TRAUMA PROVIDER LEVEL 1

TEST PREPARATION POINTS

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Chapter One: Assessment and Management

SHOCK:

THE FISK PRINCIPLE:

The Fisk principle describes the components that are necessary for the oxygenation of cells in the body. There are three components are:

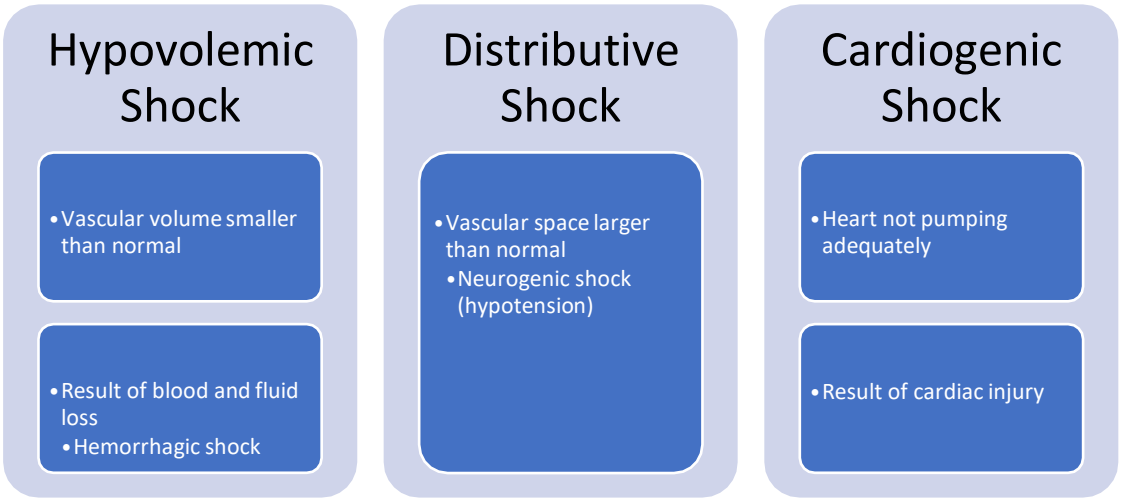
1. On-loading of oxygen to RBCs in the lung
2. Delivery of RBCs to tissue cells
3. Off-loading of oxygen from RBCs to tissue cells

It is crucial that the patient has enough RBCs to deliver sufficient oxygen to tissue cells, so that the cells can produce energy. The patient's airway must be unobstructed, and respiration must be of sufficient volume and depth, as oxygen needs to be able to reach the lungs and RBCs.

Prehospital treatment of shock seeks to ensure that the central components of the Fick principle are achieved, aiming to prevent or reverse anaerobic metabolism, and thus avoiding cell and organ death. These components are implemented using the following actions:

1. Controlling exsanguinating extremity hemorrhage
2. Maintaining sufficient airway and ventilation
3. Utilizing supplemental oxygen
4. Keeping the patient warm to cause oxygen off-loading
5. Maintaining adequate circulation, perfusing tissue cells with oxygen-rich blood
6. Stopping additional blood loss

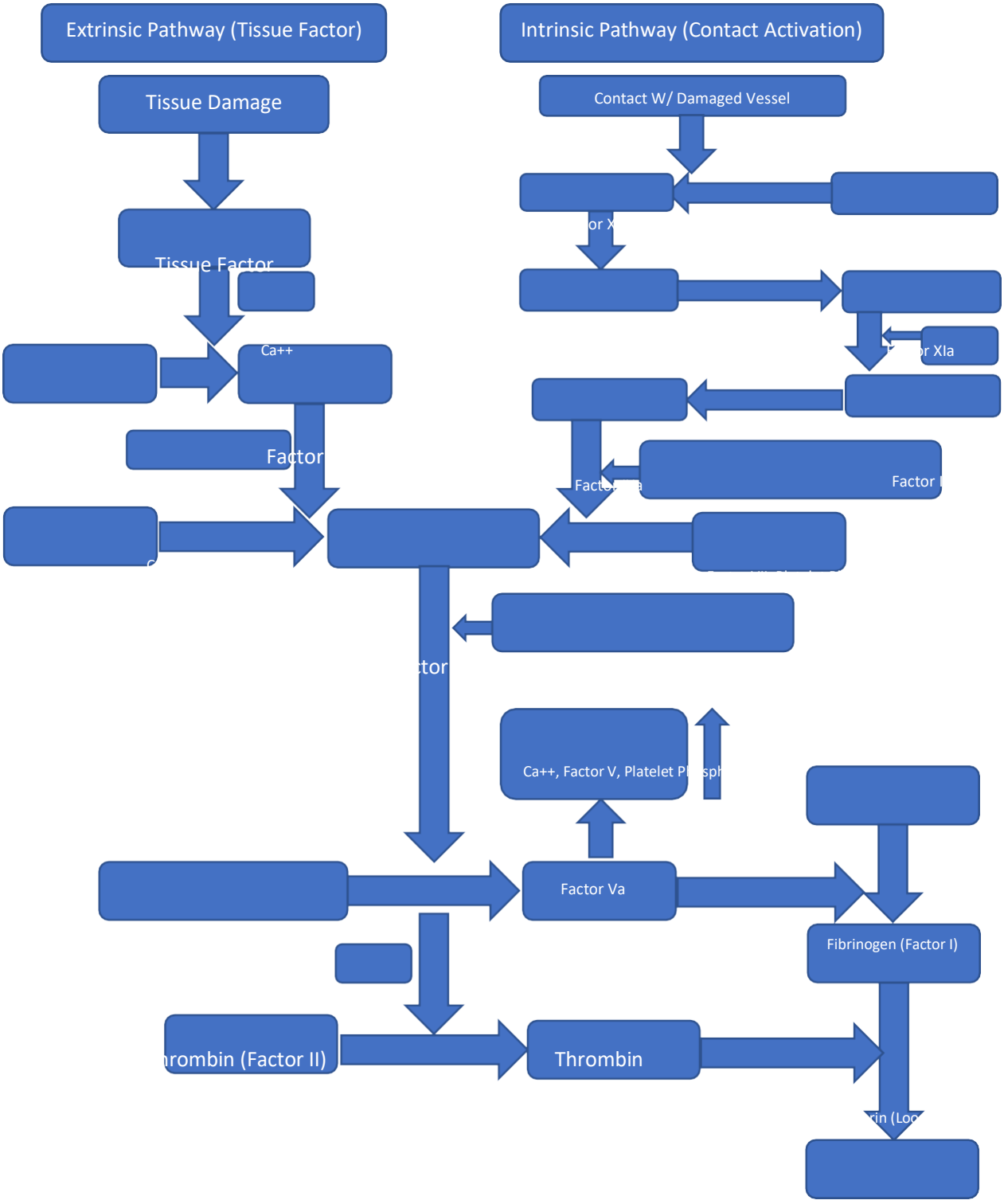
TYPES OF TRAUMATIC SHOCK:



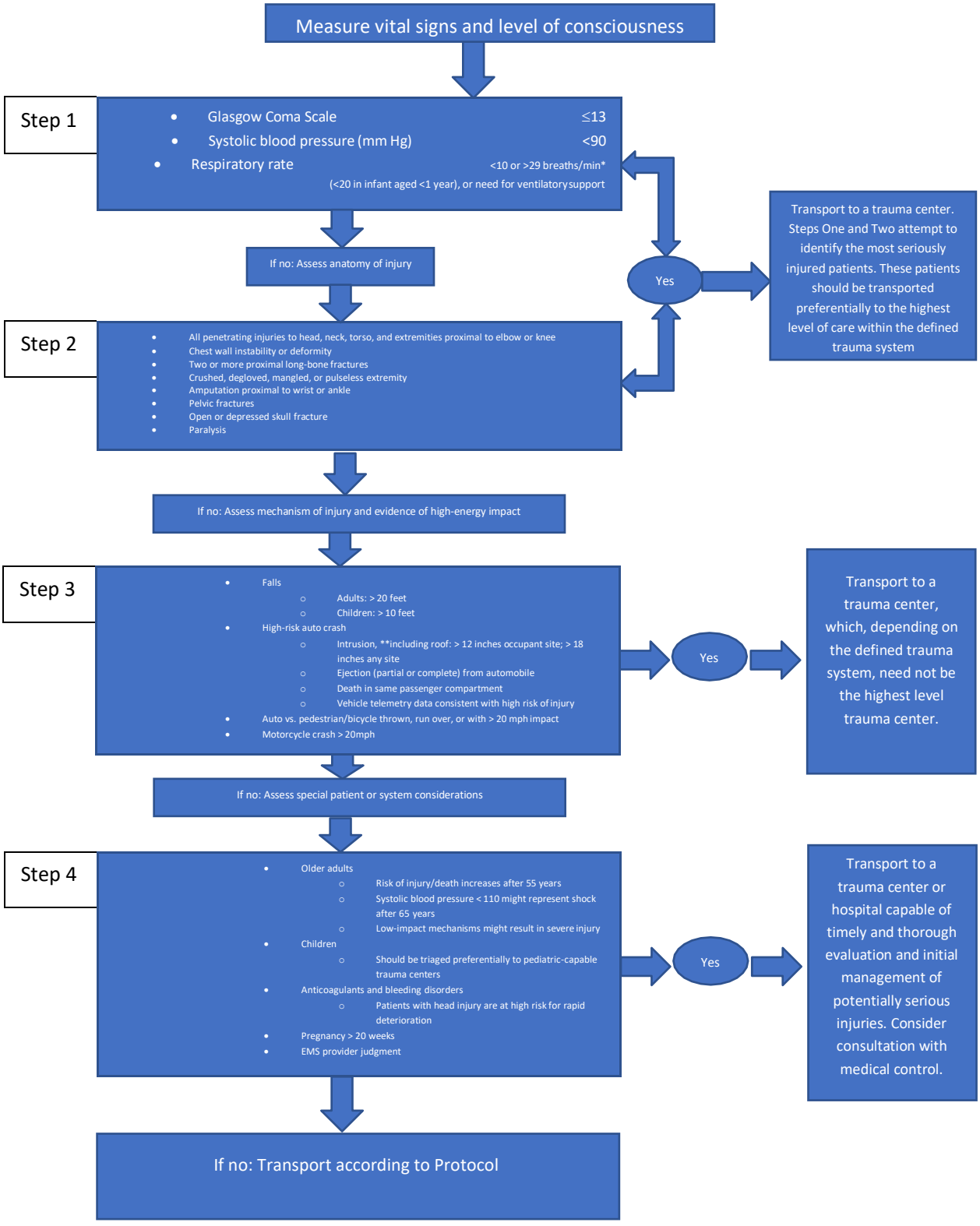
Classification of Hemorrhagic Shock				
	Class I	**Class II**	**Class III**	**Class IV**
Blood loss (ml)	<750	750-1,500	1,500-2,000	>2,000
Blood loss (% blood volume)	<15%	15-30%	30-40%	>40%
Pulse rate	<100	100-120	120-140	>140
Blood pressure	Normal	Normal	Decreased	Decreased
Pulse pressure (mm Hg)	Normal or increased	Decreased	Decreased	Decreased
Ventilatory rate	14-20	20-30	30-40	>35
Central nervous system/mental status	Slightly anxious	Mildly anxious	Anxious, confused	Confused, lethargic
Fluid replacement	Crystalloid	Crystalloid	Crystalloid and blood	Crystalloid and blood

Signs Associated With Types of Shock			
Vital Sign	Hypovolemic	Neurogenic	Cardiogenic
Skin temperature/quality	Cool, clammy	Warm, dry	Cool, clammy
Skin color	Pale, cyanotic	Pink	Pale, cyanotic
Blood pressure	Drops	Drops	Drops
Level of consciousness	Altered	Lucid	Altered
Capillary refilling time	Slowed	Normal	Slowed

CLOTTING CASCADE:



GUIDELINES FOR FIELD TRIAGE OF INJURED PATIENTS:



XABCDE

The primary survey of the trauma patient gives emphasis to the management of life-threatening external bleeding as the initial part of the sequence. While the steps of this survey are typically taught and shown in a sequential manner, many steps can and should be performed simultaneously. The mnemonic **XABCDE** is particularly helpful for remembering the steps:

- **X –** Control of severe external (exsanguinating) bleeding
- **A –** Airway management and cervical spine stabilization
- **B –** Breathing (ventilation and oxygenation)
- **C –** Circulation (perfusion and other hemorrhage)
- **D –** Disability
- **E –** Expose/environment

MARCH

MARCH is an alternative patient assessment acronym to **XABCDE** and it is used by EMS practitioners working in situations with trauma. It stands for:

- **M –** Massive bleeding: Control the bleeding of a hemorrhage with a tourniquet, hemostatic dressing, or conventional pressure dressing if the hemorrhage is life-threatening.
- **A –** Airway: Assess the airway for obstruction and secure the airway with proper body positioning, nasopharyngeal airway, advanced airways, or surgical airway.
- **R –** Respirations: Assess and treat for penetrating chest wounds, sucking chest wounds, and tension pneumothoraces.
- **C –** Circulation: Assess for shock. Establish intraosseous or intravenous access, and begin fluid resuscitation if it is needed
- **H –** Head/Hypothermia: Ensure hypothermia does not occur. Other risk factors include heat, chemical, or toxic exposures. Apply splint to any major fracture and restrict spinal motions for patients at risk.

Shock Assessment in Compensated and Decompensated Hypovolemic Shock		
Vital Sign	**Compensated**	**Decompensated**
Pulse	Increased; tachycardia	Greatly increased; marked tachycardia that can progress to bradycardia
Skin	Pale, cool, moist	White, cold, waxy
Blood pressure range	Normal	Decreased
Level of Consciousness	Unaltered	Altered, ranging from disoriented to a coma

Approximate Internal Blood Loss Associated with Fractures	
Types of Fracture	**Internal Blood Loss (ml)**
Rib	125
Radius or ulna	250-500
Humerus	500-750
Tibia or fibula	500-1000
Femur	1,000-2,000
Pelvis	1,000-massive

Intraosseous Vascular Access:

Step 1	• Assemble equipment, including an intraosseous infusion needle, syringe filled with at least 5 mL of sterile saline, antiseptic, IV fluid and tubing, and tape • Ensure proper body substance isolation • Place the patient in a supine position • Clean the insertion site with an antiseptic
Step 2	• Hold the drill and needle at a 90-degree angle to the selected bone • Activate the drill and insert the rotating needle through skin and into the bone cortex, which will produce a "pop" upon entry
Step 3	• Once there is a lack of resistance against the needle, release the drill's trigger • Remove the drill from the needle while holding the needle
Step 4	• Release and remove the trocar from the center of the needle
Step 5	• Attach the syringe with saline to the hub of the needle. Draw back with the plunger slightly, watching for fluid from the marrow cavity to mic with the saline
Step 6	• Inject 5 mL of saline and watch for signs of infiltration • If there are no signs, remove the syringe from the hub, attach IV tubing and set the flow rate. Secure the needle and IV tubing

Wound Packing with Topical Hemostatic Dressing or Plain Gauze:

Step 1	• Expose the wound
Step 2	• Carefully remove excell blood from wound site and try to preserve any clots that have formed. Locate the source of active bleeding
Step 3	• Remove the dressing from its packaging and pack the entire dressing tightly into the wound, directly above the most active bleeding point
Step 4	• Apply direct pressure onto the wound and packing for at least 3 minutes if using a hemostatic agent. Apply pressure for 10 minutes if using plain gauze
Step 5	• Ensure bleeding has stopped. The wound can be repacked or a second dressing may be inserted if necessary. If the bleeding is controlled, leave the packing in place and apply a compression wrap around the wound to secure the dressing

PRESSURE DRESSING USING ISRAELI TRAUMA BANDAGE:

Step 1	• Ensure proper BSI and place dressing pad on the wound
Step 2	• Wrap elastic bandage around the extremity at least one time
Step 3	• Loop the bandage through the bar
Step 4	• Wrap the bandage tightly around the wounded extremity in the opposite direction, and apply enough pressure to control bleeding
Step 5	• Continue wrapping
Step 6	• Secure distal end of the bandage to maintain pressure to control the hemorrhage

SCENE MANAGEMENT:

Scene Management Summary
• It is important to assess for all possible types of hazards. They include traffic issues, environmental concerns, violence, bloodborne pathogens, and hazardous materials. • Assessing the scene ensures that EMS and their equipment aren't compromised and unavailable for others. It also ensures that other emergency responders are protected from hazards. • Hazards aren't always seen unless they are actively looked for. • Prehospital care providers should have a plan to limit risk at any potentially dangerous scene. For example, reflective clothing should be worn at motor vehicle crashes. • Some situations, such as crime scenes will change how a prehospital care provider reacts and responds to the scene and the patients there. • Incidents are managed using an incident command system structure. EMS is a part of that structure. Prehospital care providers must understand the ICS and their crucial role within that system. • Care providers should take all precautionary steps to ensure that no contamination by bloodborne pathogens occurs. These precautions include employing physical barriers, handwashing, and preventing injury by sharps. • Providers responsible for multiple victims should be prepared to triage patients It is important to assess for all possible types of hazards. They include traffic issues, environmental concerns, violence, bloodborne pathogens, and hazardous materials. • Assessing the scene ensures that EMS and their equipment aren't compromised and unavailable for others. It also ensures that other emergency responders are protected from hazards. • Hazards aren't always seen unless they are actively looked for. • Prehospital care providers should have a plan to limit risk at any potentially dangerous scene. For example, reflective clothing should be worn at motor vehicle crashes. • Some situations, such as crime scenes will change how a prehospital care provider reacts and responds to the scene and the patients there. • Incidents are managed using an incident command system structure. EMS is a part of that structure. Prehospital care providers must understand the ICS and their crucial role within that system. • Care providers should take all precautionary steps to ensure that no contamination by bloodborne pathogens occurs. These precautions include employing physical barriers, handwashing, and preventing injury by sharps. • Providers responsible for multiple victims should be prepared to triage patients based on the severity of the patient's conditions as well as the resources available at the time.

PATIENT ASSESSMENT AND MANAGEMENT:

Patient Assessment and Management Summary

- The chance of survival for a patient with traumatic injuries is dependent on immediate identification and management of conditions that interfere with tissue perfusion.
- Identifying these conditions requires a systematic, logical, and prioritized process of gathering information and using it to respond. This is called patient assessment.
- Patient assessment starts with assessing the scene and performing a safety evaluation. Additionally, it should include the formation of a general patient impression, a primary survey, and when possible, a secondary survey.
- The information gathered from this process of assessment should be analyzed and used as the basis for care and transport decision-making.
- A missed problem is a missed opportunity to increase the patient's chance of survival.
- After the safety of the scene is evaluated and the general impression of the situation is considered, providers initiate the primary survey with the **XABCDE** framework:
    - **X –** Control of severe external (exsanguinating) bleeding
    - **A –** Airway management and cervical spine stabilization
    - **B –** Breathing (ventilation and oxygenation)
    - **C –** Circulation (perfusion and other hemorrhage)
    - **D –** Disability
    - **E –** Expose/environment
- All of the actions under the **XABCDE** framework typically occur at the same time, despite the seemingly sequential order.
- Immediate threats to a patient's life are quickly corrected with a "find and fix" manner. As soon as a prehospital care provider controls an exsanguinating hemorrhage and manages a patient's airway/breathing, they package the patient and begin transport without any more treatment at the scene.
- The primary and secondary surveys should be performed frequently to look for any changes in the patient's condition and anything that demands prompt intervention.
- Patient outcome may be greatly improved when the prehospital care provider decides on the most appropriate destination for the patient, communicates with that facility, and thoroughly documents the patient's condition and the actions performed in the prehospital stage.

AIRWAY AND VENTILATION:

Airway and Ventilation Summary

• Cerebral oxygenation and oxygen delivery to other parts of the body provided by adequate airway management and ventilation are the most important components of prehospital care.
• The provider needs to be able to integrate ventilation and gas exchange principles with the pathophysiology of trauma in order to properly care for a trauma patient.
• Decreased minute volume can be caused by mechanical obstruction or a decreased level of consciousness, or often both at the same time.
• If there is a noise coming from the upper airway, it usually is indication of partial airway obstruction caused by the tongue, blood, or foreign bodies in the upper airway. It is crucial to listen and search for possible signs of obstruction.
• All trauma patients receive ventilatory support with additional oxygen to ensure that hypoxia is either corrected or avoided.
• Categories for airway adjuncts and procedures include the following:
  ○ **Manual methods** are the easiest to perform and don't require any additional equipment. These methods include the trauma chin lit as well as the trauma jaw thrust.
  ○ **Simple airway management** involves the use of adjunctive devices that demand only a single piece of equipment. The technique for insertion requires very little training. They include oropharyngeal and nasopharyngeal airways.
  ○ **Complex airways** include airway adjuncts that require a high degree of training initially and continual training to ensure proficiency. They include endotracheal tubes and supraglottic airways.
• The decision to perform endotracheal intubation or use an alternative device should only be made after an assessment of the airway has defined the difficulty of the intubation. It is part of a risk-benefit evaluation that incorporates skill as well as experience of the provider and transport time to the nearest trauma center.
• End-tidal carbon dioxide monitoring is the "gold standard" for confirming ET tube placement. This technique should be used in a prehospital setting whenever it is available.
• Managing the airway is not without risk. When using some skills and modalities, the risk must be weighed against benefit on a patient-by-patient basis.
• Use critical thinking skills to make the best judgment for each patient.

AIRWAY MANAGEMENT AND VENTILATION SKILLS:

Airway and Ventilation Skills

• Trauma Jaw Thrust
• Alternate Trauma Jaw Thrust
• Trauma Chin Lift
• Oropharyngeal Airway
  ○ Tongue Jaw Lift Insertion Method
  ○ Tongue Blade Insertion Method
• Nasopharyngeal Airway
• Bag-Mask Ventilation
  ○ Two-Provider Method
• Supraglottic Airway
  ○ King LT Airway
• I-Gel Laryngeal Mask Airway
• Intubating Laryngeal Mask (ILMA)
• Visualized Orotracheal Intubation
• Face-to-Face Orotracheal Intubation
• Surgical Cricothyroidotomy
• Intubation with Airtraq Channeled Video Laryngoscope

Chapter 2: Specific Injuries

HEAD TRAUMA:

Head Trauma Summary
• To understand the pathophysiology of a traumatic brain injury, knowledge of the anatomy of the head and brain is crucial. • Providers must understand how the brain compensates for reduced cerebral blood flow after trauma occurs. • Primary brain injury occurs at the time of original insult and is any resulting injury due to the initial trauma. • Secondary brain injury is any further injury to structures that weren't harmed by the primary brain injury. Recognition of pathophysiologic processes that are associated with secondary injury, including herniation from mass effect, hypoxia, and hypotension as well as rapid transport are key priorities in the prehospital stage. • Understanding the mechanism of injury allows the anticipation of predictable injury patterns, which is crucial in identifying rapidly escalating conditions that are typically associated with brain injury. • The severity of a traumatic brain injury is not always immediately apparent. Serial neurologic evaluations, including Glasgow Coma Scale (GCS) scores, particularly the motor score and pupillary response, are necessary to recognize changes in patient condition. • Prehospital management involves controlling hemorrhage from other injuries, maintaining a systolic blood pressure of at least 90 mm Hg, and maintaining oxygen saturation of at least 90%. • Providers should consider active airway management for all with a severe traumatic brain injury, classified as a GCS score of 8 or lower. If the provider choses intubation, the most skilled prehospital provider available should perform it.

SPINAL TRAUMA:

Spinal Trauma Summary
• The vertebral column is made of 24 separate vertebrae and the sacrum and coccyx all stacked upon each other. • The main functions of the spinal column are supporting body weight and allowing movement. • The spinal cord is enclosed by the vertebral column and can be injured by abnormal movement and positioning. When the support for the vertebral column has been lost due to injury to the vertebrae or to muscles and ligaments that hold the column in place, spinal cord injury may occur. • After ensuring the scene and all providers are safe, the first priority is to conduct a primary survey. Scene assessment and event history should determine if spinal injury is a possibility. • Mechanism of injury should never be the only means of determining whether spinal motion restriction is needed or not. This is because it only represents one factor in a complex process. Assessment of the neck and spine for spinal immobilization should also include the assessment of motor and sensory function, existence of pain or tenderness, as well as patient reliability as predictors of spinal column injury (SCI).

SPINAL TRAUMA SKILLS:

Spinal Trauma Skills

• Cervical Collar Sizing and Application
• Logroll
  ○ Supine Patient
  ○ Prone or Semi-prone Patient
• Sitting Immobilization (Vest-Type Extrication Device)
• Rapid Extrication
  ○ Three or More Prehospital Care Providers
  ○ Two Prehospital Care Providers
• Child Immobilization Device
• Helmet Removal
• Vacuum Mattress Application

THORACIC TRAUMA:

Thoracic Trauma Summary
• Thoracic injuries are important, as there is potential for compromise of both respiratory and circulatory function. Thoracic injuries are also frequently associated with multisystem trauma. • When there are penetrating injuries to the chest, prehospital care providers must be ready to manage a hemothorax or pneumothorax. Additionally, they must be prepared to manage a hemopneumothorax. • When there is blunt force trauma to the chest, prehospital care providers should look for pulmonary contusion, tears of the visceral pleura, broken ribs, shearing or rupture of major chest blood vessels, and any disruption in the chest wall. Conditions include hemothorax, pneumothorax, and catastrophic hemorrhage. Pulse oximetry, side stream or in-line waveform capnography are helpful in assessing ventilatory status and patient response to therapy. • Patients should be treated aggressively and transported quickly. • **Simple pneumothorax** is the presence of air within the pleural space. • **Open pneumothorax** involves a defect in the chest wall and this allows air to enter and exit the pleural space from the outside with ventilatory effort. • **Tension pneumothorax** occurs when air enters and is trapped in the pleural space with a gradual rise in intrathoracic pressure. Providers should seek signs of tension pneumothorax, as field treatment with needle decompression can help correct this fatal problem. • Patients with blunt thoracic injury should receive spinal immobilization during transportation. • Electrocardiographic monitoring may suggest blunt cardiac injury. • Particular attention should be paid to the administration of supplemental high-concentration and any need for ventilatory support in patients suspected of having chest trauma. • Intravenous access should be obtained en route to the medical facility and fluid therapy should be given with specific goals in mind. • Many thoracic injuries can be treated without surgery, the patient must still be evaluated and managed at the appropriate medical facility. • Needle decompression is key to decrease intrathoracic pressure from a tension pneumothorax that is affecting the patient's breathing, ventilation, and circulation.

ABDOMINAL TRAUMA:

Abdominal Trauma Summary
• Intra-abdominal injuries can be life threatening because of the possibility of internal hemorrhage and the spillage of gastrointestinal contents into the peritoneal cavity. • In a prehospital setting, it is not possible to determine the extent of internal injuries; thus, mechanism of the injury combined with signs of abdominal trauma should increase provider's index of suspicion. • Management of a patient with abdominal trauma includes hemorrhage control, oxygenation, and rapid packaging for transport. Spinal immobilization precautions should be taken in blunt trauma patients who have torso injury and the pelvis should be further stabilized with a binder if it is hemodynamically unstable. • Balanced resuscitation with crystalloid solutions allows perfusion of vital organs. At the same time, it potentially minimizes the risk of aggravating internal hemorrhage. • Emergent surgical intervention is potentially lifesaving. A patient who has experienced abdominal trauma should be transported to a medical facility that has immediate surgical capabilities. • The anatomic and physiologic changes that are a result of pregnancy have implications for the pattern of injury, signs and symptoms, and ultimately, the management of the trauma patient. • Management of potential fetal compromised is accomplished through effective resuscitation of the patient.

MUSCULOSKELETAL TRAUMA:

Musculoskeletal Trauma Summary

• For patients with multisystem trauma, attention should be given to the primary survey first and the identification and treatment of all life-threatening injuries.
• Providers should be careful not to be distracted from addressing the life-threatening injuries and conditions by the gross appearance of non-critical injuries or by a patient's request for treatment of a certain injury.
• After patient assessment and finding that the patient only has isolated injuries without systematic implication, the noncritical injuries should then be addressed.
• Musculoskeletal injuries should be immobilized for stability and patient comfort/pain relief.
  ○ Rapidly finding the mechanism of injury and energy transferred will assist the provider in recognizing the most critical injuries and conditions.
  ○ The firstconsideration in managing a fracture is to control the hemorrhage and treat for shock.
  ○ Suspected dislocations should be splinted in the position it was found in.
• Traction Splint for Femur Fractures:
  ○ The purpose is to immobilize femur fractures to minimize ongoing internal thigh hemorrhage.

BURN INJURIES:

Burn Injuries Summary
• All burns are serious and should be treated as such, no matter their size. • Large thermal burns, electrical injuries and chemical burns are all potentially life-threatening. • The body has little to no adaptive mechanisms to survive a burn injury. • Burn injuries are not only isolated to the skin. Major burns can result in dysfunction of the cardiovascular, pulmonary, gastrointestinal, renal, and immune systems. • Without appropriate fluid resuscitation, refractory shock, multiorgan dysfunction, and deepening of the burns can all occur. Therefore, it is crucial that prehospital care providers treat burns properly and optimize the chance of survival from a burn. • Burns are rarely rapidly fatal. A patient who has inhaled a large quantity of smoke and has large thermal burns could take a few days to die. Patients with burns are also likely to have experienced some other type of trauma. • Dramatic burns may distract providers away from other potentially life-threatening injuries. Performing primary and secondary surveys will reduce the chance of missing these injuries. • Small burns in areas like the hands and face can result in long-term impairment due to heavy scar formation. • Being familiar with burn center transport criteria will ensure that patients can achieve maximum functional recovery after a burn injury. • The main cause of death in burn victims is complications from smoke inhalation. These include asphyxiation, thermal injury, and delayed toxic-induced lung injury. Respiratory failure symptoms can take 48 hours or longer to develop and appear. Even if the patient has no burns, they should be taken to a burn center if they have inhaled smoke. • Victims of burn injury due to hazardous materials like chemicals or radioactive agents should be decontaminated to avoid the spread of these agents to prehospital and healthcare providers.

PEDIATRIC TRAUMA:

Pediatric Trauma Summary

- Primary survey and management of a pediatric patient in a prehospital setting requires the use of standard trauma life support principles. These principles should be modified to account for the unique characteristics that pediatric patients possess.
- Traumatic brain injury is the top cause of death from trauma. It is also the most common injury for which pediatric patients require airway management.
- Children present unique anatomic and developmental considerations and they mayrequire psychological support in the prehospital stage.
- The pediatric assessment triangle (PAT) helps providers create a general impression – sick or not sick. Appearance, work of breathing, and circulation to the skin are the three general components of the pediatric assessment triangle.
- Children can compensate for volume loss for a longer duration than adults, but when they decompensate, they deteriorate suddenly and severely.
- Significant underlying organ and vascular injury may occur with no signs of external injury.
- Pediatric patients are unstable and should be transported immediately to the appropriate facility if they exhibit any of the following conditions:
    - Respiratory compromise
    - Signs of shock or circulatory instability
    - Any alteration to mental status
    - Significant blunt trauma to the head, thorax, or abdomen
    - Any evidence of multiple fractures of significant fractures (ribs or pelvis)
    - Any concern for nonaccidental trauma
- Always consider that abuse or nonaccidental trauma may be a factor when the history of the injury does not match the presentation of the patient

GERIATRIC TRAUMA:

Geriatric Trauma Summary
• General guidelines for treating geriatric patients are roughly the same, there are several specific approaches that are unique to care of an injured geriatric patient. • There are anatomic and physiologic changes that are associated with aging, chronic disease, and medications that can make certain types of trauma more likely. They can also complicate traumatic injuries, and cause a decreased ability to compensate for shock. Older patients have less physiologic reserve and do not tolerate physical insult well. • Knowing an older patient's medical history and their medications is crucial to providing them proper care. • There are many factors in geriatric trauma patients that can mask early signs of deterioration. Therefore, there is an increased possibility of sudden and rapid decompensation without an apparent warning. • More serious injury may have occurred than what is indicated by initial presentation. • Prehospital care providers must be able to recognize and report any signs of elder abuse. • A lower threshold for direct triage of geriatric trauma patients to trauma centers is crucial.

Chapter 3: Prevention

INJURY PREVENTION:

Injury Prevention Summary

- The best method to combat injury is to prevent it from occurring in the first place.
- There are five forms of energy in physical form: mechanical, chemical, thermal. Radiation, and electrical.
    - As long as a person's ability to perform a task exceeds the demands of the task itself, energy is released in a controlled and usable manner.
    - When demands exceed the person's ability, injury occurs.
- Injury and illness both require the presence of the three agents of the epidemiological triad: host, agent, and environment.
- The Haddon Matrix assists predicting injury risk by examining the triad during the pre-event, event, and post-event phases.
- Injury can be split into two categories: intentional or unintentional.
- Causes of injury-related death vary regionally.
- Injury is the leading killer of Americans between 1 and 44 years of age.
- Intimate partner violence is defined as physical or sexual violence, psychological aggressions, or stalking by a current or former intimate partner. Providers should report any suspicion of intimate partner violence to the authorities.
- Injury prevention programs aim to change knowledge, attitude, and behavior of certain identified segments of society.
- Prevention strategies can be either active (requiring cooperation of the protected person) or passive (not demanding a conscious effort).
- Education, enforcement, and engineering are the Three Es of injury prevention.
- Public health approaches create a community coalition to stop community-based diseases through a four-step process.
    - Surveillance
    - Risk Factor Identification
    - Intervention Evaluation
    - Implementation
- Providers can be active in the development of these programs and they should take advantage of "teachable moments" to educate the community
- Self-injury prevention is an incredibly valuable service that a prehospital care provider is capable of providing.

Chapter 4: Mass Casualties & Terrorism

DISASTER MANAGEMENT:

Disaster Management Summary

- Disasters can result from natural climatic or geologic events. They can also be a result of both unintentional and intentional efforts by humans.
- Although disasters tend to be unpredictable, sufficient preparation can make these difficult situations manageable.
- The incident command system (ICS) allows different agencies in many jurisdictions to work together to effectively manage disaster response.
- Prehospital care providers must understand the conceptof triage to ensure that they can help the greatest number of people with the available resources.
- Transport must take into consideration the capacity of nearby hospital and whether certain patients would benefit from additional transportation to a dedicated trauma center.
- Common pitfalls have been found that hinder proper event management:
    - Inadequate preparedness
    - Communication failures
    - Inadequate scene safety measures
    - Self-dispatched assistance
    - Supply and equipment shortage
    - Poor media relations
- Disaster response can take a heavy psychological toll on both victims and emergency responders. Agencies should consider voluntary debriefing with affected personnel to help providers keep good mental health.
- Understanding the disaster cycle is crucial to preparation and prevention efforts. There are typically five phases of disaster response:
    - Quiescent/Inter-disaster period
    - Prodrome (warning) phase
    - Impact phase
    - Rescue/Emergency/Relief phase
    - Recovery/Reconstruction phase
- The best outcome in response to MCIs is a result of a well-devised plan that has been tested and practiced.

EXPLOSIONS AND WEAPONS OF MASS DESTRUCTION:

Explosions and Weapons of Mass Destruction Summary
• Weapons of mass destruction (WMDs) manufactures by terrorist groups pose a major risk to civilized society. • Prehospital care providers may come in contact with explosions as well as chemical and radiologic materials as a result of industrial mishaps. • The safety of providers is paramount. They should be knowledgeable about the levels of personal protective equipment and the process of decontamination. • High explosives, often used in terrorist attacks, produce primary blast injuries in survivors who are close to the blast. They also produce secondary injuries that result from flying debris. • Chemical agents are capable of injuring the skin and pulmonary system. They also may result in systemic illness, manifesting as a specific toxidrome that yields clues to the agent. Antidotes are available for some of these agents. • Biologic agents can be virulent bacteria, viruses, or toxins produced by living organisms. The types of precautions used by providers vary from agent to agent. • There are several types of radiation. Exposure to them may result in acute radiation illness.