at work where the forms should be sent (usually the Human Resources or Personnel Services office).
- Ask the nurse where to leave the forms so the doctor can get them. It is best to submit these forms while your loved one is still in the hospital.
- Doctors complete the forms in their offices. The office staff returns the papers to you to submit to the employer, or the doctor may choose to fax the forms directly to the employer.
- For questions about your forms, **call our Financial Counseling Call Center at (804) 828-0966, Monday through Friday from 8:30 a.m. to 4 p.m.** Completion of these forms typically takes 7-10 business days.

## SOCIAL SECURITY

Social Security pays benefits to people who cannot work because they have a medical condition that is expected to last at least one year or result in death. The Social Security Web site ([www.ssa.gov](http://www.ssa.gov)) is easy to use if you apply for Supplemental Security Income (SSI). You can call 800-772-1213 or call your local Social Security office. It takes many months to process an application, so it is a good idea to get started quickly.

## LETTERS FOR EMPLOYERS, SCHOOLS AND OTHERS

The hospital has letters to send to employers, schools or courts to inform them that you and your loved one are in the hospital. Your nurse can tell you how to get these letters. They are available only while you are in the hospital. After discharge, you will need to contact your doctor's office directly.

It has been twelve and a half years since our family's journey began after our son, John, was in a car accident. We call it "our journey" because it affected all of us and we're all in it together.

— Pam, John's mother

# DISCHARGE

## 9. AFTER THE HOSPITAL: PLANNING FOR DISCHARGE

Many people need specialized care after they leave the hospital. This can include:

- Special equipment
- Nursing care
- Physical therapy
- Occupational therapy
- Speech therapy

A care coordinator or social worker will work with you to make a plan. They may talk with your insurance company to see what it will pay. They can also help you arrange for care. If you do not have health insurance, the social worker or financial counselor can help find out where you can apply for assistance.

### LEVELS OF CARE IN THE COMMUNITY

Each person, injury and path to recovery is different. Your trauma team will tell you which level of care is best. Your social worker or care coordinator will help you find the care you need. They will take into account your insurance and your ability to pay.

Here are the levels of care:

#### » Rehabilitation hospital

People who can do three hours or more of therapy each day may be able to go to an acute rehabilitation hospital. Patients have freedom of choice when deciding upon a rehabilitation hospital. VCU Medical Center has a rehabilitation unit on site. Your physician will decide if this will be the best care for you when you are ready for rehabilitation.

### REHABILITATION PREFERENCES

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

### » Skilled nursing facility

People who are not well enough to do three hours of therapy each day but who still need therapy may benefit from a short stay at a skilled nursing facility. Such care is available at many local nursing homes and can be arranged by your care coordinator.

## SKILLED NURSING FACILITY PREFERENCES

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

### » Home care

Some people can live at home with nurses and therapists coming to them. The care coordinator will arrange for these types of services. They can also give you the name and phone number of a home health agency.

### » Outpatient care

People who are able to go out of their home for therapy will be given a prescription when they are discharged. This prescription is a doctor's order that you will need to make your own appointments. The care coordinator or social worker can give you the names of providers near your home.

### » Home with no home care

Many people do not need home care from a nurse or therapist. They are discharged to the care of family. The trauma doctor may tell you to come back to see him or her or to see your own doctor after you are discharged. You will need to make your own appointments with the physician's office.

## 10. PERSONAL HEALTH INFORMATION

Use the following pages to list:

- Names of the doctors, nurses and others who are caring for your loved one
- Injuries and procedures
- Questions you may have
- Things you need to do and get

### NAMES OF PROVIDERS

Many doctors, nurses and others will be taking care of your loved one. They are all part of the trauma team, led by the trauma surgeon.

Our board-certified trauma surgeons provide 24-hour coverage of the trauma center. They are called the attending trauma surgeons. We also train future surgeons. They are known as surgical residents. Other members of the trauma team and their roles are listed at the beginning of this handbook.

Who are the attending trauma surgeons and residents?

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Who are the physician consultants? These are doctors who help with the diagnosis and treatment of specific types of injuries.

Orthopedic Surgery \_\_\_\_\_

Neurosurgery \_\_\_\_\_

Spine Surgery \_\_\_\_\_

Plastic Surgery \_\_\_\_\_

Rehabilitation \_\_\_\_\_

Other \_\_\_\_\_

Other \_\_\_\_\_

Other \_\_\_\_\_

Who are the nurses who are taking care of your loved one? \_\_\_\_\_

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Who is the Trauma Survivor Network (TSN) coordinator? \_\_\_\_\_

Who else in the hospital is helping in the care of your loved one?

Physical Therapist \_\_\_\_\_

Occupational Therapist \_\_\_\_\_

Speech Pathologist \_\_\_\_\_

Psychologist \_\_\_\_\_

Psychiatrist \_\_\_\_\_

Social Worker \_\_\_\_\_

Financial Counselor \_\_\_\_\_

Other \_\_\_\_\_

Other \_\_\_\_\_

Other \_\_\_\_\_

## Injuries and Procedures

### List of major injuries:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_



**List of major procedures:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_

[illegible]

## 11. THINGS TO DO AND GET

**Remember, ask for help.**

[illegible]

## 12. ADDITIONAL NOTES

[illegible]

[illegible]

# RECOVERY

## 13. YOUR RESPONSE TO YOUR LOVED ONE'S INJURY: GRIEF AND LOSS

Just as our bodies can be traumatized, so can our minds. Trauma can affect your emotions and will to live. The effect may be so great that your usual ways of thinking and feeling may change. The ways you used to handle stress may no longer work.

Patients may have a delayed reaction to their trauma. In the hospital, they may focus on their physical recovery rather than on their emotions. As they face their recovery, they may have a range of feelings, from relief to intense anxiety.

Family members also may go through a range of emotions between first hearing the news of the injury and on through the patient's recovery.

Trauma patients and their families often feel loss on some level. The loss may relate to changes in health, income, family routine or dreams for the future. Each person responds to these changes in their own way. Grief is a common response. When it does get better, it can delay recovery and add to family problems. Knowing the early signs of depression and post-traumatic stress disorder (PTSD), is important.

### **COPING WITH LOSS**

The stress that goes with trauma and grief can affect your health. It can also affect your decision-making during the first several months after the trauma. It is important for you to try to eat well, sleep and exercise. If you have any long-term health problems, such as heart disease, be sure to stay in contact with your doctor.

Part of recovery involves using the help of others. You can also find a support system. This can be a friend, family member, member of the clergy, support group, or another person who has experienced similar loss. Not everyone knows what to say or how to be helpful. Some people avoid those who have experienced a trauma in their family because it makes them uncomfortable. It may take some time to find friends or family who can be good listeners.

### **WHEN A PATIENT DIES**

Few things in life are as painful as the death of a loved one. We all feel grief when we lose a loved one. Grief is also a very personal response. It can dominate one's emotions for many months or years. For most people, the intensity of initial grief changes over time. It may take both time and help to move from suffering to a way of remembering and honoring the loved one.

## WHEN IS IT A GOOD IDEA TO SEEK PROFESSIONAL HELP?

Sometimes grief overwhelms us. This is when professional help is useful. You may need help if:

- The grief is constant after about six months
- If there are symptoms of PTSD or major depression
- If your reaction interferes with daily life

Your doctor can help you identify local services available for support, including the Trauma Survivors Network.

## GETTING HELP IF YOU ARE A VICTIM OF VIOLENCE

Victims of violent crimes may have trouble coping. We can help during your loved one's stay in the Trauma Center. You may also call the Victim's Assistance Resources in your home county, which you can reach by calling your local District Attorney's office.

VCU Medical Center is home to Project EMPOWER, a multidisciplinary initiative dedicated to prevention and intervention services to individuals and their family who experience intimate partner violence or sexual assault. The hotline number is 1-800-838-8238.

Other community resources are the YWCA of Richmond (804-643-0888), Safe Harbor Henrico (804-287-7877) and Hanover Safe Place (804-752-2702) or call toll-free 1-888-370-SAFE.

## 14. IS IT STRESS OR POST-TRAUMATIC STRESS DISORDER?

Going through a traumatic injury can cause a range of strong emotions. For example, it is common for people to feel or experience the following right after the injury:

- Sadness
- Anxiousness
- Crying spells
- Sleep problems
- Anger
- Irritability
- Grief or self-doubt

These emotions are perfectly normal.

For some people, distress resolves over time. For others, it may hold steady or even increase. In about one out of four people, the distress is so severe that it is called post-traumatic stress disorder, or PTSD.

## WHAT IS PTSD?

PTSD is a type of anxiety that occurs in response to a traumatic event. It was first described in combat veterans. Now we know that PTSD occurs in everyday life. PTSD has defined symptoms that are present for at least four weeks.

After a trauma, people may have some PTSD symptoms, but that does not mean they have PTSD. PTSD means having a certain number of symptoms for a certain length of time.

There are three types of PTSD symptoms:

Type	Symptoms
<b>Hypervigilance</b>	Having a hard time falling asleep or staying asleep Feeling irritable or having outbursts of anger Having a hard time concentrating Having an exaggerated startle response
<b>Re-experiencing</b>	Having recurrent recollections of the event Having recurrent dreams about the event Acting or feeling as if the event were happening again (hallucinations or flashbacks) Feeling distress when exposed to cues that resemble the event
<b>Avoidance</b>	Avoiding thoughts, feelings, conversations, activities, places or people that are reminders of the event Less interest or participation in activities that used to be important Feeling detached; not able to feel

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

## 15. WISDOM FROM OTHER TRAUMA PATIENTS AND THEIR FAMILIES

- » Dates and times for medical procedures, tests or even discharge from the hospital are not set in stone. There are usually many factors or people involved, and things do not always work out as planned. If you are scheduled for an MRI, for instance, but an emergency case comes in to the unit, they must handle the emergency first. Dates and times are targets, not guarantees.
- » Don't be afraid to ask for pain medicine. But keep in mind that the staff must follow a process, and it may take a while to fill the request. Your nurse must get your doctor's OK before you receive any medications.
- » Get involved in your treatment. You have the right to know about your options and to discuss them with your doctor. 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.
- » Get a person's name at your insurance company and try to always talk to that person. The social worker or care coordinator at the hospital may be able to help you find this person. It is easier for you and easier for the insurance person too. Having someone who knows your case can be very helpful when the bills start rolling in.



- » Physical therapy can be very 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. If you do this, your therapy won't hurt so much and you will be able to do more and make more progress.
- » Plan ahead. Your discharge from the hospital may come more quickly than you expect, even before you feel really ready to go. The best way to be ready is to make plans early. Ask your nurse about what kind of help is available to arrange for rehab, home care, equipment or follow-up appointments. Even if you plan ahead, you may find that you need other equipment or devices after you return home. Don't panic! Your home care provider or doctor's office can help you once you are home.
- » Be patient with yourself. Your recovery may not always follow a "straight line." You may feel fairly 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 progress over time.
- » Take notes. Ask a family member or friend to keep a journal of what happens during your hospital stay. These notes may be interesting to you in the future.
- » Ask for help. Being in the hospital 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 help. Your family and friends probably want to help out in any way they can. They only need your invitation.

## 16. ABOUT THE AMERICAN TRAUMA SOCIETY AND THE TRAUMA SURVIVORS NETWORK

The American Trauma Society (ATS) is a leading group for trauma care and prevention. We have been an advocate for trauma survivors for more than 30 years. Our mission is to save lives through improved trauma care and injury prevention. For details, go to [www.amtrauma.org](http://www.amtrauma.org).

The ATS knows that a serious injury is a challenge. To help, the ATS has joined with your trauma center to help you through this difficult time. The goal of the TSN is to help trauma survivors and their families connect and rebuild their lives.

The TSN is committed to:

- Training health care providers to deliver the best support to patients and their families
- Connecting survivors with peer mentors and support groups
- Enhancing survivor skills to manage day-to-day challenges
- Providing practical information and referrals
- Developing online communities of support

The TSN offers its services together with local trauma centers. These services can include:

- A link to Carepages which helps you talk with friends and family about your injured loved one
- An online library where you can learn from about common injuries and treatments

- This Patient & Family Handbook
- An online forum where trauma survivors and their families can share experiences
- Trauma Support Groups for survivors
- Family Class to support family members
- NextSteps Classes. NextSteps is an interactive program to help survivors manage life after a serious injury
- Peer Visitors who provide support to current Trauma Survivors while they are hospitalized

Please take a moment to explore the TSN programs and services by visiting the Website at [www.traumasurvivorsnetwork.org](http://www.traumasurvivorsnetwork.org). If you think we can help you—or if you want to help support and inspire others—join the TSN today! Joining takes only a minute of your time and is **completely free**.

“My deep commitment to the Trauma Survivors Network is a way for me to make sure that trauma survivors everywhere finally receive the resources that few, if any of us, had before.”

— Steve, Trauma Survivor

# GLOSSARY

## 17. COMMON TRAUMATIC INJURIES AND THEIR TREATMENT

Injuries may be due to blunt or penetrating forces. Blunt injuries occur when an outside force strikes the body. These injuries occur as a result of a motor vehicle crash, a fall or an assault. Penetrating trauma occurs when an object, such as a bullet or knife, pierces the body. Sometimes, patients have both types of injuries.

In this section of the handbook, we describe some of the common types of injuries people have and how they are typically treated. The trauma staff can give you more details about your loved one's injuries. At the end of the book there is a place for you to list these injuries.

### HEAD INJURIES

A traumatic brain injury, sometimes called a TBI, is an injury to the brain due to blunt or penetrating trauma. There are many types of brain injuries:

- **Cerebral concussion:** brief loss of consciousness after a blow to the head. A head scan does not show this injury; a mild concussion may produce a brief period of confusion; it is also common to have some loss of memory about the events that caused the injury.
- **Cerebral contusion:** contusion means bruising, so a cerebral contusion is bruising of the brain; this can occur under a skull fracture. It can also be due to a powerful blow to the head that causes the brain to shift and bounce against the skull.
- **Skull fracture:** cracks in the bones of the skull caused by blunt or penetrating trauma; the brain or blood vessels may also be injured.
- **Hematomas:** Head injuries and skull fractures may cause tearing and cutting of the blood vessels carrying blood into the brain. This may cause a blood clot to form in or on top of the brain. A blood clot in the brain is referred to as a hematoma. There are several types of hematomas:
  - **Subdural hematoma:** bleeding that occurs when a vein on the outside of the brain is damaged; a blood clot slowly forms and puts pressure on the outside of the brain.
  - **Epidural hematoma:** bleeding that occurs when an artery on the outside of the brain is injured; a blood clot can occur quickly and put pressure on the outside of the brain.
  - **Intracerebral hematoma:** bleeding inside the brain itself; it usually happens when blood vessels rupture deep within the brain.

A traumatic brain injury that is described as “mild” implies that there was little or no loss of consciousness at the time of injury. These types of injuries often are not reported or treated. Neurological exams may appear normal, which makes it hard to diagnose the injury, but symptoms often show up later. Such symptoms may include foggy memory, a hard time solving problems, headaches, dizziness, nausea, fatigue, mood swings, anxiety, depression, disorientation and delayed motor response.

## Diagnosis and Evaluation

The trauma team watches patients with a head injury very closely, including:

- Checking the patient's pupils with a light
- Checking the level of consciousness. They use the Glasgow Coma Scale (GCS) to find out how badly the brain has been injured. The GCS includes testing for eye opening, talking and movement. Scores range from a high of 15 (normal) to a low of 3 (coma from injury or drugs).
- Checking to see if patients react to touch or if they feel dull, sharp or tingling feelings.

When doctors think that a patient has a brain injury, they often order a scan of the brain (CT scan). This scan can find out if there is swelling, bleeding or a blood clot.

When the patient is more stable, doctors may evaluate the patient's level of functioning using the Rancho Los Amigos Scale, often called the Ranchos Scale. The Ranchos Scale has eight levels that describe how well patients can think and how they act. It ranges from level 1 (lowest level of functioning) to Level 8 (highest level of functioning). It also gives better information about the severity of the brain injury.

## Treatment

Doctors base treatment for a brain injury on the type and location of the injury. Treatments may include:

- Drugs to lower brain pressure, drugs to lower anxiety and drugs that change the fluid levels in the brain
- Intracranial pressure monitor (ICP), which measures pressure in the brain. There are two types of monitors: a tube placed in the brain that only measures brain pressure, and a tube placed into a small space in the brain that measures brain pressure and also drains fluid from the brain to lower the pressure on the brain.
- Craniotomy, which is an opening in the skull to remove a clot and lower brain pressure. This is done in the operating room.
- Shunt, which is a tube placed to drain excess fluid in the brain. This is done in the operating room.
- Craniectomy, which involves removing a part of the skull bone to give the brain more room to swell. This type of surgery may also be done when a clot is removed. The skull bone is replaced when the patient is better (usually several months later).

## CHEST INJURIES

Chest injuries may be life threatening if the lungs are bruised. The goal of early trauma care is to protect breathing and blood flow. Types of chest injuries include:

- Rib fractures: the most common type of chest injury; they can be very painful but will usually heal without surgery in three to six weeks.
- Flail chest: two or more ribs are broken in more than two places and the chest wall is not working as it should during breathing.
- Hemothorax: blood pools in the chest cavity, often due to rib fractures.
- Pneumothorax: air collects in the chest cavity due to an injured lung.
- Hemo-pneumothorax: both air and blood collect in the chest cavity.

- Pulmonary contusion: bruising of the lung; if severe, it can be life threatening because bruised lung tissue does not use oxygen well.

### **Diagnosis and Evaluation**

Doctors often use a chest X-ray or CT scan to find out more about the injury. They can tell how the lung is using oxygen by taking some blood from an artery. They may need to open the chest to examine and treat the injury.

### **Treatment**

The goals are to increase oxygen to the lungs, control pain and prevent pneumonia. Doctors and nurses may ask the patient to cough and do deep-breathing exercises, which help the lungs heal. They will also tell the patient to stop smoking. The doctor will order drugs to treat pain and soreness.

It is important that the patient take part in the healing process. It greatly reduces the risk of other problems, such as pneumonia or lung collapse, that may need to be treated with a ventilator (breathing machine).

## **ABDOMINAL INJURIES**

Blunt or penetrating trauma to the abdomen can injure such organs as the liver, spleen, kidney or stomach. The injuries may be:

- Lacerations (cuts)
- Contusions (bruises)
- Ruptures (severe tearing of the tissue)

### **Diagnosis and Evaluation**

There are many ways to diagnose an abdominal injury, including:

- Physical examination
- CT scan
- A blood count to check hemoglobin and hematocrit, two measures of blood loss
- Ultrasound
- Surgery called a laparotomy in which the surgeon makes an incision in the abdominal area

### **Treatment**

Treatment depends on the organ that is injured and the severity of the injury. It may range from watching the patient closely to surgery. Many injuries to the kidney, spleen or liver can be treated without surgery. Often, however, severe injuries to the abdomen require a number of surgeries.

## BONE, LIGAMENT AND JOINT INJURIES

Blunt and penetrating trauma can harm bones, ligaments and joints. Types of fractures or broken bones include:

- Open or compound fracture: a broken bone pushes through the skin; it is serious because the wound and the bone may get infected.
- Closed fracture: the broken bone does not pierce the skin.
- Greenstick fracture: a bone is partly bent and partly broken; occurs most often in children.
- Spiral fracture: a break that follows a line like a corkscrew.
- Transverse fracture: a break that is at right angles to the long axis of the bone.
- Comminuted fracture: a bone that is broken into many pieces.
- Hairline fracture: a break that shows on an X- ray as a very thin line that does not extend entirely through the bone; all parts of the bone still line up perfectly.



Simple



Greenstick



Comminuted



Hairline



Compound



Spiral

### Diagnosis

Doctors can usually see whether most bones are broken by using regular X-rays. However, for other bones, doctors may use a CT scan. To find out if there is any damage to joints or ligaments, doctors may do a magnetic resonance imaging scan (MRI).

### Treatment

Treatment for a broken bone depends on the type, severity and location and whether the tissue around the bone is damaged. A doctor may choose to treat a fracture in several different ways:

- A cast, sling or splint
- Closed reduction: moving the limb or joint to its normal position without open surgery. Pain or sedation drugs are used during the procedure.
- Open reduction: Surgery that returns the bone to its normal position. Surgeons may use pins, wires, plates and/or screws to hold the bone together.
- External fixator: the surgeon puts pins in the bone above and below the break and connects the pins to bars outside the skin that hold the bones together to heal. The doctor takes the fixator off after the fracture heals.

## SPINAL CORD INJURY

Blunt or penetrating trauma can injure the spinal cord. Two main types of injury can occur:

- Quadriplegia (also called tetraplegia): injury to the spinal cord from the first cervical vertebra (C1) to the first thoracic vertebra (T1) level (see section under Anatomy). This means the patient has paralysis of (cannot move) the arms and legs. Injury at or above the C4 level affects breathing and patients often need a ventilator (a breathing machine).

- Paraplegia: injury to the spinal cord from the second thoracic vertebra (T2) to the 12<sup>th</sup> thoracic vertebra (T12), causing paralysis of both legs and possibly the chest and abdomen.

Doctors may also say the patient has a complete or an incomplete injury:

- A complete spinal cord injury means that the patient cannot move and has no feeling. It does not always mean that the spinal cord has been cut in two.
- An incomplete spinal cord injury means that the patient has some movement or feeling. Incomplete injuries may be to back, front or central part of the spinal cord. With injury to the back part of the spinal cord, the patient may have movement but be unable to feel that movement. With injury to the front part of the cord, the patient may lose movement but may be able to feel touch and temperature. An incomplete injury may get better in time. It is hard to know when or if full function will return.

## **Diagnosis and Evaluation**

Doctors use physical exams, X-rays, CT scans and Magnetic Resonance Imagery (MRI) scans to diagnose a spinal cord injury. X-rays do not show the spinal cord itself but do show damage to the vertebral column or the bones around the spinal cord. CT scans and MRIs give the best picture of the spinal cord and bones. Sometimes doctors cannot do an MRI because of other injuries the patient has, because of the patient's weight, or because the patient has a pacemaker, monitor or other metal device. In these cases, doctors use other tests to evaluate the patient.

## **Treatment**

In the first 12 hours after a blunt spinal cord injury, doctors often give steroids to the patient to reduce spinal cord swelling and improve recovery from the injury. If the spinal cord was cut in two, no treatment can reduce paralysis.

Patients need special attention to bladder and bowel function and skin care. They may need surgery to give support to the spine. Surgery may not change paralysis but will allow the patient to sit up. Talk with the surgeon about the goals of surgery. In any case, getting out of bed improves healing and the sense of well-being and lowers the risk of pneumonia, pressure sores and blood clots.

Patients with spinal cord injuries receive special attention to prevent pressure sores and a condition called autonomic dysreflexia:

- Pressure sores (also known as pressure ulcers or decubitis) are breakdowns in the skin caused by constant pressure on one area and decreased blood flow from not moving. Pressure sores can occur on the bottom, hips, back, shoulders, elbows and heels. Skin redness is the first sign that a sore may be starting, so it is important to check the skin every day to prevent these sores. If a sore occurs, it can take many months to heal or even need surgery. Moving the patient from side to side and propping up the feet can help prevent pressure sores.
- Autonomic dysreflexia may occur when the spinal cord injury is at or above the T6 level. It means that messages about blood pressure control are not being sent as they should be. As a result, when blood pressure goes up due to pain (for instance), it may not return to normal once the pain is treated. High blood pressure can cause a stroke, so it is very

important to know the warning signs and find the cause. Signs of autonomic dysreflexia include headache, seeing spots or blurred vision, sweating, or flushing (redness) of the skin.

## 18. COMMON MEDICAL TERMS

### 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.

**craniectomy:** removing part of the skull bone to give the brain more room to swell. This type of surgery may also be done when a clot is removed. The skull bone is replaced when the patient is better (usually several months later).

**gastrostomy:** surgery to make an opening into the stomach to place a feeding tube. This surgery is often done at the bedside. The feeding tube is usually temporary. The doctor may remove it when the patient is able to eat food.

**jejunostomy:** surgery to make an opening in the small intestine to place a feeding tube. The feeding tube is often temporary. The doctor may remove it when the patient is able to eat food.

**laparotomy:** surgery that opens the abdomen so doctors can examine and treat organs, blood vessels or arteries.

**suction:** a procedure to remove secretions from the mouth and lungs. Doctors also use suction to remove fluid during surgery.

**thoracotomy:** surgery to open the chest.

**tracheostomy:** surgery that makes an incision in the throat area just above the windpipe (trachea) to insert a breathing tube. When it is complete, the breathing tube in the mouth will be taken out. This surgery is often done at the bedside. The tracheostomy tube may be removed when the patient can breathe on his or her own and can cough up secretions.

### EQUIPMENT

**ambu bag:** a device used to help patients breathe.

**blood pressure cuff:** a wrap that goes around the arm or leg and is attached to the heart monitor. The cuff lightly squeezes the arm or leg to measure blood pressure.

**cervical collar (C-collar):** a hard plastic collar placed around the neck to keep it from moving. Most patients have a C-collar until the doctor can be sure that there is no spine injury. If there is no injury, the doctor will remove the collar.

**continuous passive motion (CPM):** a machine that gives constant movement to selected joints. It is often used in the hospital after surgery to reduce problems and help recovery.

**ECG/EKG (electrocardiogram):** a painless tracing of the electrical activity of the heart. The ECG gives important information about heart rhythms and heart damage.



**endotracheal tube:** a tube that is put in the patient's mouth and down into the lungs to help with breathing. The patient cannot talk while it is in place because the tube passes through the vocal cords. When it is taken out, the patient can speak but may have a sore throat.

**Foley catheter:** a tube placed in the bladder to collect urine.

**halo:** A device used to keep the neck from moving when there is a cervical spine injury. When used, a C-collar is not needed.

**intracranial pressure (ICP) monitor:** a tube placed in the brain to measure pressure on the brain caused by excess fluid.

**IV fluid:** fluid put in the vein to give the patient drugs and nutrition (food).

**IV pump:** a machine that gives a precise rate of fluids and/or drugs into the vein.

**nasogastric (NG) tube:** a tube put into the patient's nose to give drugs and nutrition (food) directly into the stomach. It can also be used to get rid of excess fluids from the stomach.

**orthotic:** a device, such as a splint, that keeps a part of the body from moving around.

**prosthetic:** a device that replaces a missing body part, such as a leg, arm or eye.

**pulmonary artery catheter:** a line placed into a shoulder or neck vein to measure heart pressure and to tell how well the heart is working.

**pulse oximeter:** an electronic device placed on the finger, toe or ear lobe to check oxygen levels.

**triple lumen catheter:** a line placed into a shoulder or neck vein to give IV fluids and drugs.

**tube feeding pump:** a machine to give fluids and nutrition (food) in the stomach or small intestine using a nasogastric (NG) tube.

**ventilator:** a breathing machine, sometimes called a respirator, that helps patients breathe and gives oxygen to the lungs.

## **ANATOMY**

### **Bones, Skeletal**

**acetabulum:** the hip socket.

**carpals:** the eight bones of the wrist joint.

**clavicle (collarbone):** a bone curved like the letter F that moves with the breastbone (sternum) and the shoulder blade (scapula).

**femur:** the thigh bone, which runs from the hip to the knee and is the longest and strongest bone in the skeleton

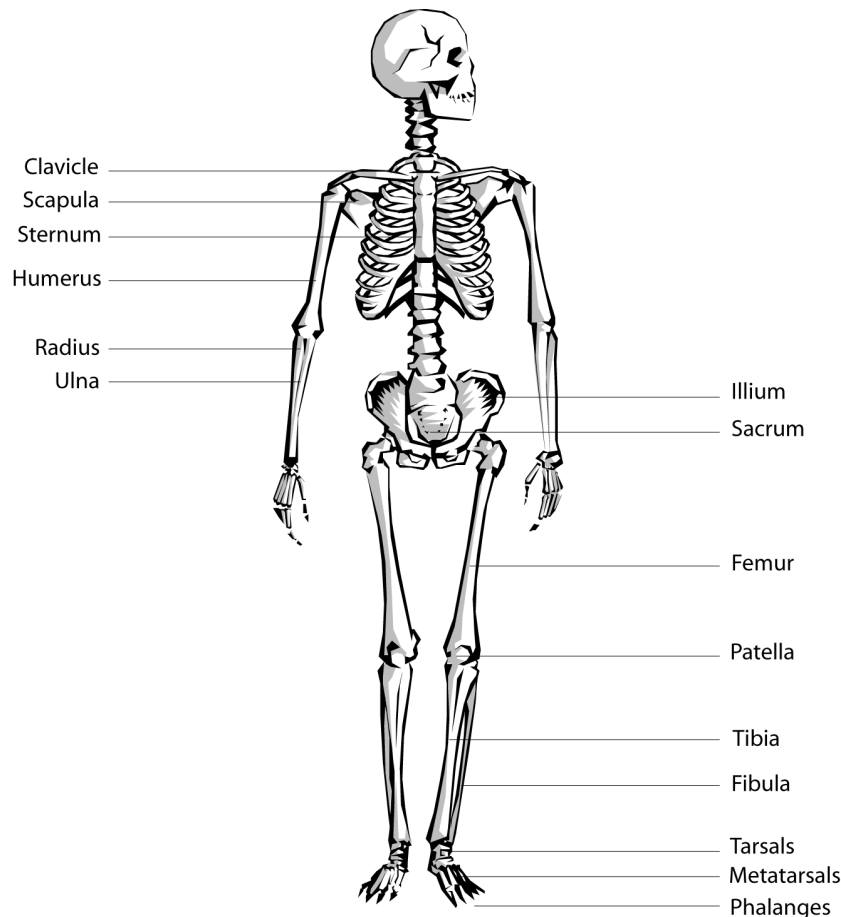
**fibula:** the outer and smaller bone of the leg from the ankle to the knee; it is one of the longest and thinnest bones of the body.

**humerus:** the upper bone of the arm from the shoulder joint to the elbow.

**ileum:** one of the bones of the pelvis; it is the upper and widest part and supports the flank (outer side of the thigh, hip and buttock).

**ischium:** the lower and back part of the hip bone.

**metacarpals:** the bones in the hand that make up the area known as the palm.



**metatarsals:** the bones in the foot that make up the area known as the arch.

**patella:** the lens-shaped bone in front of the knee.

**pelvis:** three bones (ilium, ischium and pubis) that form the girdle of the body and support the vertebral column (spine); the pelvis is connected by ligaments and includes the hip socket (the acetabulum).

**phalanges:** any one of the bones of the fingers or toes.

**pubis:** the bone at the front of the pelvis.

**radius:** the outer and shorter bone in the forearm; it extends from the elbow to the wrist.

**sacrum:** five joined vertebrae at the base of the vertebral column (spine).

**scapula (shoulder blade):** the large, flat, triangular bone that forms the back part of the shoulder.

**sternum (breastbone):** 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.

## Bones, Skull and Face

**frontal bone:** forehead bone.

**mandible:** the horseshoe-shaped bone forming the lower jaw.

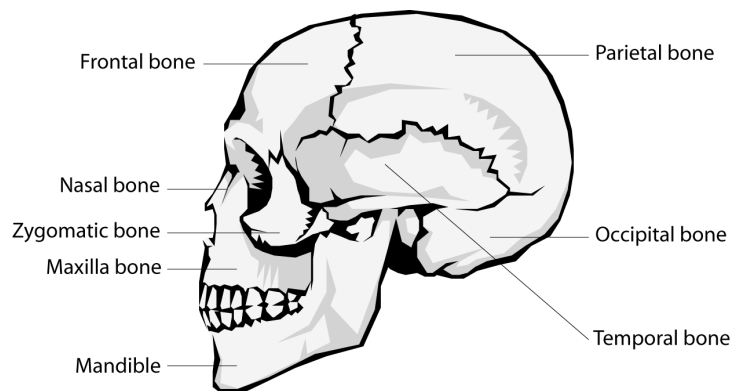
**maxilla:** the jawbone; it is the base of most of the upper face, roof of the mouth, sides of the nasal cavity and floor of the eye socket.

**nasal bone:** either of the two small bones that form 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.



## Bones, Spine

**atlas:** the first cervical vertebra.

**axis:** the second cervical vertebra.

**cervical vertebrae (C1–C7):** the first seven bones of the spinal column; injury to the spinal cord at the C1–C7 level may result in paralysis from the neck down (quadriplegia).

**coccyx:** a small bone at the base of the spinal column, also known as the tailbone.

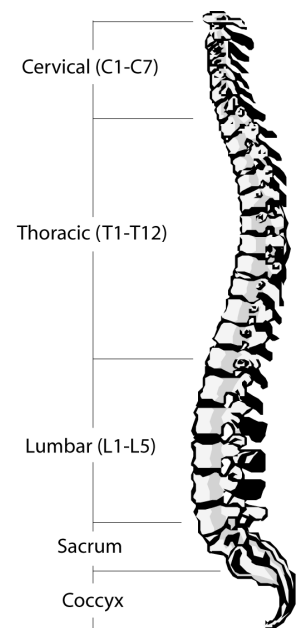
**intervertebral disk:** the shock-absorbing spacers between the bones of the spine (vertebrae).

**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 paralysis below the waist (paraplegia).

**sacral vertebrae:** the vertebrae that form the sacrum.

**sacrum:** five joined vertebrae at the base of the vertebral column (spine).

**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 12 vertebrae in the middle of the back that are connected to the ribs; injury to spinal cord at the thoracic level may result in paralysis from the waist down (paraplegia) and may affect other organs such as the liver, stomach and kidneys, and functions such as breathing.

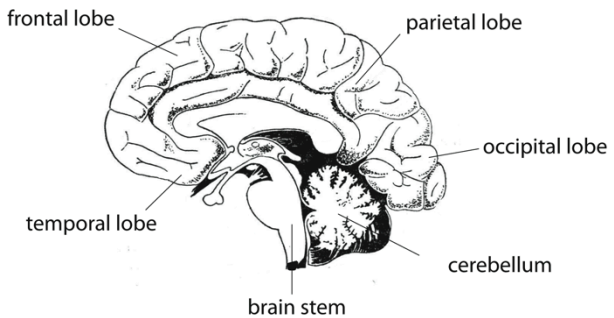
**transverse process:** the two small bones that protrude from either side of each vertebra.

## Brain

**brain stem:** the part of the brain that connects to the spinal cord; it controls blood pressure, breathing and heartbeat.

**cerebellum:** the second-largest part of the brain; it controls balance, coordination and walking.

**cerebrum:** the largest part of the brain, with two halves known as hemispheres; the right half controls the body's left side and the left half controls the body's right side. Each hemisphere is divided into four lobes:



- **frontal lobe:** area behind the forehead that helps control body movement, speech, behavior, memory and thinking.
- **occipital lobe:** area at the back of the brain that controls eyesight.
- **parietal lobe:** top and center part of the brain, located above the ear, helps us understand things like pain, touch, pressure, body-part awareness, hearing, reasoning, memory and orientation in space.
- **temporal lobe:** part of the brain near the temples that controls emotion, memory, and the ability to speak and understand language.

## Digestive System and Abdomen

**colon:** the final section of the large intestine; it mixes the intestinal contents and absorbs any remaining nutrients before the body expels them.

**duodenum:** the first part of the small intestine; it receives secretions from the liver and pancreas through the common bile duct.

**esophagus:** the muscular tube, just over nine inches long, that carries swallowed foods and liquids from the mouth 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

**kidney:** one of a pair of organs at the back of the abdominal cavity that filter waste products and excess water from the blood to produce urine.

**large intestine:** absorbs nutrients and moves stool out of the body.

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

**pancreas:** gland that produces insulin for energy and secretes digestive enzymes.

**pharynx (throat):** the passageway or tube for air from the nose to the windpipe and for food from the mouth to the esophagus.

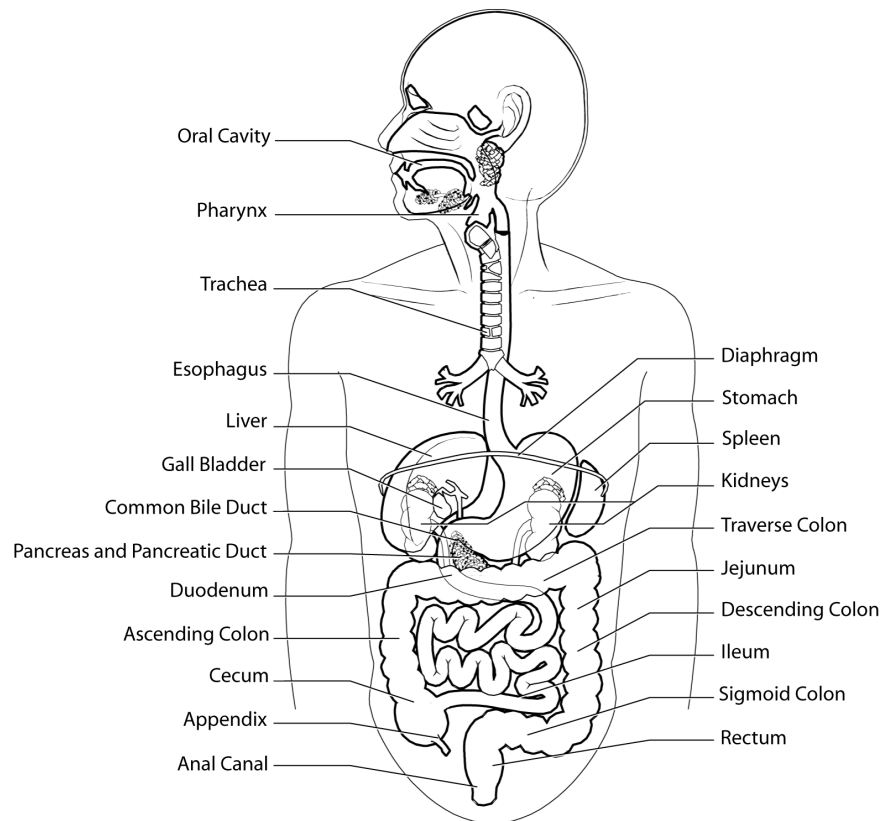
**rectum:** the lower part of the large intestine between the sigmoid colon and the anus.

**sigmoid colon:** the S-shaped part of the colon between the descending colon and the rectum.

**small intestine:** the part of the digestive tract that breaks down and moves food into the large intestine and also absorbs nutrients.

**spleen:** organ in the upper left part of the abdomen that filters waste, stores blood cells and destroys old blood cells; it is not vital to survival but without it there is a higher risk of infections.

**stomach:** the large organ that digests food and then sends it to the small intestine.



## Respiratory System

**diaphragm:** dome-shaped skeletal muscle between the chest cavity and the abdomen that contracts when we breathe in and relaxes when we breathe out.

**epiglottis:** a flap of cartilage behind the tongue that covers the windpipe during swallowing to keep food or liquids from getting into the airway.

**larynx (voice box):** part of the airway and place in the throat where the vocal chords are located.

**lung:** one of two organs in the chest that delivers oxygen to the body and removes carbon dioxide from it.

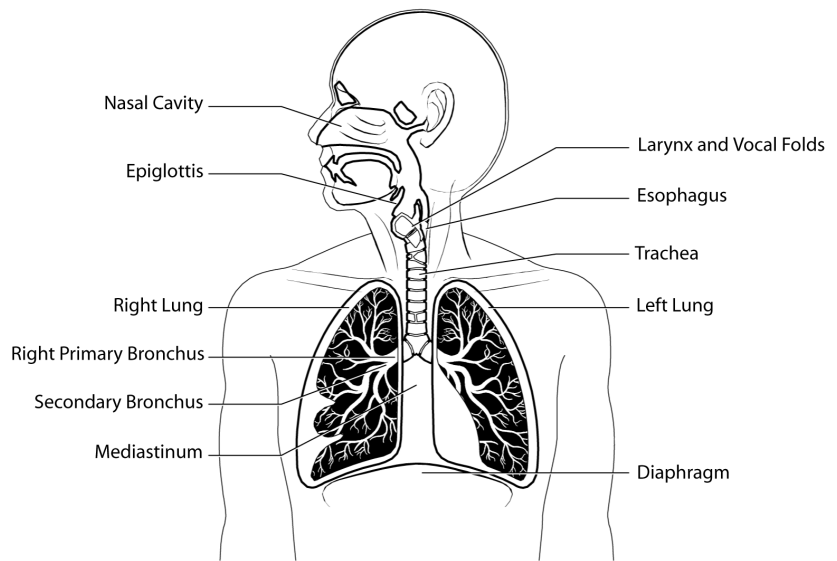
**mediastinum:** the part of the body between the lungs that contains the heart, windpipe, esophagus, the large air passages that lead to the lungs (bronchi) and lymph nodes.

**nasal cavity:** a large air-filled space above and behind the nose in the middle of the face where inhaled air is warmed and moistened.

**pharynx (throat):** the passageway or tube for air from the nose to the windpipe and for food from the mouth to the esophagus.

**trachea (windpipe):** the main airway that supplies air to both lungs.

**vocal cord:** either of two thin folds of tissue within the larynx that vibrate air passing between them to produce speech sounds.







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## Medical Center

The American Trauma Society and VCU Medical Center provide this booklet as a public service. The booklet is based on a Trauma Handbook developed by the Inova Regional Trauma Center at the Inova Fairfax Hospital and Inova Fairfax Hospital for Children in Falls Church, Virginia.

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